Appendices A to P

# CLOVERDALE RANCHERIA OF POMO INDIANS FEE-TO-TRUST AND RESORT CASINO PROJECT

## Final Environmental Impact Statement

Lead Agency
United States Bureau of Indian Affairs
Pacific Region

April 2014

Cooperating Agencies
National Indian Gaming Commission, Cloverdale Rancheria of Pomo Indians, United States Environmental Protection Agency, California Department of Transportation, Sonoma County, and City of Cloverdale

ESA

Appendices A to P

# CLOVERDALE RANCHERIA OF POMO INDIANS FEE-TO-TRUST AND RESORT CASINO PROJECT

## Final Environmental Impact Statement

Lead Agency
United States Bureau of Indian Affairs
Pacific Region
2800 Cottage Way
Sacramento, CA 95825

April 2014

Cooperating Agencies
National Indian Gaming Commission, Cloverdale Rancheria of Pomo Indians, United States Environmental Protection Agency, California Department of Transportation, Sonoma County, and City of Cloverdale

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# Appendix A
## Preliminary Grading Study

ESA

# PRELIMINARY GRADING STUDY

**For**

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

**July 2009**

Prepared for:

**ESA**
8950 Cal Center Drive
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Prepared by:

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# TABLE OF CONTENTS

## Preliminary Grading Study


| | Page Number |
|---|---|
| Preliminary Grading | 1-2 |

Exhibits

Preliminary Grading Plan – Alternative A
Preliminary Grading Plan – Alternative B
Preliminary Grading Plan – Alternative C
Preliminary Grading Plan – Alternative D
Preliminary Grading Plan – Alternative E

**Preliminary Grading:**

Preliminary grading analysis has been conducted on each of the site plan alternatives A-E. Finished grade contours and rough earthwork quantities are shown on exhibits titled, "Preliminary Grading Plan – Alternative (A to E)."

Geotechnical reports were not available at the time this study was prepared. Earthwork quantities calculated for each alternative include volumes for spoil material anticipated from building foundations and underground utility installations.

Factors that may potentially impact grading quantities were excluded from the preliminary grading quantities shown below in Table 1 - Preliminary Earthwork Quantities. Excluded factors include soil types, soil expansion and shrinkage, compaction, unsuitable materials, and site strippings.

**Table 1 - Preliminary Earthwork Quantities**

| | **Excavation** | | | **Fill** | | |
|---|---|---|---|---|---|---|
| Alternative | Site Exc. (cy) | Spoils (cy) | Subtotal (cy) | Site Fill (cy) | **Net Import (cy)** | **Net Export (cy)** |
| A | 158,000 | 25,000 | 183,000 | 182,000 | | 1,000 |
| B | 134,000 | 20,000 | 154,000 | 181,000 | 27,000 | |
| C | 134,000 | 20,000 | 154,000 | 181,000 | 27,000 | |
| D | 135,000 | 15,000 | 150,000 | 184,000 | 34,000 | |
| E | 74,000 | 22,000 | 96,000 | 100,000 | 4,000 | |

Alternative A is considered the ultimate developed site. Initial site development may occur using one of the B-D alternatives with development phasing established to reach the ultimate development shown by alternative A.

Building pad elevations for alternative A were used for alternatives B-D to minimize development impact to existing site improvements should a phased development be realized. The result is that alternative A, the ultimate site development, is conceptually designed to be an earthwork balanced site. No import or export of soils materials is necessary outside of the project boundary.

To construct alternative B-D using the ultimate building pad elevations shown in Alternative A, soil material will need to be imported to the site, see table 1. During construction of the south underground garage, excess soil material will need to be exported from the site. The building pad and site grading elevations of each alternative could be independently adjusted to balance if each alternative was considered the ultimate developed condition. Actual site earthwork balance would consider the earthwork needs of other improvements associated with the project including wastewater ponds, wastewater treatment facilities, and domestic water facilities grading during the design phase of the project.

Retaining walls will be required for alternatives A-D. Elevation differences between building pads will be supported by retaining wall systems integrated into the building foundation designs. Parking structures will also require integrated retaining capability.

The use of retaining walls is also planned in the site grading for alternatives A-D. A retaining wall system is included in the preliminary grading design near the south end of the site at the southern limit of the building pads. Retaining wall heights are anticipated to be up to eight feet in height. As an option, terracing could be considered in this area using a series of walls with heights less than eight feet and landscape terraces between them.

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| EARTHWORK | |
|---|---|
| CUT (CY) | FILL (CY) |
| 183,000 | 182,000 |

*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY GRADING PLAN - ALTERNATIVE A**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

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Santa Rosa, CA

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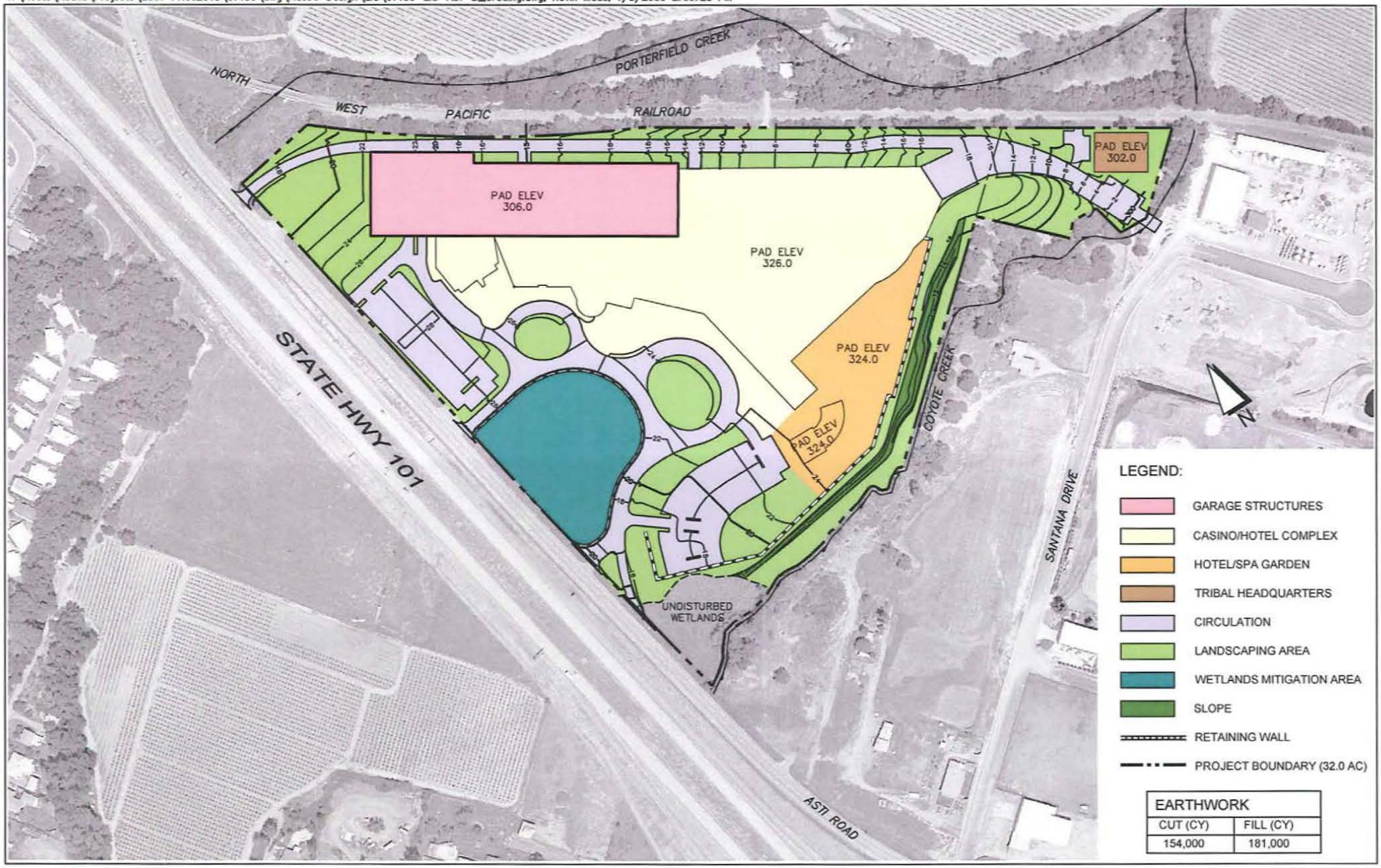


| EARTHWORK | |
|---|---|
| CUT (CY) | FILL (CY) |
| 154,000 | 181,000 |

**CLOVERDALE RANCHERIA**

*Cloverdale, CA - Sonoma County*

**PRELIMINARY GRADING PLAN - ALTERNATIVE B**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

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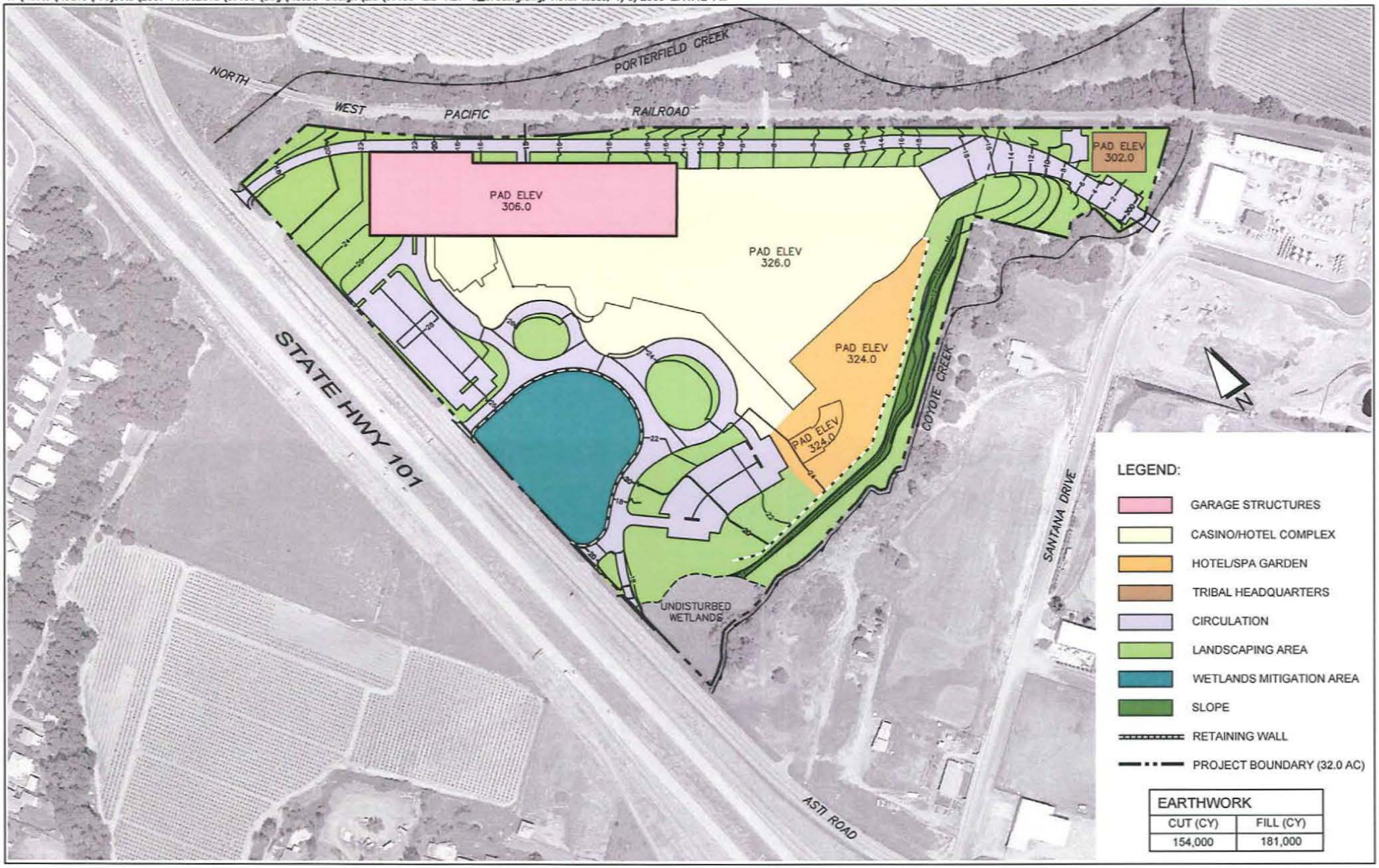


| EARTHWORK | |
|---|---|
| CUT (CY) | FILL (CY) |
| 154,000 | 181,000 |

*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY GRADING PLAN - ALTERNATIVE C**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

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Santa Rosa, CA

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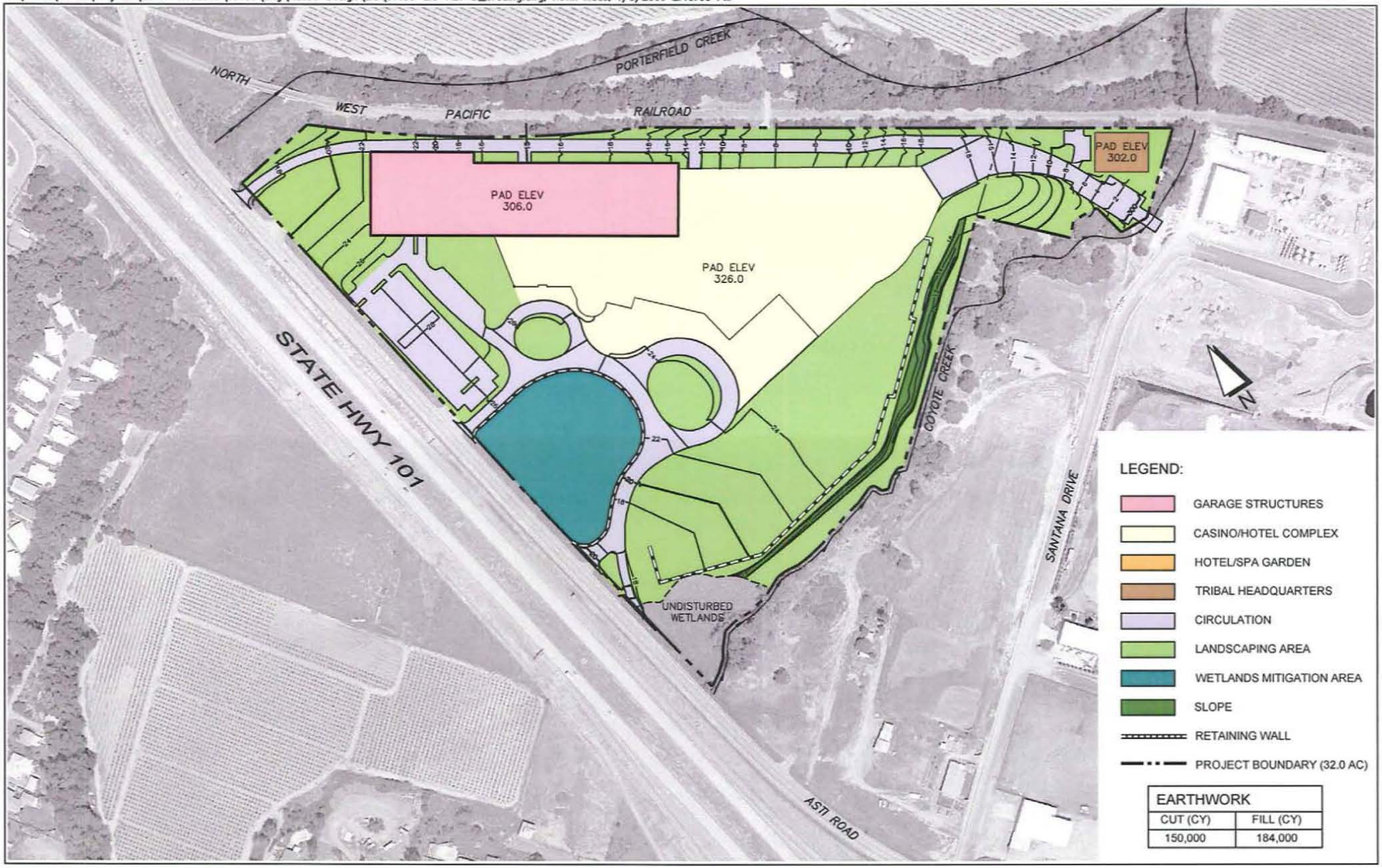


| EARTHWORK | |
|---|---|
| CUT (CY) | FILL (CY) |
| 150,000 | 184,000 |

*CLOVERDALE RANCHERIA*
*Cloverdale, CA - Sonoma County*

**PRELIMINARY GRADING PLAN - ALTERNATIVE D**

GRAPHIC SCALE: 1" = 300'
0 150 300 600

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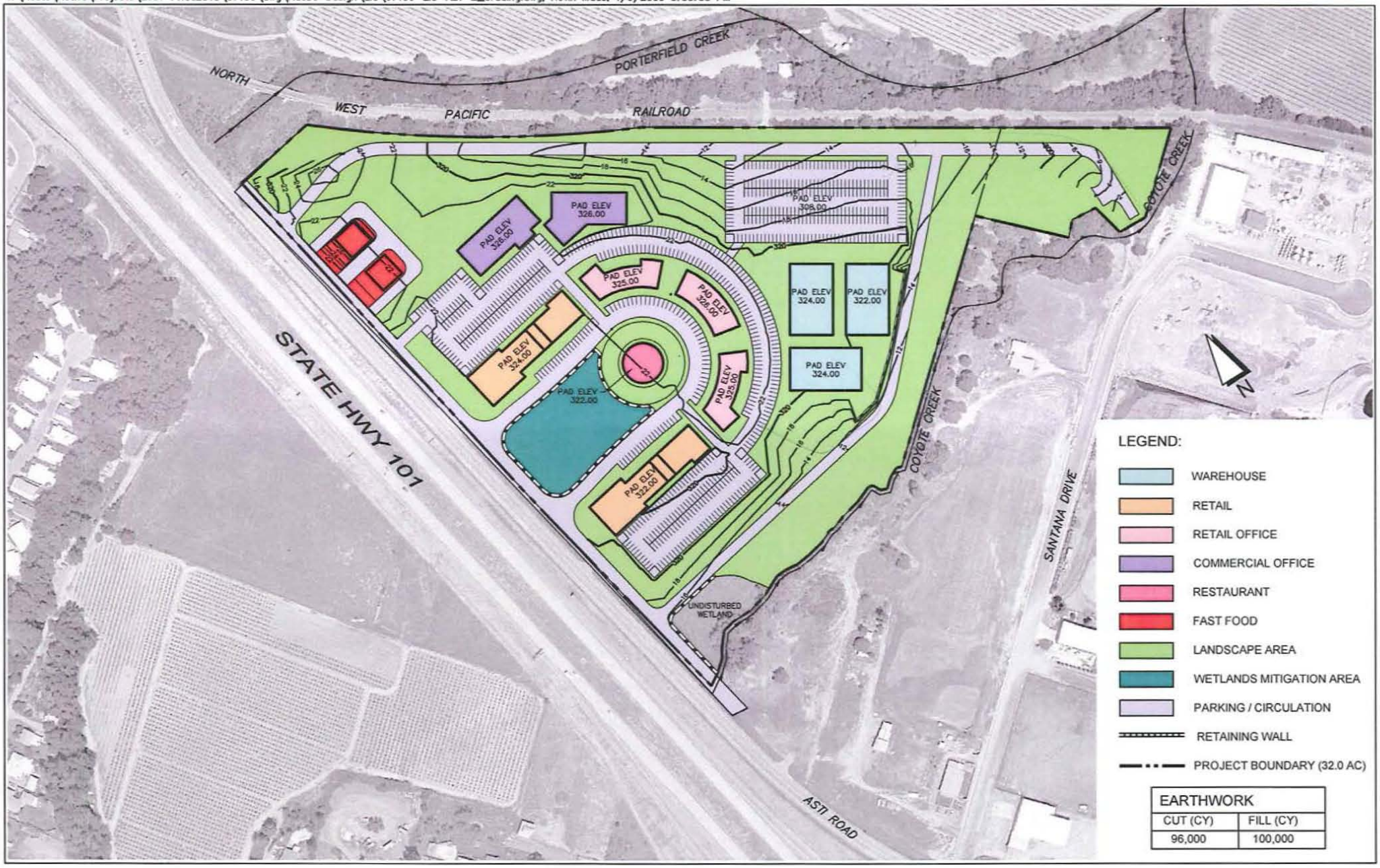


| EARTHWORK | |
|---|---|
| CUT (CY) | FILL (CY) |
| 96,000 | 100,000 |

*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY GRADING PLAN - ALTERNATIVE E**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

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# Appendix B
## Preliminary Drainage Study

ESA

# PRELIMINARY DRAINAGE STUDY

**For**

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

**June 29, 2009**

Prepared for:

**ESA**
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# TABLE OF CONTENTS

## Preliminary Drainage Study


| | Page Number |
|---|---|
| Existing Terrain and Topography | 1 |
| Sensitive Areas | 1 |
| Storm Water Run-On | 2 |
| Wetlands | 3 |
| Drainage System Discharge Outfalls | 3-4 |
| Storm Water Runoff | 4-5 |
| Storm Water Quality | 6 |

Exhibits

Preliminary Overall Site Plan
Preliminary Drainage Plan – Alternative A
Preliminary Drainage Plan – Alternative B
Preliminary Drainage Plan – Alternative C
Preliminary Drainage Plan – Alternative D
Preliminary Drainage Plan – Alternative E

## Preliminary Drainage

### Existing Terrain and Topography:

The proposed 69.8-acre project site is a trapezoidal shaped site bounded by the Russian River on the east side, the City of Cloverdale Wastewater Treatment Plant on the north side, Coyote Creek on the southern boundary, and State Highway 101 along the western boundary. Refer to the exhibit herein titled, "Preliminary Overall Site Plan".

Porterfield Creek flows from the northwest corner of the project site to the southeast corner parallel to and along the east side of the railroad tracks which bisects the project.

Surface drainage from the western 32-acre portion of the site flows across a gently sloping existing ground surface from the west to the east to Porterfield Creek, and then to the Russian River. Typical ground slopes range from one and a half percent to three percent. Presently, this area is primarily pasture land with several residential and barn structures.

The eastern 37.8-acre portion of the site is currently used as a vineyard and surface drainage flows from the north to the south. Surface runoff from the northern half of the vineyard flows to Porterfield Creek near the middle of the site. The southern half of the vineyard flows to Porterfield Creek near the southeast corner of the vineyard.

### Sensitive Areas:

The Russian River is the receiving water body for drainage in the vicinity of the City of Cloverdale. Considered a sensitive water body, the Russian River is listed on the State 303(d) list of impaired water bodies. Listed impairments include nutrients, pathogens, and sedimentation/siltation.

The Environmental Protection Agency (EPA) Region 9 is the Federal agency responsible for compliance with the Federal Clean Water Act (CWA). Considerations for storm water quality mitigations during construction and post-construction will be required. The proposed construction activities and post-construction improvements require compliance with the CWA regulations through the National Pollutant Discharge Elimination System (NPDES) permits and requirements.

NDPES requirements include the filing of an application for permit coverage and the preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is a document in which pollutants from construction activities and ultimate development uses are identified and specific best management practices (BMPs) are specified to mitigate and eliminate pollutant runoff from the project site. BMPs will consist of a combination of physical improvements (i.e. silt fences, fiber rolls, hydro-seed, etc.) and practices (i.e. water sampling, subcontractor training, BMP inspection and maintenance, etc).

Preliminary wetland delineations have been conducted for the project site and are discussed further in the wetlands section herein.

**Storm Water Run-On:**
Drainage from offsite areas run on to the project site at several locations along the project's north and west boundaries. Refer to the exhibit titled, "Preliminary Overall Site Plan."

Significant storm water run-on occurs at the north end of the vineyard property from Heron Creek which has a watershed area of over 1,000 acres. Prior to the construction of Highway 101 in the early 1990's, Heron Creek flowed along the west side of the City's wastewater treatment plant (WWTP) and became tributary to Porterfield Creek near the northwest corner of the project. During the construction of Highway 101, Asti Road was re-aligned causing Porterfield Creek to be altered. Drainage problems arose subsequent to highway construction and the Asti Road realignment and have become a subject of litigation between locals and the City, and between the City and Caltrans.

The project is awaiting the outcome of this litigation to determine the improvements to be made by the City, necessary to address Heron Creek drainage problems. The City intends to explore solutions for mitigating the litigated drainage issues. It is presently unknown what impacts the City's ultimate drainage solution may have on the project.

In the absence of information about future mitigation impacts, the project has planned for the existing condition, where surface water from an approximate 1,000 acre watershed enters the vineyard property. To address this existing condition, a surface drainage channel is proposed to be constructed to the east along the north boundary to the east boundary and then to the south to Porterfield Creek, replacing the existing surface ditch through the vineyard. The constructed drainage channel would move storm water around the proposed wastewater treatment facilities and spray fields.

Porterfield Creek is a defined water course originating from offsite areas to the west and skirts the north end of the project. The project site elevations are approximately 25 to 30 feet higher in elevation than the creek bottom of Porterfield Creek. Porterfield Creek appears to have diminished flow capacity from near the middle of the vineyard site to its confluence with the Russian River. The agricultural diversion channel, located on the vineyard property, characteristics give way to a shallow, wider and more natural appearing creek in this section. Large storm events appear to breach the low-lying constructed berm along the creek's east bank and spill into the vineyard. Storm water which breeches the east bank of Porterfield Creek returns to the creek near the southeast corner of the project.

Another source of storm water run-on to the project site is Highway 101 and the area immediately west of the highway. Two existing 30-inch diameter culverts discharge storm water at the west boundary of the project. Evidence of potential wetlands exists near the discharge end of both of these culverts. The tributary area to each of these culverts is approximately 20 acres. Preliminary wetland delineations have been conducted at each location of run-on drainage and are shown on the drainage exhibits for Alternatives A-E herein.

**Wetlands:**
A wetland mitigation area has been planned on the project site and is located at the east side of Asti Road between the project entrances. Site improvements in the vicinity of both preliminary wetland delineation areas will be designed and constructed to avoid the wetlands areas. Alternatives A through D propose the use of retaining walls to protect proposed fill locations from impacting both wetland areas. Alternative E proposes the use of retaining walls to protect the wetland area between the project entrances on Asti Road and the wetland area located near the southwest corner of the project site.

**Drainage System Discharge Outfalls:**

*Site portion west of railroad tracks:*
Presently concentrated storm water drainage on the portion of the site west of the railroad tracks exits the site from four culvert outfall locations. Pre-development sheet flow runoff occurs at the northwest end of the site, at the easterly most portions of the site, and along the southern boundary adjacent to the Coyote Creek.

Existing culvert locations and sizes are proposed to be maintained for the developed site alternatives. Project improvements are proposed to mitigate post-construction storm water runoff to pre-construction run-off rates, reducing potential development impacts to the pre-development (existing) conditions. Improvements proposed include subterranean detention systems and upland drainage release systems.

Two storm drain outfalls exist along the northeast boundary, passing under the railroad track and discharging indirectly to Porterfield Creek. The northern culvert is an 18-inch pipe which discharges upstream to an area showing highly erodible soil conditions. Proposed site improvements would extend the 18-inch culvert through the erodible areas and discharge to the existing drainage course downstream. Energy dissipation would be provided at the discharge end of the culvert.

Slope protection practices such as hydro-seeding, planting, and soil reinforcement mats are proposed during construction to prevent erosion and sediment transport to Porterfield Creek. This would mitigate pollutants from being transported from this area to Porterfield Creek.

The southern culvert crossing the railroad tracks is a 24-inch culvert. Field inspection of this culvert revealed the existence of two water lines within the culvert, which appear to be used as a way to move well water from Porterfield Creek to locations on the west side of the railroad track. These water lines will be removed or relocated during construction of site utilities, to provide full capacity of the drainage culvert.

Proposed building improvements for alternatives A-E require concentrated flows to be directed toward the southern project boundary where existing sheet flow discharges occur. Upland drainage release systems are proposed at a minimum of two locations along the south boundary. Upland drainage release systems consist of a field of large diameter rock placed near the existing grade surface which spreads concentrated flow to a sheet flow condition prior to being discharged over the natural ground surface to Coyote Creek. Upland drainage release systems are an increasingly common and effective way to discharge to creeks and waterways without the construction of pipe outfalls, head walls, and erosion protection within the flow areas of the waterway.

*Site portion east of railroad tracks:*
Surface water leaves the east portion of the site at two locations. Natural low points exist at both locations where storm water runoff is discharged over the existing ground surface to Porterfield Creek. One existing outfall location, located near the middle of the project site discharging to the east bank of Porterfield Creek, is proposed be left in its natural condition.

A second outfall location, near the southeast corner of the site, is also proposed to be left in its natural condition. This location will be the downstream end of the constructed drainage ditch conveying the flows from Heron Creek.

**Storm Water Runoff:**
Storm water runoff from the project site is proposed to be limited to the pre-development runoff conditions. Pre-development and post development runoff volumes were analyzed using Pond Pack software by Bentley. Increased runoff from the developed site would be mitigated by several methods including detention facilities and pervious surfaces.

Pervious concrete surfaces are proposed for a considerable portion of the driveway and parking surfaces. Refer to the exhibits titled, “Preliminary Drainage Plan – Alternative (A-E)” for porous surface locations and for pervious and non-pervious surface areas.

Minimizing the amount of impervious surfacing has the benefit of reducing runoff by allowing more opportunity for infiltration and groundwater recharge. Additional benefits to porous concrete surfaces are surface water filtration, storm water storage, reduced storm drainage piping and structures, and reduced heat surface versus asphalt paving surfaces.

Increased storm water runoff from the project site would be mitigated further by detaining runoff during periods of high intensity rain events and metering the discharge to pre-development discharges. A detention system would provide a reservoir to collect the runoff during the periods of high rainfall.

Subterranean detention systems are proposed under the parking areas in alternatives A-E. Surface runoff will be treated using methods described in the section titled “Storm Water Quality” herein, prior to entering the detention system. A subterranean detention system would be constructed using a network of large diameter pipes for temporary storage and an outlet structure which restricts discharges from the detention system to pre-

development flow rates. Stormwater runoff is stored in the detention system when the inflow rate to the storage pipe network exceeds the outflow rate. The temporarily stored water is released as the inflow rate drops below outflow rates and no stored stormwater is retained in the system.

Storm water detention storage design determines the storage volume required to detain the increased runoff from a 10-year storm event, to discharge the runoff at the pre-development runoff rate or less. Storm events greater than 10-year events will be detained to the storage capacities designed for the 10-year event and excess flows will bypass, via culverts, the detention facility and discharge into the upland drainage release system.

Exit flow from the subterranean detention pipe system is to be controlled using a concrete outlet structure located immediately downstream of the detention system. The outlet structure would be constructed using an orifice or weir designed to restrict discharges to the predevelopment 10-year storm peak flow rate.

Subterranean detention system locations and discharge locations are shown on the exhibits titled, "Preliminary Drainage Plan – Alternative (A-E)." Approximate detention storage volumes are shown in Table 1 below and assume that no other means (i.e. porous concrete surfaces) of onsite storm water storage is utilized.

**Table 1 – Subterranean Detention System Volume Requirements**

| Alternative | 10-year Storm Volume (cf) | 10-year Storm Volume (ac-ft) |
|---|---|---|
| A-D | 60,100 | 1.38 |
| E | 31,800 | 0.73 |

The required storage volume will be detained in storage pipe network beneath the parking lot located west of the parking garage. A 60,100 cubic foot storage area is equivalent to approximately 3,200 lineal feet of 60-inch diameter pipe, which is easily accommodated within the parking lot area.

Upland drainage release systems will be constructed to discharge runoff to the existing creeks and natural drainage courses along the perimeter of the site. Upland drainage release systems can be an environmentally friendly alternative to the culvert outfall structures which have traditionally been constructed within creek banks.

Upland drainage release systems function by allowing runoff collected in a piped system to bubble up to the ground surface through a bed of coarsely graded rock laid in a linear configuration parallel to and outside of a creek bank. Runoff is discharged to the receiving water as sheet flow runoff rather than concentrated flow. Sheet flow runoff possesses less kinetic energy than concentrated runoff and when located near low sloping creek banks and/or well vegetated banks will greatly reduce potential erosion and sediment transport impacts.

**Storm Water Quality:**
Cloverdale Rancheria site runoff enters Porterfield Creek along the northeast boundary and Coyote Creek along the southern boundary. Both creeks are tributary to the Russian River, the receiving water body, approximately 1/3 of a mile southeast of the project site. Pollutants of concern for the Russian River basin, according to the State of California 303 (d) list, include nutrients, pathogens, and sediment/siltation.

Potential sources for nutrients are agricultural activities. Pathogens are a pollutant associated with urban runoff, while the source of sediment and siltation includes agriculture, construction and land development, and urban runoff. Treatment of runoff is accomplished through a combination of source controls and treatment controls.

Proposed source treatment controls to be used on the project site for storm water quality mitigation include the following:

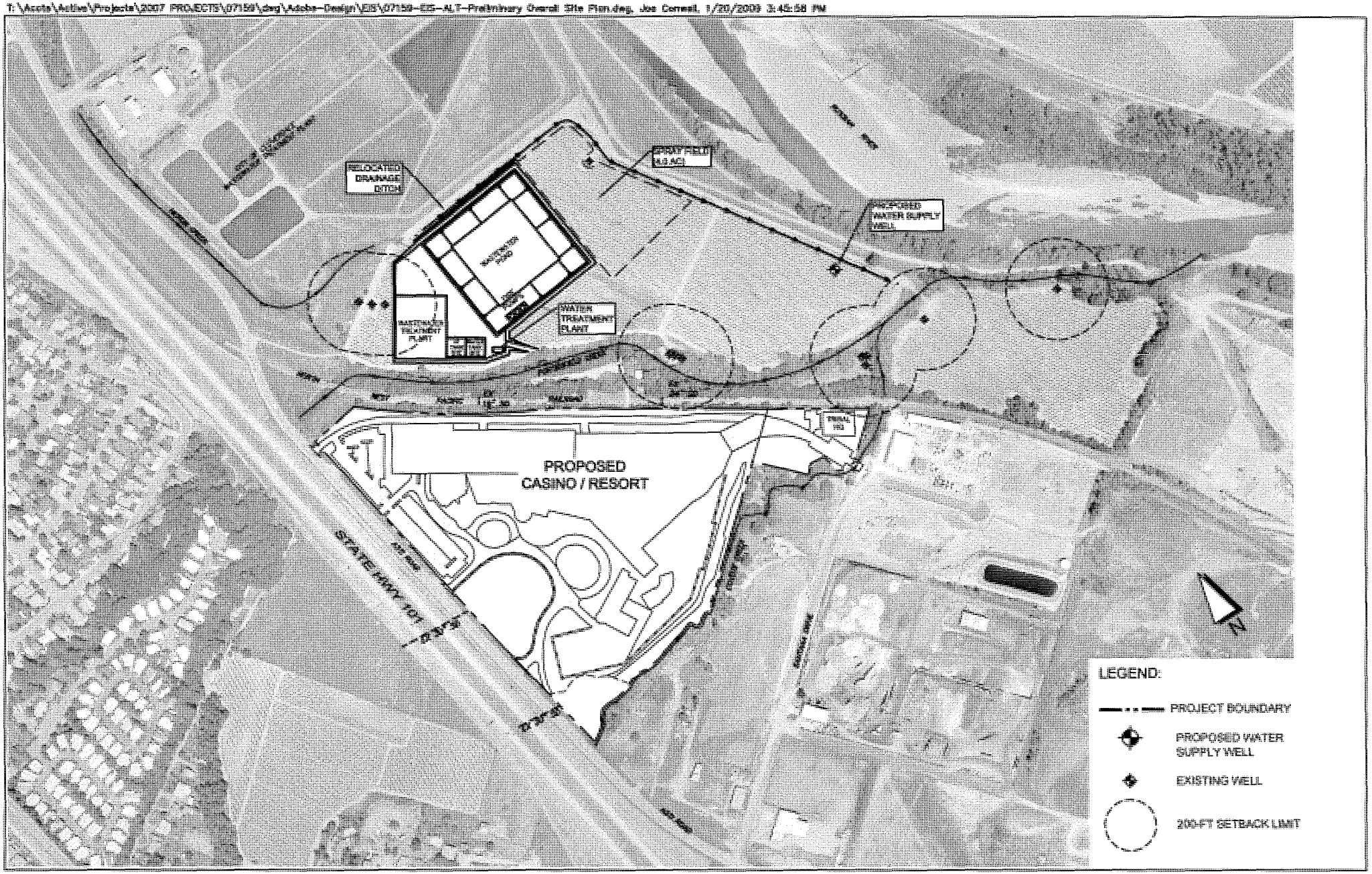
- Landscaping designs to prevent sediment transport to storm drain systems.
- Design landscaping to vector control requirements - avoid water ponding.
- Use porous concrete surfacing in driveways and parking areas – maximizes pervious surfaces and reduces runoff while filtering pollutant particles from runoff, reduces required stormwater detention volumes, reduces storm drain pipe and structure improvements.
- Treat runoff in landscaping or porous concrete surfaces prior to storing in storm water detention facility.
- Use upland drainage release system to release water to existing creeks – avoids the need to place storm drain outfall piping, headwall structures, and energy dissipation improvements within existing creek banks.
- Discharge roof drainage directly to landscape or porous concrete surfaces – allows treatment prior to entering storm drain system.
- Incorporate Integrated Pest Management (IPM) principles and techniques for design and maintenance.

Proposed treatment controls to maintain or improve water quality include the following:

- Use bio-swales to channel and treat surface water
- Proprietary treatment systems maybe used as an alternative to porous concrete surfaces.

Dimensions and sizing for best management practices (BMPs) are determined using Environmental Protection Agency BMP criteria and the Guidelines for Standard Urban Storm Water Mitigation Plan prepared cooperatively by Sonoma County, City of Santa Rosa, and the Russian River Watershed Association.

In addition to the above source and treatment controls, which are post-construction or permanent controls, best management practices (BMPs) will be implemented during the construction phase. These BMPs control the transport of pollutants from the construction site to the natural water ways. An erosion and sediment control plan will be prepared with the construction design drawings and a Storm Water Pollution Prevention Plan (SWPPP) as required by the EPA Region 9 prior to the start of construction. Both documents will describe the devices and practices to control pollutant runoff during and after construction.




*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

GRAPHIC SCALE: 1" = 500'

0 250 500 1,000

**PRELIMINARY OVERALL SITE PLAN**

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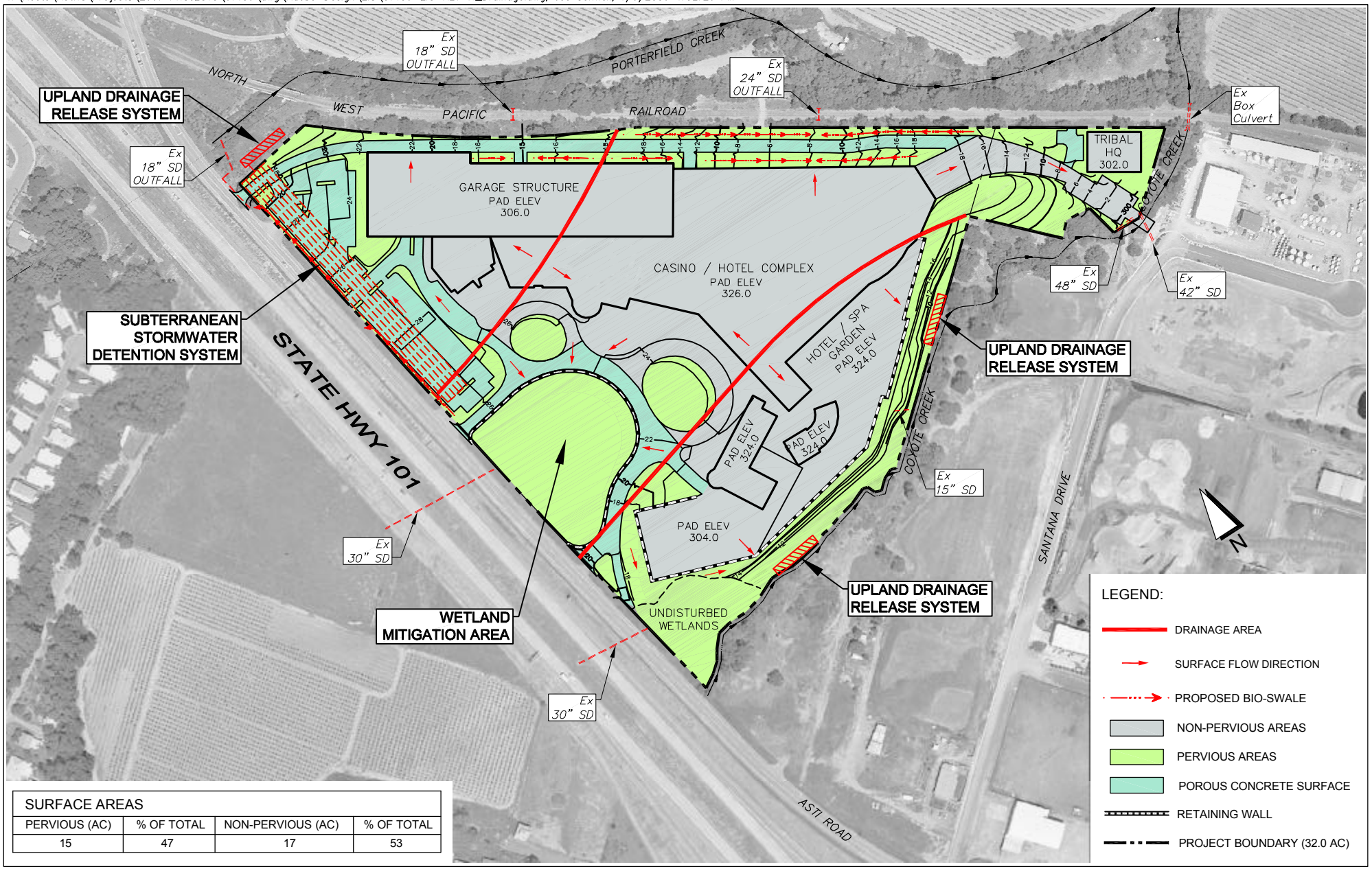


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 15 | 47 | 17 | 53 |

***CLOVERDALE RANCHERIA***

***Cloverdale, CA - Sonoma County***

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE A**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

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Santa Rosa, CA

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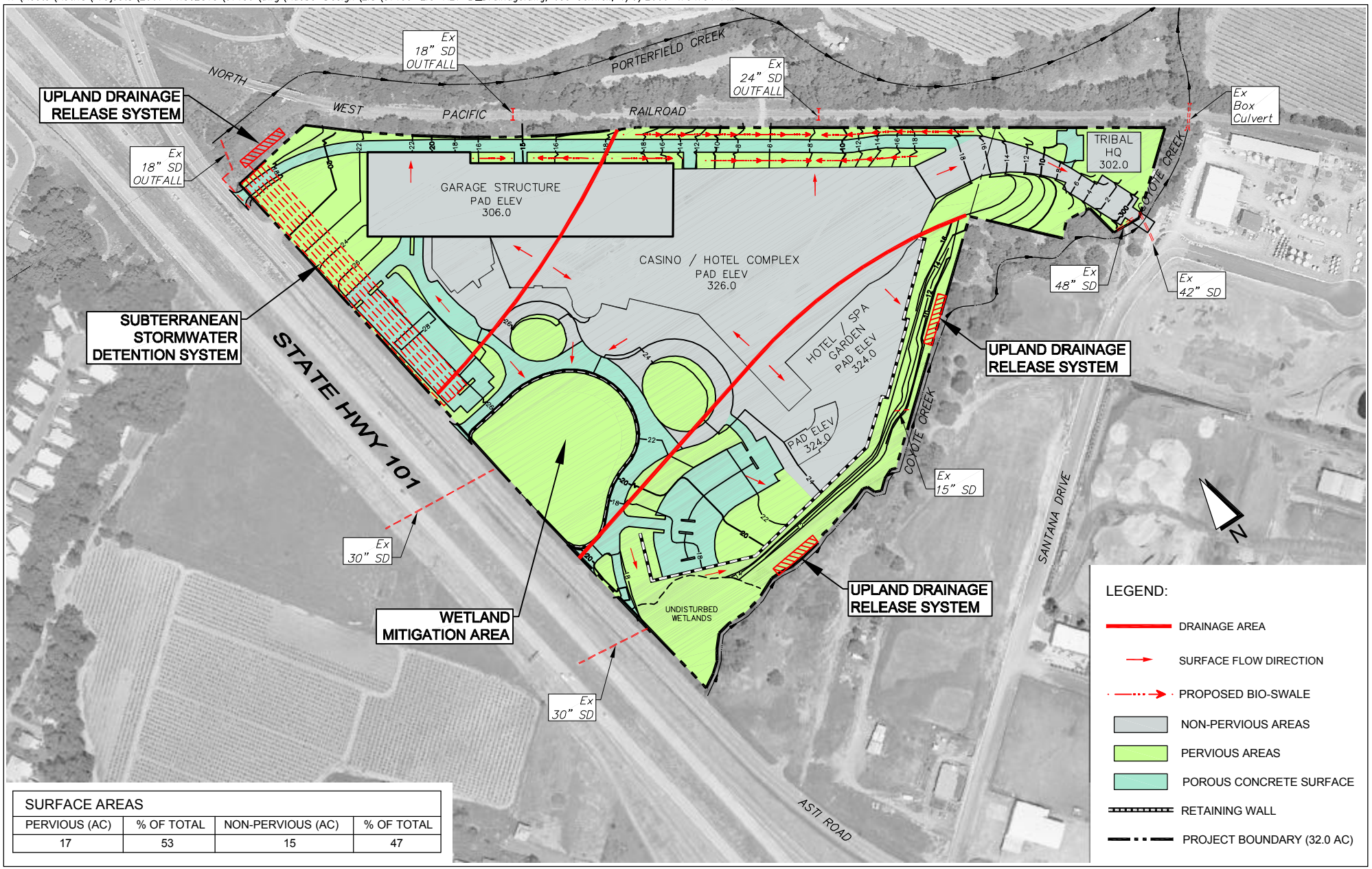


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 17 | 53 | 15 | 47 |

***CLOVERDALE RANCHERIA***

***Cloverdale, CA - Sonoma County***

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE B**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

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Santa Rosa, CA

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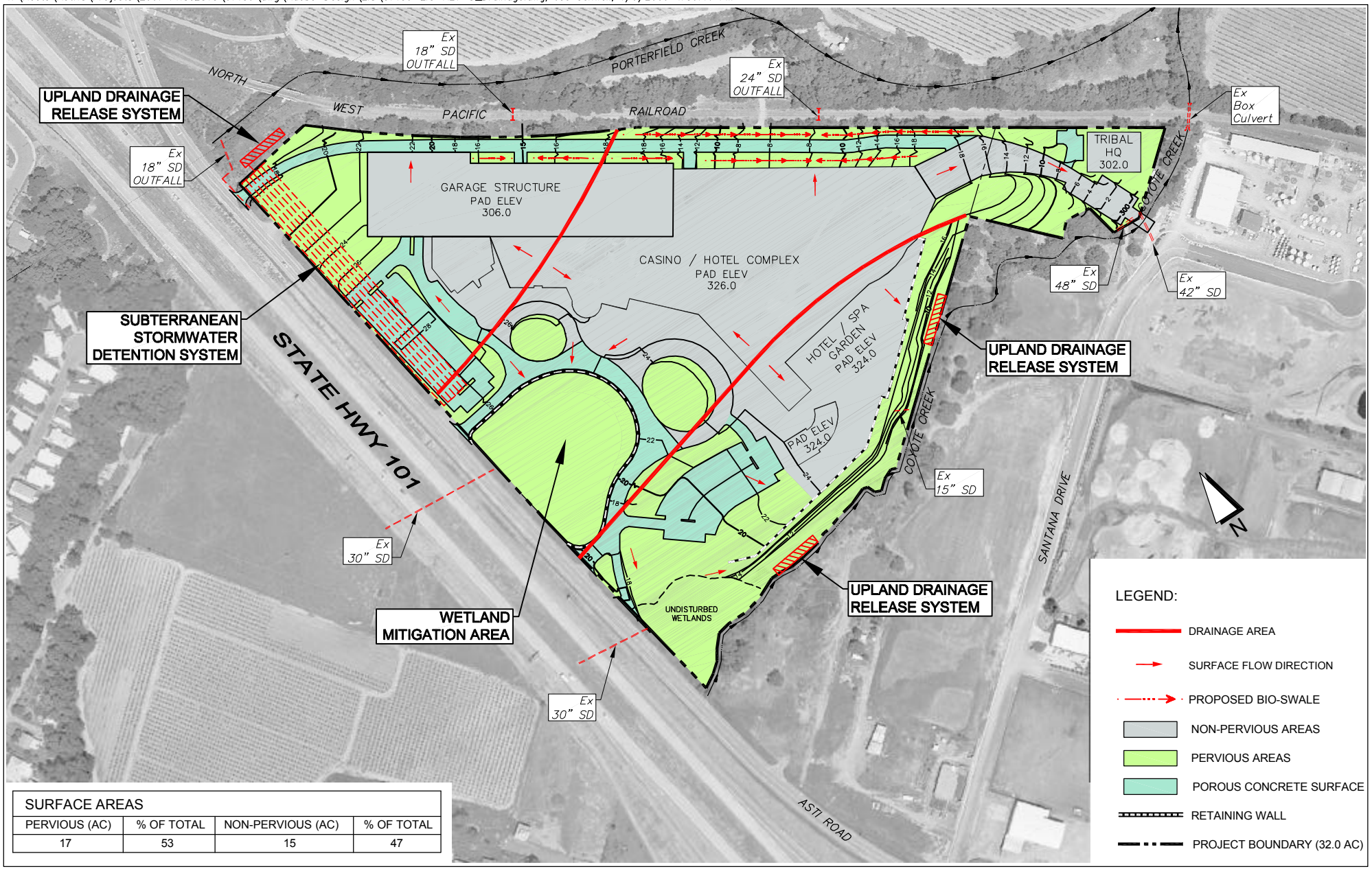


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 17 | 53 | 15 | 47 |

***CLOVERDALE RANCHERIA***

***Cloverdale, CA - Sonoma County***

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE C**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

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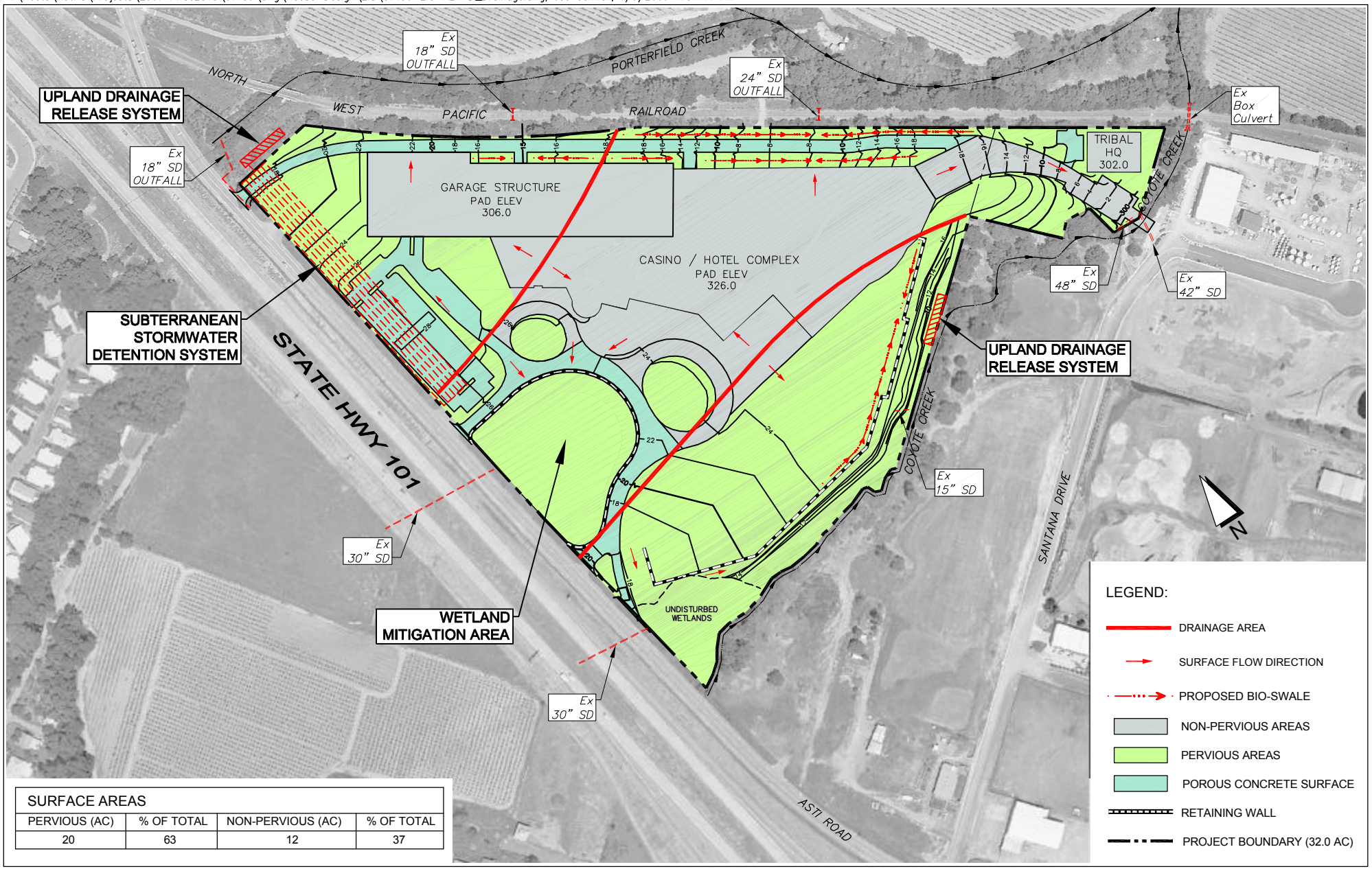


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 20 | 63 | 12 | 37 |

***CLOVERDALE RANCHERIA***

***Cloverdale, CA - Sonoma County***

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE D**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

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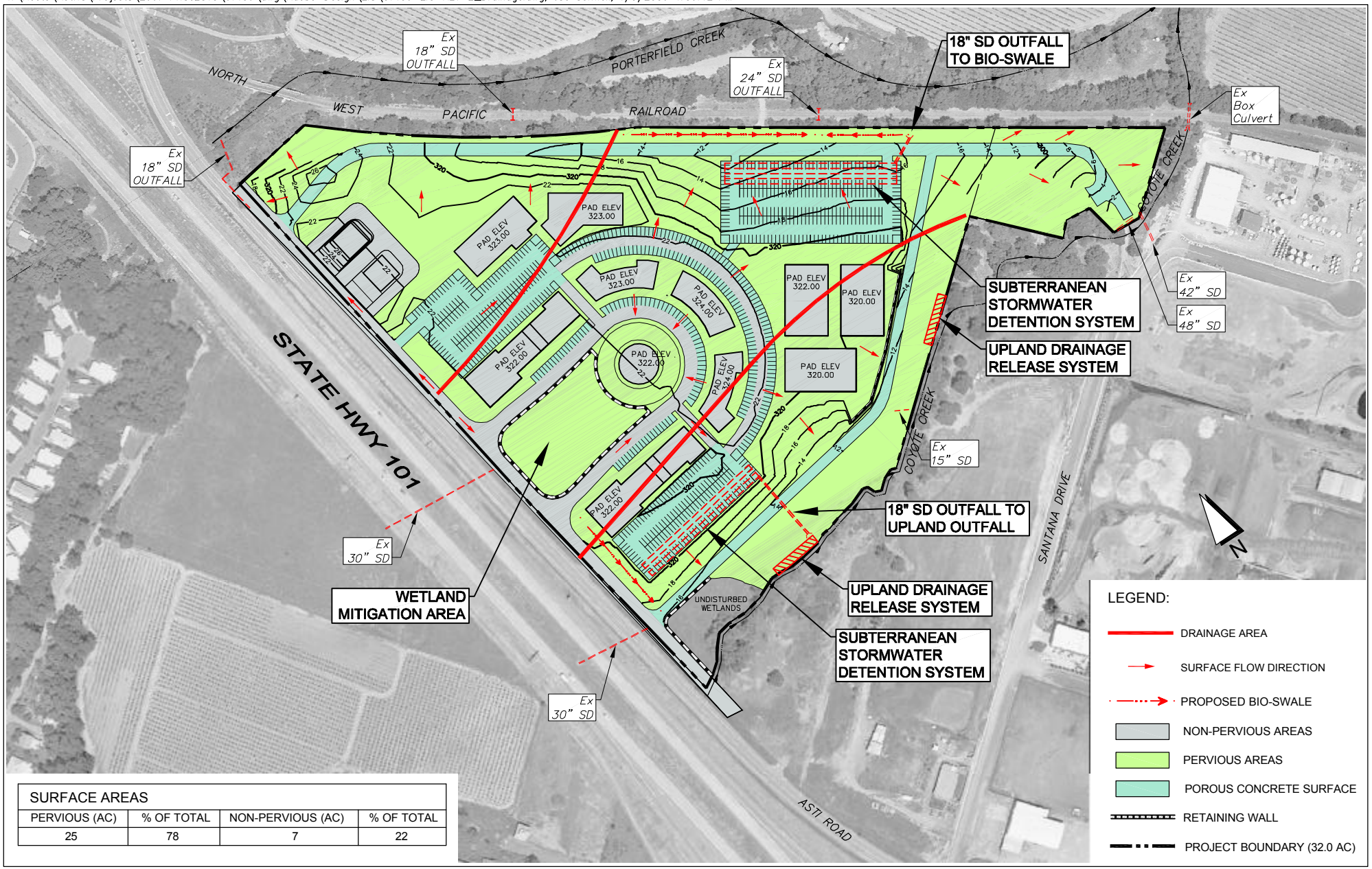
1220 N. Dutton Drive
Santa Rosa, CA

T:\Accts\Active\Projects\2007 PROJECTS\07159\dwg\Adobe-Design\EIS\07159-EIS-ALT-E_Drainage.dwg, Joe Conwell, 1/9/2009 4:39:12 PM




| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 25 | 78 | 7 | 22 |

***CLOVERDALE RANCHERIA***

***Cloverdale, CA - Sonoma County***

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE E**

GRAPHIC SCALE: 1" = 300'

0 150 300 600


**Adobe Associates, Inc.**
1220 N. Dutton Drive
Santa Rosa, CA

# Appendix C
## Air Quality Data

ESA

**3/5/2009 3:15:15 PM**

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\cloverdale alt A.urb924

Project Name: cloverdale alt a

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (lbs/day unmitigated) | 43.08 | 58.57 | 109.69 | 0.12 | 98.81 | 3.84 | 100.08 | 20.64 | 3.53 | 21.80 | 15,461.50 |
| 2011 TOTALS (lbs/day unmitigated) | 38.83 | 33.30 | 86.23 | 0.11 | 0.49 | 1.96 | 2.45 | 0.18 | 1.79 | 1.97 | 12,865.33 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 3.56 | 4.29 | 12.77 | 0.00 | 0.04 | 0.04 | 5,016.47 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 293.98 | 413.57 | 4,871.44 | 2.98 | 492.05 | 93.52 | 298,327.80 |

**3/5/2009 3:15:15 PM**

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 297.54 | 417.86 | 4,884.21 | 2.98 | 492.09 | 93.56 | 303,344.27 |

**3/5/2009 3:17:35 PM**

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\cloverdale alt A.urb924

Project Name: cloverdale alt a

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (tons/year unmitigated) | 0.84 | 3.38 | 2.91 | 0.00 | 9.69 | 0.19 | 9.88 | 2.02 | 0.17 | 2.20 | 455.66 |
| 2011 TOTALS (tons/year unmitigated) | 5.05 | 4.33 | 11.21 | 0.01 | 0.06 | 0.25 | 0.32 | 0.02 | 0.23 | 0.26 | 1,672.49 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 0.59 | 0.77 | 1.47 | 0.00 | 0.00 | 0.00 | 913.95 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 58.47 | 88.13 | 941.56 | 0.52 | 89.80 | 17.06 | 51,898.21 |

**3/5/2009 3:17:35 PM**

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 59.06 | 88.90 | 943.03 | 0.52 | 89.80 | 17.06 | 52,812.16 |

**3/5/2009 3:16:06 PM**

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\cloverdale alt A.urb924

Project Name: cloverdale alt a

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 Total | PM2.5 Dust | PM2.5 Exhaust | PM2.5 Total | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 1/1/2010-7/30/2010 Active Days: 151 | 3.09 | 25.37 | 15.11 | 0.00 | **98.81** | 1.26 | **100.08** | **20.64** | 1.16 | **21.80** | 2,575.25 |
| Mass Grading 01/01/2010-08/01/2010 | 3.09 | 25.37 | 15.11 | 0.00 | 98.81 | 1.26 | 100.08 | 20.64 | 1.16 | 21.80 | 2,575.25 |
| Mass Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 98.80 | 0.00 | 98.80 | 20.63 | 0.00 | 20.63 | 0.00 |
| Mass Grading Off Road Diesel | 3.00 | 24.99 | 12.46 | 0.00 | 0.00 | 1.25 | 1.25 | 0.00 | 1.15 | 1.15 | 2,247.32 |
| Mass Grading On Road Diesel | 0.01 | 0.19 | 0.04 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 24.45 |
| Mass Grading Worker Trips | 0.08 | 0.20 | 2.60 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 303.49 |
| Time Slice 8/2/2010-10/1/2010 Active Days: 45 | 3.08 | 25.19 | 15.06 | 0.00 | 98.81 | 1.26 | 100.07 | 20.64 | 1.15 | 21.79 | 2,550.80 |
| Fine Grading 08/02/2010-10/01/2010 | 3.08 | 25.19 | 15.06 | 0.00 | 98.81 | 1.26 | 100.07 | 20.64 | 1.15 | 21.79 | 2,550.80 |
| Fine Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 98.80 | 0.00 | 98.80 | 20.63 | 0.00 | 20.63 | 0.00 |
| Fine Grading Off Road Diesel | 3.00 | 24.99 | 12.46 | 0.00 | 0.00 | 1.25 | 1.25 | 0.00 | 1.15 | 1.15 | 2,247.32 |
| Fine Grading On Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fine Grading Worker Trips | 0.08 | 0.20 | 2.60 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 303.49 |

**3/5/2009 3:16:06 PM**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 10/4/2010-11/30/2010 Active Days: 42 | 3.70 | 22.29 | 17.01 | 0.01 | 0.05 | 1.77 | 1.82 | 0.02 | 1.63 | 1.64 | 2,602.81 |
| Asphalt 10/02/2010-12/01/2010 | 3.70 | 22.29 | 17.01 | 0.01 | 0.05 | 1.77 | 1.82 | 0.02 | 1.63 | 1.64 | 2,602.81 |
| Paving Off-Gas | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving Off Road Diesel | 2.98 | 18.01 | 10.28 | 0.00 | 0.00 | 1.57 | 1.57 | 0.00 | 1.44 | 1.44 | 1,418.44 |
| Paving On Road Diesel | 0.25 | 3.84 | 0.88 | 0.00 | 0.02 | 0.19 | 0.21 | 0.01 | 0.17 | 0.18 | 501.52 |
| Paving Worker Trips | 0.17 | 0.45 | 5.85 | 0.01 | 0.03 | 0.01 | 0.05 | 0.01 | 0.01 | 0.02 | 682.84 |
| Time Slice 12/1/2010-12/1/2010 Active Days: 1 | 43.08 | **58.57** | 109.69 | **0.12** | 0.54 | **3.84** | 4.38 | 0.19 | **3.53** | 3.72 | **15,461.50** |
| Asphalt 10/02/2010-12/01/2010 | 3.70 | 22.29 | 17.01 | 0.01 | 0.05 | 1.77 | 1.82 | 0.02 | 1.63 | 1.64 | 2,602.81 |
| Paving Off-Gas | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving Off Road Diesel | 2.98 | 18.01 | 10.28 | 0.00 | 0.00 | 1.57 | 1.57 | 0.00 | 1.44 | 1.44 | 1,418.44 |
| Paving On Road Diesel | 0.25 | 3.84 | 0.88 | 0.00 | 0.02 | 0.19 | 0.21 | 0.01 | 0.17 | 0.18 | 501.52 |
| Paving Worker Trips | 0.17 | 0.45 | 5.85 | 0.01 | 0.03 | 0.01 | 0.05 | 0.01 | 0.01 | 0.02 | 682.84 |
| Building 12/01/2010-01/01/2012 | 6.76 | 36.20 | 91.69 | 0.11 | 0.49 | 2.07 | 2.56 | 0.17 | 1.90 | 2.07 | 12,743.26 |
| Building Off Road Diesel | 3.65 | 16.55 | 11.20 | 0.00 | 0.00 | 1.19 | 1.19 | 0.00 | 1.10 | 1.10 | 1,621.20 |
| Building Vendor Trips | 1.03 | 14.20 | 8.79 | 0.03 | 0.11 | 0.70 | 0.80 | 0.04 | 0.64 | 0.67 | 2,759.43 |
| Building Worker Trips | 2.08 | 5.46 | 71.70 | 0.08 | 0.38 | 0.18 | 0.56 | 0.14 | 0.16 | 0.30 | 8,362.63 |
| Coating 12/01/2010-01/01/2012 | 32.62 | 0.08 | 0.99 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 115.43 |
| Architectural Coating | 32.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.03 | 0.08 | 0.99 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 115.43 |
| Time Slice 12/2/2010-12/31/2010 Active Days: 22 | 39.38 | 36.28 | 92.68 | 0.11 | 0.49 | 2.07 | 2.56 | 0.18 | 1.90 | 2.07 | 12,858.69 |
| Building 12/01/2010-01/01/2012 | 6.76 | 36.20 | 91.69 | 0.11 | 0.49 | 2.07 | 2.56 | 0.17 | 1.90 | 2.07 | 12,743.26 |
| Building Off Road Diesel | 3.65 | 16.55 | 11.20 | 0.00 | 0.00 | 1.19 | 1.19 | 0.00 | 1.10 | 1.10 | 1,621.20 |
| Building Vendor Trips | 1.03 | 14.20 | 8.79 | 0.03 | 0.11 | 0.70 | 0.80 | 0.04 | 0.64 | 0.67 | 2,759.43 |
| Building Worker Trips | 2.08 | 5.46 | 71.70 | 0.08 | 0.38 | 0.18 | 0.56 | 0.14 | 0.16 | 0.30 | 8,362.63 |
| Coating 12/01/2010-01/01/2012 | 32.62 | 0.08 | 0.99 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 115.43 |
| Architectural Coating | 32.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.03 | 0.08 | 0.99 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 115.43 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 1/3/2011-12/30/2011<br>Active Days: 260 | 38.83 | 33.30 | 86.23 | 0.11 | 0.49 | 1.96 | 2.45 | 0.18 | 1.79 | 1.97 | 12,865.33 |
| Building 12/01/2010-01/01/2012 | 6.21 | 33.23 | 85.32 | 0.11 | 0.49 | 1.95 | 2.44 | 0.17 | 1.79 | 1.96 | 12,749.82 |
| Building Off Road Diesel | 3.39 | 15.67 | 10.85 | 0.00 | 0.00 | 1.14 | 1.14 | 0.00 | 1.05 | 1.05 | 1,621.20 |
| Building Vendor Trips | 0.93 | 12.60 | 8.28 | 0.03 | 0.11 | 0.63 | 0.74 | 0.04 | 0.58 | 0.62 | 2,759.86 |
| Building Worker Trips | 1.90 | 4.96 | 66.19 | 0.08 | 0.38 | 0.18 | 0.56 | 0.14 | 0.16 | 0.30 | 8,368.76 |
| Coating 12/01/2010-01/01/2012 | 32.62 | 0.07 | 0.91 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 115.51 |
| Architectural Coating | 32.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.03 | 0.07 | 0.91 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 115.51 |

## Phase Assumptions

Phase: Fine Grading 8/2/2010 - 10/1/2010 - Fine Site Grading

Total Acres Disturbed: 19.77

Maximum Daily Acreage Disturbed: 4.94

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 8/1/2010 - Mass Site Grading

Total Acres Disturbed: 32

Maximum Daily Acreage Disturbed: 4.94

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 6.62

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 10/2/2010 - 12/1/2010 - Paving

Acres to be Paved: 4.94

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 12/1/2010 - 1/1/2012 - Building Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 12/1/2010 - 1/1/2012 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**3/5/2009 3:17:09 PM**

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\cloverdale alt A.urb924

Project Name: cloverdale alt a

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| Source | ROG | NOX | CO | SO2 | PM10 | PM25 | CO2 |
|---|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | 66.81 | 95.31 | 1,123.13 | 0.69 | 113.39 | 21.55 | 68,754.76 |
| Hotel | 24.71 | 31.07 | 366.09 | 0.22 | 36.96 | 7.03 | 22,410.88 |
| casino | 95.75 | 136.59 | 1,608.62 | 0.99 | 162.52 | 30.89 | 98,528.39 |
| specialty retail | 45.00 | 63.03 | 742.34 | 0.45 | 75.00 | 14.25 | 45,468.65 |
| entertainment center | 22.56 | 32.01 | 376.96 | 0.23 | 38.08 | 7.24 | 23,089.08 |
| convention center | 39.15 | 55.56 | 654.30 | 0.40 | 66.10 | 12.56 | 40,076.04 |
| TOTALS (lbs/day, unmitigated) | 293.98 | 413.57 | 4,871.44 | 2.98 | 492.05 | 93.52 | 298,327.80 |

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | | 41.96 | 1000 sq ft | 52.45 | 2,200.80 | 66,024.06 |

**3/5/2009 3:17:09 PM**

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| Hotel | | 2.94 | rooms | 244.00 | 717.36 | 21,520.80 |
| casino | | 39.43 | 1000 sq ft | 80.00 | 3,154.40 | 94,632.00 |
| specialty retail | | 14.63 | 1000 sq ft | 99.50 | 1,455.69 | 43,670.55 |
| entertainment center | | 26.40 | 1000 sq ft | 28.00 | 739.20 | 22,176.00 |
| convention center | | 26.40 | 1000 sq ft | 48.60 | 1,283.04 | 38,491.20 |
| | | | | | 9,550.49 | 286,514.61 |

Vehicle Fleet Mix

| Vehicle Type | Percent Type | Non-Catalyst | Catalyst | Diesel |
|---|---|---|---|---|
| Light Auto | 44.8 | 2.0 | 97.3 | 0.7 |
| Light Truck < 3750 lbs | 18.3 | 2.7 | 90.7 | 6.6 |
| Light Truck 3751-5750 lbs | 19.8 | 1.5 | 98.0 | 0.5 |
| Med Truck 5751-8500 lbs | 7.2 | 1.4 | 97.2 | 1.4 |
| Lite-Heavy Truck 8501-10,000 lbs | 1.8 | 0.0 | 66.7 | 33.3 |
| Lite-Heavy Truck 10,001-14,000 lbs | 1.0 | 0.0 | 50.0 | 50.0 |
| Med-Heavy Truck 14,001-33,000 lbs | 1.2 | 8.3 | 16.7 | 75.0 |
| Heavy-Heavy Truck 33,001-60,000 lbs | 0.2 | 0.0 | 0.0 | 100.0 |
| Other Bus | 0.1 | 0.0 | 100.0 | 0.0 |
| Urban Bus | 0.0 | 0.0 | 0.0 | 0.0 |
| Motorcycle | 4.5 | 66.7 | 33.3 | 0.0 |
| School Bus | 0.1 | 0.0 | 0.0 | 100.0 |
| Motor Home | 1.0 | 0.0 | 90.0 | 10.0 |

**3/5/2009 3:17:09 PM**

Travel Conditions

| | Residential | | | Commercial | | |
|---|---|---|---|---|---|---|
| | Home-Work | Home-Shop | Home-Other | Commute | Non-Work | Customer |
| Urban Trip Length (miles) | 10.8 | 7.3 | 7.5 | 9.5 | 7.4 | 7.4 |
| Rural Trip Length (miles) | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |
| Trip speeds (mph) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| % of Trips - Residential | 32.9 | 18.0 | 49.1 | | | |
| % of Trips - Commercial (by land use) | | | | | | |
| High turnover (sit-down) rest. | | | | 5.0 | 2.5 | 92.5 |
| Hotel | | | | 5.0 | 2.5 | 92.5 |
| casino | | | | 2.0 | 1.0 | 97.0 |
| specialty retail | | | | 2.0 | 1.0 | 97.0 |
| entertainment center | | | | 2.0 | 1.0 | 97.0 |
| convention center | | | | 2.0 | 1.0 | 97.0 |

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work average speed changed from 35 mph to 60 mph

Home-based work rural trip length changed from 16.8 miles to 30 miles

Home-based shop average speed changed from 35 mph to 60 mph

Home-based shop rural trip length changed from 7.1 miles to 30 miles

Home-based other average speed changed from 35 mph to 60 mph

Home-based other rural trip length changed from 7.9 miles to 30 miles

**3/5/2009 3:17:09 PM**

Operational Changes to Defaults

Commercial-based commute average speed changed from 35 mph to 60 mph

Commercial-based commute rural trip length changed from 14.7 miles to 30 miles

Commercial-based non-work average speed changed from 35 mph to 60 mph

Commercial-based non-work rural trip length changed from 6.6 miles to 30 miles

Commercial-based customer average speed changed from 35 mph to 60 mph

Commercial-based customer rural trip length changed from 6.6 miles to 30 miles

**3/5/2009 3:19:52 PM**

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt B.urb924

Project Name: Cloverdale alt B

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (lbs/day unmitigated) | 27.95 | 30.24 | 66.43 | 0.08 | 67.04 | 1.79 | 68.54 | 14.01 | 1.64 | 15.39 | 9,238.33 |
| 2011 TOTALS (lbs/day unmitigated) | 27.49 | 27.62 | 61.95 | 0.08 | 0.33 | 1.69 | 2.03 | 0.12 | 1.55 | 1.67 | 9,242.83 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 2.52 | 2.82 | 10.01 | 0.00 | 0.03 | 0.03 | 3,274.36 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 205.64 | 289.74 | 3,412.96 | 2.09 | 344.75 | 65.51 | 209,010.76 |

**3/5/2009 3:19:52 PM**

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 208.16 | 292.56 | 3,422.97 | 2.09 | 344.78 | 65.54 | 212,285.12 |

**3/5/2009 3:21:49 PM**

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt B.urb924

Project Name: Cloverdale alt B

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (tons/year unmitigated) | 0.71 | 3.63 | 2.65 | 0.00 | 6.57 | 0.20 | 6.77 | 1.37 | 0.18 | 1.56 | 453.93 |
| 2011 TOTALS (tons/year unmitigated) | 3.57 | 3.59 | 8.05 | 0.01 | 0.04 | 0.22 | 0.26 | 0.02 | 0.20 | 0.22 | 1,201.57 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 0.41 | 0.51 | 1.12 | 0.00 | 0.00 | 0.00 | 596.27 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 40.93 | 61.76 | 659.66 | 0.36 | 62.92 | 11.96 | 36,360.29 |

**3/5/2009 3:21:49 PM**

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 41.34 | 62.27 | 660.78 | 0.36 | 62.92 | 11.96 | 36,956.56 |

**3/5/2009 3:20:25 PM**

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt B.urb924

Project Name: Cloverdale alt B

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 Total | PM2.5 Dust | PM2.5 Exhaust | PM2.5 Total | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 1/1/2010-7/30/2010 Active Days: 151 | 3.41 | **30.24** | 16.22 | 0.01 | **67.04** | 1.50 | **68.54** | **14.01** | 1.38 | **15.39** | 3,210.92 |
| Mass Grading 01/01/2010-08/01/2010 | 3.41 | 30.24 | 16.22 | 0.01 | 67.04 | 1.50 | 68.54 | 14.01 | 1.38 | 15.39 | 3,210.92 |
| Mass Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 67.00 | 0.00 | 67.00 | 13.99 | 0.00 | 13.99 | 0.00 |
| Mass Grading Off Road Diesel | 3.00 | 24.99 | 12.46 | 0.00 | 0.00 | 1.25 | 1.25 | 0.00 | 1.15 | 1.15 | 2,247.32 |
| Mass Grading On Road Diesel | 0.33 | 5.05 | 1.16 | 0.01 | 0.03 | 0.25 | 0.27 | 0.01 | 0.23 | 0.24 | 660.11 |
| Mass Grading Worker Trips | 0.08 | 0.20 | 2.60 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 303.49 |
| Time Slice 8/2/2010-10/1/2010 Active Days: 45 | 3.08 | 25.19 | 15.06 | 0.00 | 67.01 | 1.26 | 68.27 | 14.00 | 1.15 | 15.15 | 2,550.80 |
| Fine Grading 08/02/2010-10/01/2010 | 3.08 | 25.19 | 15.06 | 0.00 | 67.01 | 1.26 | 68.27 | 14.00 | 1.15 | 15.15 | 2,550.80 |
| Fine Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 67.00 | 0.00 | 67.00 | 13.99 | 0.00 | 13.99 | 0.00 |
| Fine Grading Off Road Diesel | 3.00 | 24.99 | 12.46 | 0.00 | 0.00 | 1.25 | 1.25 | 0.00 | 1.15 | 1.15 | 2,247.32 |
| Fine Grading On Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fine Grading Worker Trips | 0.08 | 0.20 | 2.60 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 303.49 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 10/4/2010-12/1/2010 Active Days: 43 | 3.52 | 21.06 | 16.73 | 0.01 | 0.04 | 1.71 | 1.75 | 0.02 | 1.57 | 1.59 | 2,441.39 |
| Asphalt 10/02/2010-12/01/2010 | 3.52 | 21.06 | 16.73 | 0.01 | 0.04 | 1.71 | 1.75 | 0.02 | 1.57 | 1.59 | 2,441.39 |
| Paving Off-Gas | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving Off Road Diesel | 2.98 | 18.01 | 10.28 | 0.00 | 0.00 | 1.57 | 1.57 | 0.00 | 1.44 | 1.44 | 1,418.44 |
| Paving On Road Diesel | 0.17 | 2.60 | 0.60 | 0.00 | 0.01 | 0.13 | 0.14 | 0.00 | 0.12 | 0.12 | 340.10 |
| Paving Worker Trips | 0.17 | 0.45 | 5.85 | 0.01 | 0.03 | 0.01 | 0.05 | 0.01 | 0.01 | 0.02 | 682.84 |
| Time Slice 12/2/2010-12/31/2010 Active Days: 22 | **27.95** | 29.92 | **66.43** | **0.08** | 0.33 | **1.79** | 2.12 | 0.12 | **1.64** | 1.76 | 9,238.33 |
| Building 12/02/2010-01/01/2012 | 5.76 | 29.87 | 65.76 | 0.07 | 0.33 | 1.79 | 2.12 | 0.12 | 1.64 | 1.76 | 9,159.81 |
| Building Off Road Diesel | 3.65 | 16.55 | 11.20 | 0.00 | 0.00 | 1.19 | 1.19 | 0.00 | 1.10 | 1.10 | 1,621.20 |
| Building Vendor Trips | 0.70 | 9.63 | 5.96 | 0.02 | 0.07 | 0.47 | 0.54 | 0.02 | 0.43 | 0.46 | 1,870.36 |
| Building Worker Trips | 1.41 | 3.70 | 48.60 | 0.06 | 0.26 | 0.12 | 0.38 | 0.09 | 0.11 | 0.20 | 5,668.25 |
| Coating 12/02/2010-01/01/2012 | 22.19 | 0.05 | 0.67 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 78.52 |
| Architectural Coating | 22.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.02 | 0.05 | 0.67 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 78.52 |
| Time Slice 1/3/2011-12/30/2011 Active Days: 260 | 27.49 | 27.62 | 61.95 | **0.08** | 0.33 | 1.69 | 2.03 | 0.12 | 1.55 | 1.67 | **9,242.83** |
| Building 12/02/2010-01/01/2012 | 5.30 | 27.57 | 61.33 | 0.07 | 0.33 | 1.69 | 2.02 | 0.12 | 1.55 | 1.67 | 9,164.26 |
| Building Off Road Diesel | 3.39 | 15.67 | 10.85 | 0.00 | 0.00 | 1.14 | 1.14 | 0.00 | 1.05 | 1.05 | 1,621.20 |
| Building Vendor Trips | 0.63 | 8.54 | 5.61 | 0.02 | 0.07 | 0.43 | 0.50 | 0.02 | 0.40 | 0.42 | 1,870.65 |
| Building Worker Trips | 1.29 | 3.36 | 44.87 | 0.06 | 0.26 | 0.12 | 0.38 | 0.09 | 0.11 | 0.20 | 5,672.41 |
| Coating 12/02/2010-01/01/2012 | 22.19 | 0.05 | 0.62 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 78.57 |
| Architectural Coating | 22.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.02 | 0.05 | 0.62 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 78.57 |

## Phase Assumptions

Phase: Fine Grading 8/2/2010 - 10/1/2010 - Fine Site Grading

Total Acres Disturbed: 13.41

Maximum Daily Acreage Disturbed: 3.35

Fugitive Dust Level of Detail: Default

20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 8/1/2010 - mass site grading
Total Acres Disturbed: 13.41
Maximum Daily Acreage Disturbed: 3.35
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 178.81
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 10/2/2010 - 12/1/2010 - Paving
Acres to be Paved: 3.35
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 12/2/2010 - 1/1/2012 - Building Construction
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 12/2/2010 - 1/1/2012 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**3/5/2009 3:21:25 PM**

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt B.urb924

Project Name: Cloverdale alt B

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| Source | ROG | NOX | CO | SO2 | PM10 | PM25 | CO2 |
|---|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | 48.15 | 68.69 | 809.42 | 0.50 | 81.72 | 15.53 | 49,550.61 |
| Hotel | 14.28 | 17.95 | 211.55 | 0.13 | 21.36 | 4.06 | 12,950.55 |
| casino | 80.82 | 115.30 | 1,357.88 | 0.83 | 137.19 | 26.07 | 83,170.28 |
| specialty retail | 39.75 | 55.68 | 655.80 | 0.40 | 66.26 | 12.59 | 40,167.78 |
| entertainment center | 22.64 | 32.12 | 378.31 | 0.23 | 38.22 | 7.26 | 23,171.54 |
| TOTALS (lbs/day, unmitigated) | 205.64 | 289.74 | 3,412.96 | 2.09 | 344.75 | 65.51 | 209,010.76 |

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | | 41.96 | 1000 sq ft | 37.80 | 1,586.09 | 47,582.64 |
| Hotel | | 2.94 | rooms | 141.00 | 414.54 | 12,436.20 |

**3/5/2009 3:21:25 PM**

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| casino | | 39.43 | 1000 sq ft | 67.53 | 2,662.71 | 79,881.24 |
| specialty retail | | 14.63 | 1000 sq ft | 87.90 | 1,285.98 | 38,579.31 |
| entertainment center | | 26.40 | 1000 sq ft | 28.10 | 741.84 | 22,255.20 |
| | | | | | 6,691.16 | 200,734.59 |

Vehicle Fleet Mix

| Vehicle Type | Percent Type | Non-Catalyst | Catalyst | Diesel |
|---|---|---|---|---|
| Light Auto | 44.8 | 2.0 | 97.3 | 0.7 |
| Light Truck < 3750 lbs | 18.3 | 2.7 | 90.7 | 6.6 |
| Light Truck 3751-5750 lbs | 19.8 | 1.5 | 98.0 | 0.5 |
| Med Truck 5751-8500 lbs | 7.2 | 1.4 | 97.2 | 1.4 |
| Lite-Heavy Truck 8501-10,000 lbs | 1.8 | 0.0 | 66.7 | 33.3 |
| Lite-Heavy Truck 10,001-14,000 lbs | 1.0 | 0.0 | 50.0 | 50.0 |
| Med-Heavy Truck 14,001-33,000 lbs | 1.2 | 8.3 | 16.7 | 75.0 |
| Heavy-Heavy Truck 33,001-60,000 lbs | 0.2 | 0.0 | 0.0 | 100.0 |
| Other Bus | 0.1 | 0.0 | 100.0 | 0.0 |
| Urban Bus | 0.0 | 0.0 | 0.0 | 0.0 |
| Motorcycle | 4.5 | 66.7 | 33.3 | 0.0 |
| School Bus | 0.1 | 0.0 | 0.0 | 100.0 |
| Motor Home | 1.0 | 0.0 | 90.0 | 10.0 |

**3/5/2009 3:21:25 PM**

Travel Conditions

| | Residential | | | Commercial | | |
|---|---|---|---|---|---|---|
| | Home-Work | Home-Shop | Home-Other | Commute | Non-Work | Customer |
| Urban Trip Length (miles) | 10.8 | 7.3 | 7.5 | 9.5 | 7.4 | 7.4 |
| Rural Trip Length (miles) | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |
| Trip speeds (mph) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| % of Trips - Residential | 32.9 | 18.0 | 49.1 | | | |
| % of Trips - Commercial (by land use) | | | | | | |
| High turnover (sit-down) rest. | | | | 5.0 | 2.5 | 92.5 |
| Hotel | | | | 5.0 | 2.5 | 92.5 |
| casino | | | | 2.0 | 1.0 | 97.0 |
| specialty retail | | | | 2.0 | 1.0 | 97.0 |
| entertainment center | | | | 2.0 | 1.0 | 97.0 |

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work average speed changed from 35 mph to 60 mph

Home-based work rural trip length changed from 16.8 miles to 30 miles

Home-based shop average speed changed from 35 mph to 60 mph

Home-based shop rural trip length changed from 7.1 miles to 30 miles

Home-based other average speed changed from 35 mph to 60 mph

Home-based other rural trip length changed from 7.9 miles to 30 miles

Commercial-based commute average speed changed from 35 mph to 60 mph

Operational Changes to Defaults

Commercial-based commute rural trip length changed from 14.7 miles to 30 miles

Commercial-based non-work average speed changed from 35 mph to 60 mph

Commercial-based non-work rural trip length changed from 6.6 miles to 30 miles

Commercial-based customer average speed changed from 35 mph to 60 mph

Commercial-based customer rural trip length changed from 6.6 miles to 30 miles

**3/5/2009 3:26:37 PM**

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt C.urb924

Project Name: Cloverdale alt C

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (lbs/day unmitigated) | 26.32 | 30.24 | 62.72 | 0.07 | 62.64 | 1.75 | 64.14 | 13.09 | 1.60 | 14.47 | 8,726.22 |
| 2011 TOTALS (lbs/day unmitigated) | 25.87 | 26.81 | 58.51 | 0.07 | 0.31 | 1.65 | 1.97 | 0.11 | 1.52 | 1.63 | 8,730.42 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 2.39 | 2.69 | 9.90 | 0.00 | 0.03 | 0.03 | 3,117.40 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 189.46 | 266.77 | 3,142.38 | 1.93 | 317.41 | 60.32 | 192,438.08 |

**3/5/2009 3:26:37 PM**

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 191.85 | 269.46 | 3,152.28 | 1.93 | 317.44 | 60.35 | 195,555.48 |

**3/6/2009 10:43:33 AM**

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt C.urb924

Project Name: Cloverdale alt C

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (tons/year unmitigated) | 0.69 | 3.62 | 2.61 | 0.00 | 6.14 | 0.20 | 6.34 | 1.28 | 0.18 | 1.47 | 447.82 |
| 2011 TOTALS (tons/year unmitigated) | 3.36 | 3.49 | 7.61 | 0.01 | 0.04 | 0.22 | 0.26 | 0.01 | 0.20 | 0.21 | 1,134.96 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 0.38 | 0.48 | 1.10 | 0.00 | 0.00 | 0.00 | 567.62 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 37.70 | 56.86 | 607.36 | 0.33 | 57.93 | 11.01 | 33,477.26 |

**3/6/2009 10:43:33 AM**

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 38.08 | 57.34 | 608.46 | 0.33 | 57.93 | 11.01 | 34,044.88 |

**3/5/2009 3:27:06 PM**

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt C.urb924

Project Name: Cloverdale alt C

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 Total | PM2.5 Dust | PM2.5 Exhaust | PM2.5 Total | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 1/1/2010-7/30/2010 Active Days: 151 | 3.41 | **30.24** | 16.22 | 0.01 | **62.64** | 1.50 | **64.14** | **13.09** | 1.38 | **14.47** | 3,210.92 |
| Mass Grading 01/01/2010-08/01/2010 | 3.41 | 30.24 | 16.22 | 0.01 | 62.64 | 1.50 | 64.14 | 13.09 | 1.38 | 14.47 | 3,210.92 |
| Mass Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 62.60 | 0.00 | 62.60 | 13.07 | 0.00 | 13.07 | 0.00 |
| Mass Grading Off Road Diesel | 3.00 | 24.99 | 12.46 | 0.00 | 0.00 | 1.25 | 1.25 | 0.00 | 1.15 | 1.15 | 2,247.32 |
| Mass Grading On Road Diesel | 0.33 | 5.05 | 1.16 | 0.01 | 0.03 | 0.25 | 0.27 | 0.01 | 0.23 | 0.24 | 660.11 |
| Mass Grading Worker Trips | 0.08 | 0.20 | 2.60 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 303.49 |
| Time Slice 8/2/2010-10/1/2010 Active Days: 45 | 3.08 | 25.19 | 15.06 | 0.00 | 62.61 | 1.26 | 63.87 | 13.08 | 1.15 | 14.23 | 2,550.80 |
| Fine Grading 08/02/2010-10/01/2010 | 3.08 | 25.19 | 15.06 | 0.00 | 62.61 | 1.26 | 63.87 | 13.08 | 1.15 | 14.23 | 2,550.80 |
| Fine Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 62.60 | 0.00 | 62.60 | 13.07 | 0.00 | 13.07 | 0.00 |
| Fine Grading Off Road Diesel | 3.00 | 24.99 | 12.46 | 0.00 | 0.00 | 1.25 | 1.25 | 0.00 | 1.15 | 1.15 | 2,247.32 |
| Fine Grading On Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fine Grading Worker Trips | 0.08 | 0.20 | 2.60 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 303.49 |

**3/5/2009 3:27:06 PM**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 10/4/2010-12/1/2010 Active Days: 43 | 3.50 | 20.89 | 16.69 | 0.01 | 0.04 | 1.70 | 1.74 | 0.02 | 1.56 | 1.58 | 2,419.05 |
| Asphalt 10/02/2010-12/01/2010 | 3.50 | 20.89 | 16.69 | 0.01 | 0.04 | 1.70 | 1.74 | 0.02 | 1.56 | 1.58 | 2,419.05 |
| Paving Off-Gas | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving Off Road Diesel | 2.98 | 18.01 | 10.28 | 0.00 | 0.00 | 1.57 | 1.57 | 0.00 | 1.44 | 1.44 | 1,418.44 |
| Paving On Road Diesel | 0.16 | 2.43 | 0.56 | 0.00 | 0.01 | 0.12 | 0.13 | 0.00 | 0.11 | 0.11 | 317.77 |
| Paving Worker Trips | 0.17 | 0.45 | 5.85 | 0.01 | 0.03 | 0.01 | 0.05 | 0.01 | 0.01 | 0.02 | 682.84 |
| Time Slice 12/2/2010-12/31/2010 Active Days: 22 | 26.32 | 29.02 | 62.72 | **0.07** | 0.31 | **1.75** | 2.06 | 0.11 | **1.60** | 1.72 | 8,726.22 |
| Building 12/02/2010-01/01/2012 | 5.62 | 28.97 | 62.09 | 0.07 | 0.31 | 1.75 | 2.06 | 0.11 | 1.60 | 1.71 | 8,652.98 |
| Building Off Road Diesel | 3.65 | 16.55 | 11.20 | 0.00 | 0.00 | 1.19 | 1.19 | 0.00 | 1.10 | 1.10 | 1,621.20 |
| Building Vendor Trips | 0.65 | 8.98 | 5.56 | 0.02 | 0.07 | 0.44 | 0.51 | 0.02 | 0.40 | 0.43 | 1,744.61 |
| Building Worker Trips | 1.32 | 3.45 | 45.33 | 0.05 | 0.24 | 0.12 | 0.36 | 0.09 | 0.10 | 0.19 | 5,287.17 |
| Coating 12/02/2010-01/01/2012 | 20.70 | 0.05 | 0.63 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 73.24 |
| Architectural Coating | 20.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.02 | 0.05 | 0.63 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 73.24 |
| Time Slice 1/3/2011-12/30/2011 Active Days: 260 | 25.87 | 26.81 | 58.51 | **0.07** | 0.31 | 1.65 | 1.97 | 0.11 | 1.52 | 1.63 | **8,730.42** |
| Building 12/02/2010-01/01/2012 | 5.17 | 26.77 | 57.93 | 0.07 | 0.31 | 1.65 | 1.96 | 0.11 | 1.52 | 1.63 | 8,657.13 |
| Building Off Road Diesel | 3.39 | 15.67 | 10.85 | 0.00 | 0.00 | 1.14 | 1.14 | 0.00 | 1.05 | 1.05 | 1,621.20 |
| Building Vendor Trips | 0.59 | 7.96 | 5.24 | 0.02 | 0.07 | 0.40 | 0.47 | 0.02 | 0.37 | 0.39 | 1,744.89 |
| Building Worker Trips | 1.20 | 3.14 | 41.85 | 0.05 | 0.24 | 0.12 | 0.36 | 0.09 | 0.10 | 0.19 | 5,291.05 |
| Coating 12/02/2010-01/01/2012 | 20.69 | 0.04 | 0.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 73.29 |
| Architectural Coating | 20.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.02 | 0.04 | 0.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 73.29 |

## Phase Assumptions

Phase: Fine Grading 8/2/2010 - 10/1/2010 - Fine Site Grading

Total Acres Disturbed: 12.51

Maximum Daily Acreage Disturbed: 3.13

Fugitive Dust Level of Detail: Default

20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 8/1/2010 - Mass Site Grading
Total Acres Disturbed: 12.51
Maximum Daily Acreage Disturbed: 3.13
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 178.81
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 10/2/2010 - 12/1/2010 - Paving
Acres to be Paved: 3.13
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 12/2/2010 - 1/1/2012 - Building Construction
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 12/2/2010 - 1/1/2012 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**3/5/2009 3:27:31 PM**

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt C.urb924

Project Name: Cloverdale alt C

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| Source | ROG | NOX | CO | SO2 | PM10 | PM25 | CO2 |
|---|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | 48.15 | 68.69 | 809.42 | 0.50 | 81.72 | 15.53 | 49,550.61 |
| Hotel | 14.28 | 17.95 | 211.55 | 0.13 | 21.36 | 4.06 | 12,950.55 |
| casino | 69.07 | 98.53 | 1,160.42 | 0.71 | 117.24 | 22.28 | 71,075.92 |
| specialty retail | 35.32 | 49.48 | 582.68 | 0.36 | 58.87 | 11.19 | 35,689.46 |
| entertainment center | 22.64 | 32.12 | 378.31 | 0.23 | 38.22 | 7.26 | 23,171.54 |
| TOTALS (lbs/day, unmitigated) | 189.46 | 266.77 | 3,142.38 | 1.93 | 317.41 | 60.32 | 192,438.08 |

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | | 41.96 | 1000 sq ft | 37.80 | 1,586.09 | 47,582.64 |
| Hotel | | 2.94 | rooms | 141.00 | 414.54 | 12,436.20 |

**3/5/2009 3:27:31 PM**

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| casino | | 39.43 | 1000 sq ft | 57.71 | 2,275.51 | 68,265.16 |
| specialty retail | | 14.63 | 1000 sq ft | 78.10 | 1,142.60 | 34,278.09 |
| entertainment center | | 26.40 | 1000 sq ft | 28.10 | 741.84 | 22,255.20 |
| | | | | | 6,160.58 | 184,817.29 |

Vehicle Fleet Mix

| Vehicle Type | Percent Type | Non-Catalyst | Catalyst | Diesel |
|---|---|---|---|---|
| Light Auto | 44.8 | 2.0 | 97.3 | 0.7 |
| Light Truck < 3750 lbs | 18.3 | 2.7 | 90.7 | 6.6 |
| Light Truck 3751-5750 lbs | 19.8 | 1.5 | 98.0 | 0.5 |
| Med Truck 5751-8500 lbs | 7.2 | 1.4 | 97.2 | 1.4 |
| Lite-Heavy Truck 8501-10,000 lbs | 1.8 | 0.0 | 66.7 | 33.3 |
| Lite-Heavy Truck 10,001-14,000 lbs | 1.0 | 0.0 | 50.0 | 50.0 |
| Med-Heavy Truck 14,001-33,000 lbs | 1.2 | 8.3 | 16.7 | 75.0 |
| Heavy-Heavy Truck 33,001-60,000 lbs | 0.2 | 0.0 | 0.0 | 100.0 |
| Other Bus | 0.1 | 0.0 | 100.0 | 0.0 |
| Urban Bus | 0.0 | 0.0 | 0.0 | 0.0 |
| Motorcycle | 4.5 | 66.7 | 33.3 | 0.0 |
| School Bus | 0.1 | 0.0 | 0.0 | 100.0 |
| Motor Home | 1.0 | 0.0 | 90.0 | 10.0 |

**3/5/2009 3:27:31 PM**

Travel Conditions

| | Residential | | | Commercial | | |
|---|---|---|---|---|---|---|
| | Home-Work | Home-Shop | Home-Other | Commute | Non-Work | Customer |
| Urban Trip Length (miles) | 10.8 | 7.3 | 7.5 | 9.5 | 7.4 | 7.4 |
| Rural Trip Length (miles) | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |
| Trip speeds (mph) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| % of Trips - Residential | 32.9 | 18.0 | 49.1 | | | |
| % of Trips - Commercial (by land use) | | | | | | |
| High turnover (sit-down) rest. | | | | 5.0 | 2.5 | 92.5 |
| Hotel | | | | 5.0 | 2.5 | 92.5 |
| casino | | | | 2.0 | 1.0 | 97.0 |
| specialty retail | | | | 2.0 | 1.0 | 97.0 |
| entertainment center | | | | 2.0 | 1.0 | 97.0 |

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work average speed changed from 35 mph to 60 mph

Home-based work rural trip length changed from 16.8 miles to 30 miles

Home-based shop average speed changed from 35 mph to 60 mph

Home-based shop rural trip length changed from 7.1 miles to 30 miles

Home-based other average speed changed from 35 mph to 60 mph

Home-based other rural trip length changed from 7.9 miles to 30 miles

Commercial-based commute average speed changed from 35 mph to 60 mph

Operational Changes to Defaults

Commercial-based commute rural trip length changed from 14.7 miles to 30 miles

Commercial-based non-work average speed changed from 35 mph to 60 mph

Commercial-based non-work rural trip length changed from 6.6 miles to 30 miles

Commercial-based customer average speed changed from 35 mph to 60 mph

Commercial-based customer rural trip length changed from 6.6 miles to 30 miles

**2/8/2012 10:41:09 AM**

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\mxm\Desktop\Current Project Shortcuts\Cloverdale\Feb 2012\Cloverdale alt D.urb924

Project Name: Cloverdale alt D

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

**2/8/2012 10:41:09 AM**

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (tons/year unmitigated) | 0.96 | 3.23 | 2.53 | 0.00 | 2.53 | 0.19 | 2.72 | 0.53 | 0.17 | 0.70 | 428.35 |
| 2011 TOTALS (tons/year unmitigated) | 1.53 | 1.22 | 2.20 | 0.00 | 0.01 | 0.08 | 0.09 | 0.00 | 0.07 | 0.08 | 327.70 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 0.23 | 0.24 | 0.61 | 0.00 | 0.00 | 0.00 | 272.04 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 30.02 | 45.54 | 486.39 | 0.27 | 46.38 | 8.82 | 26,809.59 |

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 30.25 | 45.78 | 487.00 | 0.27 | 46.38 | 8.82 | 27,081.63 |

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 | 0.96 | 3.23 | 2.53 | 0.00 | 2.53 | 0.19 | 2.72 | 0.53 | 0.17 | 0.70 | 428.35 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mass Grading 01/01/2010-06/01/2010 | 0.20 | 1.84 | 0.92 | 0.00 | 2.10 | 0.09 | 2.19 | 0.44 | 0.08 | 0.52 | 200.50 |
| Mass Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 2.10 | 0.44 | 0.00 | 0.44 | 0.00 |
| Mass Grading Off Road Diesel | 0.16 | 1.35 | 0.67 | 0.00 | 0.00 | 0.07 | 0.07 | 0.00 | 0.06 | 0.06 | 121.36 |
| Mass Grading On Road Diesel | 0.03 | 0.48 | 0.11 | 0.00 | 0.00 | 0.02 | 0.03 | 0.00 | 0.02 | 0.02 | 62.76 |
| Mass Grading Worker Trips | 0.00 | 0.01 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 16.39 |
| Fine Grading 06/02/2010-07/01/2010 | 0.03 | 0.28 | 0.17 | 0.00 | 0.43 | 0.01 | 0.44 | 0.09 | 0.01 | 0.10 | 28.06 |
| Fine Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 0.43 | 0.00 | 0.43 | 0.09 | 0.00 | 0.09 | 0.00 |
| Fine Grading Off Road Diesel | 0.03 | 0.27 | 0.14 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 24.72 |
| Fine Grading On Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fine Grading Worker Trips | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.34 |
| Asphalt 07/02/2010-10/02/2010 | 0.10 | 0.57 | 0.48 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.04 | 0.04 | 66.34 |
| Paving Off-Gas | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving Off Road Diesel | 0.09 | 0.53 | 0.30 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.04 | 0.04 | 41.98 |
| Paving On Road Diesel | 0.00 | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.33 |
| Paving Worker Trips | 0.00 | 0.01 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 20.03 |
| Building 11/02/2010-06/01/2011 | 0.11 | 0.53 | 0.94 | 0.00 | 0.00 | 0.03 | 0.04 | 0.00 | 0.03 | 0.03 | 131.60 |
| Building Off Road Diesel | 0.08 | 0.36 | 0.25 | 0.00 | 0.00 | 0.03 | 0.03 | 0.00 | 0.02 | 0.02 | 35.67 |
| Building Vendor Trips | 0.01 | 0.12 | 0.08 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 23.80 |
| Building Worker Trips | 0.02 | 0.05 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 72.13 |
| Coating 11/02/2010-06/01/2011 | 0.52 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.85 |
| Architectural Coating | 0.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.85 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2011 | 1.53 | 1.22 | 2.20 | 0.00 | 0.01 | 0.08 | 0.09 | 0.00 | 0.07 | 0.08 | 327.70 |
| Building 11/02/2010-06/01/2011 | 0.24 | 1.22 | 2.16 | 0.00 | 0.01 | 0.08 | 0.09 | 0.00 | 0.07 | 0.08 | 323.15 |
| Building Off Road Diesel | 0.18 | 0.85 | 0.59 | 0.00 | 0.00 | 0.06 | 0.06 | 0.00 | 0.06 | 0.06 | 87.54 |
| Building Vendor Trips | 0.02 | 0.27 | 0.18 | 0.00 | 0.00 | 0.01 | 0.02 | 0.00 | 0.01 | 0.01 | 58.43 |
| Building Worker Trips | 0.04 | 0.11 | 1.40 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 177.18 |
| Coating 11/02/2010-06/01/2011 | 1.29 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.55 |
| Architectural Coating | 1.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.55 |

Phase Assumptions

Phase: Fine Grading 6/2/2010 - 7/1/2010 - Fine Site Grading

Total Acres Disturbed: 7.76

Maximum Daily Acreage Disturbed: 1.94

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 6/1/2010 - Mass Site Grading

Total Acres Disturbed: 7.76

Maximum Daily Acreage Disturbed: 1.94

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 314.81

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/2/2010 - 10/2/2010 - Paving

Acres to be Paved: 1.94

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 11/2/2010 - 6/1/2011 - Building Construction

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 11/2/2010 - 6/1/2011 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**2/8/2012 10:41:09 AM**

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

| Source | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| Natural Gas | 0.02 | 0.23 | 0.19 | 0.00 | 0.00 | 0.00 | 271.28 |
| Hearth | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Landscape | 0.03 | 0.01 | 0.42 | 0.00 | 0.00 | 0.00 | 0.76 |
| Consumer Products | 0.00 | | | | | | |
| Architectural Coatings | 0.18 | | | | | | |
| TOTALS (tons/year, unmitigated) | 0.23 | 0.24 | 0.61 | 0.00 | 0.00 | 0.00 | 272.04 |

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

| Source | ROG | NOX | CO | SO2 | PM10 | PM25 | CO2 |
|---|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | 9.63 | 14.64 | 156.43 | 0.09 | 14.91 | 2.83 | 8,620.06 |
| casino | 13.81 | 21.00 | 224.26 | 0.12 | 21.39 | 4.07 | 12,362.46 |
| specialty retail | 6.58 | 9.90 | 105.70 | 0.06 | 10.08 | 1.92 | 5,827.07 |
| TOTALS (tons/year, unmitigated) | 30.02 | 45.54 | 486.39 | 0.27 | 46.38 | 8.82 | 26,809.59 |

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

**2/8/2012 10:41:09 AM**

Analysis Year: 2010 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | | 41.96 | 1000 sq ft | 37.80 | 1,586.09 | 47,582.64 |
| casino | | 39.43 | 1000 sq ft | 57.70 | 2,275.11 | 68,253.33 |
| specialty retail | | 14.63 | 1000 sq ft | 73.30 | 1,072.38 | 32,171.37 |
| | | | | | 4,933.58 | 148,007.34 |

Vehicle Fleet Mix

| Vehicle Type | Percent Type | Non-Catalyst | Catalyst | Diesel |
|---|---|---|---|---|
| Light Auto | 44.8 | 2.0 | 97.3 | 0.7 |
| Light Truck < 3750 lbs | 18.3 | 2.7 | 90.7 | 6.6 |
| Light Truck 3751-5750 lbs | 19.8 | 1.5 | 98.0 | 0.5 |
| Med Truck 5751-8500 lbs | 7.2 | 1.4 | 97.2 | 1.4 |
| Lite-Heavy Truck 8501-10,000 lbs | 1.8 | 0.0 | 66.7 | 33.3 |
| Lite-Heavy Truck 10,001-14,000 lbs | 1.0 | 0.0 | 50.0 | 50.0 |
| Med-Heavy Truck 14,001-33,000 lbs | 1.2 | 8.3 | 16.7 | 75.0 |
| Heavy-Heavy Truck 33,001-60,000 lbs | 0.2 | 0.0 | 0.0 | 100.0 |
| Other Bus | 0.1 | 0.0 | 100.0 | 0.0 |
| Urban Bus | 0.0 | 0.0 | 0.0 | 0.0 |
| Motorcycle | 4.5 | 66.7 | 33.3 | 0.0 |
| School Bus | 0.1 | 0.0 | 0.0 | 100.0 |
| Motor Home | 1.0 | 0.0 | 90.0 | 10.0 |

**2/8/2012 10:41:09 AM**

Travel Conditions

| | Residential | | | Commercial | | |
|---|---|---|---|---|---|---|
| | Home-Work | Home-Shop | Home-Other | Commute | Non-Work | Customer |
| Urban Trip Length (miles) | 10.8 | 7.3 | 7.5 | 9.5 | 7.4 | 7.4 |
| Rural Trip Length (miles) | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |
| Trip speeds (mph) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| % of Trips - Residential | 32.9 | 18.0 | 49.1 | | | |
| | | | | | | |
| % of Trips - Commercial (by land use) | | | | | | |
| High turnover (sit-down) rest. | | | | 5.0 | 2.5 | 92.5 |
| casino | | | | 2.0 | 1.0 | 97.0 |
| specialty retail | | | | 2.0 | 1.0 | 97.0 |

**3/5/2009 3:43:23 PM**

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt E.urb924

Project Name: cloverdale alt E

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (lbs/day unmitigated) | 60.67 | 74.04 | 108.60 | 0.17 | 83.62 | 3.92 | 84.93 | 17.47 | 3.60 | 18.67 | 19,209.76 |
| 2011 TOTALS (lbs/day unmitigated) | 59.87 | 66.76 | 101.31 | 0.17 | 0.73 | 3.64 | 4.37 | 0.26 | 3.34 | 3.60 | 19,216.64 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 3.04 | 2.53 | 11.29 | 0.00 | 0.03 | 0.03 | 2,907.69 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 256.96 | 362.96 | 4,284.36 | 2.63 | 431.61 | 82.06 | 261,852.36 |

**3/5/2009 3:43:23 PM**

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (lbs/day, unmitigated) | 260.00 | 365.49 | 4,295.65 | 2.63 | 431.64 | 82.09 | 264,760.05 |

**3/5/2009 3:44:44 PM**

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt E.urb924

Project Name: cloverdale alt E

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (tons/year unmitigated) | 1.65 | 4.00 | 3.93 | 0.00 | 5.45 | 0.23 | 5.68 | 1.14 | 0.21 | 1.35 | 674.48 |
| 2011 TOTALS (tons/year unmitigated) | 3.23 | 3.61 | 5.47 | 0.01 | 0.04 | 0.20 | 0.24 | 0.01 | 0.18 | 0.19 | 1,037.70 |

AREA SOURCE EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 0.49 | 0.45 | 1.20 | 0.00 | 0.00 | 0.00 | 529.10 |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 51.20 | 77.36 | 827.73 | 0.46 | 78.77 | 14.98 | 45,554.29 |

**3/5/2009 3:44:44 PM**

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|
| TOTALS (tons/year, unmitigated) | 51.69 | 77.81 | 828.93 | 0.46 | 78.77 | 14.98 | 46,083.39 |

**3/5/2009 3:44:06 PM**

Urbemis 2007 Version 9.2.4

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt E.urb924

Project Name: cloverdale alt E

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| Source | ROG | NOX | CO | SO2 | PM10 | PM25 | CO2 |
|---|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | 14.67 | 21.01 | 247.56 | 0.15 | 24.99 | 4.75 | 15,154.90 |
| Fast food rest. w/ drive thru | 56.96 | 81.97 | 965.91 | 0.59 | 97.52 | 18.54 | 59,130.35 |
| Free-standing discount store | 61.90 | 88.43 | 1,041.39 | 0.64 | 105.21 | 20.00 | 63,785.45 |
| General office building | 49.54 | 68.69 | 814.03 | 0.50 | 81.60 | 15.52 | 49,565.46 |
| Industrial park | 33.58 | 45.29 | 537.43 | 0.33 | 53.79 | 10.23 | 32,685.85 |
| specialty retail | 40.31 | 57.57 | 678.04 | 0.42 | 68.50 | 13.02 | 41,530.35 |
| TOTALS (lbs/day, unmitigated) | 256.96 | 362.96 | 4,284.36 | 2.63 | 431.61 | 82.06 | 261,852.36 |

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| High turnover (sit-down) rest. | | 69.30 | 1000 sq ft | 7.00 | 485.10 | 14,553.00 |

**3/5/2009 3:44:07 PM**

Summary of Land Uses

| Land Use Type | Acreage | Trip Rate | Unit Type | No. Units | Total Trips | Total VMT |
|---|---|---|---|---|---|---|
| Fast food rest. w/ drive thru | | 270.39 | 1000 sq ft | 7.00 | 1,892.73 | 56,781.90 |
| Free-standing discount store | | 45.38 | 1000 sq ft | 45.00 | 2,042.10 | 61,263.00 |
| General office building | | 12.67 | 1000 sq ft | 125.00 | 1,583.75 | 47,512.50 |
| Industrial park | | 6.96 | 1000 sq ft | 150.00 | 1,044.00 | 31,320.00 |
| specialty retail | | 44.32 | 1000 sq ft | 30.00 | 1,329.60 | 39,888.00 |
| | | | | | 8,377.28 | 251,318.40 |

Vehicle Fleet Mix

| Vehicle Type | Percent Type | Non-Catalyst | Catalyst | Diesel |
|---|---|---|---|---|
| Light Auto | 44.8 | 2.0 | 97.3 | 0.7 |
| Light Truck < 3750 lbs | 18.3 | 2.7 | 90.7 | 6.6 |
| Light Truck 3751-5750 lbs | 19.8 | 1.5 | 98.0 | 0.5 |
| Med Truck 5751-8500 lbs | 7.2 | 1.4 | 97.2 | 1.4 |
| Lite-Heavy Truck 8501-10,000 lbs | 1.8 | 0.0 | 66.7 | 33.3 |
| Lite-Heavy Truck 10,001-14,000 lbs | 1.0 | 0.0 | 50.0 | 50.0 |
| Med-Heavy Truck 14,001-33,000 lbs | 1.2 | 8.3 | 16.7 | 75.0 |
| Heavy-Heavy Truck 33,001-60,000 lbs | 0.2 | 0.0 | 0.0 | 100.0 |
| Other Bus | 0.1 | 0.0 | 100.0 | 0.0 |
| Urban Bus | 0.0 | 0.0 | 0.0 | 0.0 |
| Motorcycle | 4.5 | 66.7 | 33.3 | 0.0 |
| School Bus | 0.1 | 0.0 | 0.0 | 100.0 |
| Motor Home | 1.0 | 0.0 | 90.0 | 10.0 |

**3/5/2009 3:44:07 PM**

Travel Conditions

| | Residential | | | Commercial | | |
|---|---|---|---|---|---|---|
| | Home-Work | Home-Shop | Home-Other | Commute | Non-Work | Customer |
| Urban Trip Length (miles) | 10.8 | 7.3 | 7.5 | 9.5 | 7.4 | 7.4 |
| Rural Trip Length (miles) | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |
| Trip speeds (mph) | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| % of Trips - Residential | 32.9 | 18.0 | 49.1 | | | |
| % of Trips - Commercial (by land use) | | | | | | |
| High turnover (sit-down) rest. | | | | 5.0 | 2.5 | 92.5 |
| Fast food rest. w/ drive thru | | | | 5.0 | 2.5 | 92.5 |
| Free-standing discount store | | | | 2.0 | 1.0 | 97.0 |
| General office building | | | | 35.0 | 17.5 | 47.5 |
| Industrial park | | | | 41.5 | 20.8 | 37.8 |
| specialty retail | | | | 2.0 | 1.0 | 97.0 |

Operational Changes to Defaults

The urban/rural selection has been changed from Urban to Rural

Home-based work average speed changed from 35 mph to 60 mph

Home-based work rural trip length changed from 16.8 miles to 30 miles

Home-based shop average speed changed from 35 mph to 60 mph

Home-based shop rural trip length changed from 7.1 miles to 30 miles

Home-based other average speed changed from 35 mph to 60 mph

Home-based other rural trip length changed from 7.9 miles to 30 miles

Operational Changes to Defaults

Commercial-based commute average speed changed from 35 mph to 60 mph

Commercial-based commute rural trip length changed from 14.7 miles to 30 miles

Commercial-based non-work average speed changed from 35 mph to 60 mph

Commercial-based non-work rural trip length changed from 6.6 miles to 30 miles

Commercial-based customer average speed changed from 35 mph to 60 mph

Commercial-based customer rural trip length changed from 6.6 miles to 30 miles

**3/5/2009 3:43:47 PM**

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\Cloverdale alt E.urb924

Project Name: cloverdale alt E

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 Total | PM2.5 Dust | PM2.5 Exhaust | PM2.5 Total | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 1/1/2010-6/1/2010 Active Days: 108 | 3.15 | 26.23 | 15.30 | 0.00 | **83.62** | 1.31 | **84.93** | **17.47** | 1.20 | **18.67** | 2,687.54 |
| Mass Grading 01/01/2010-06/01/2010 | 3.15 | 26.23 | 15.30 | 0.00 | 83.62 | 1.31 | 84.93 | 17.47 | 1.20 | 18.67 | 2,687.54 |
| Mass Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 83.60 | 0.00 | 83.60 | 17.46 | 0.00 | 17.46 | 0.00 |
| Mass Grading Off Road Diesel | 3.00 | 24.99 | 12.46 | 0.00 | 0.00 | 1.25 | 1.25 | 0.00 | 1.15 | 1.15 | 2,247.32 |
| Mass Grading On Road Diesel | 0.07 | 1.05 | 0.24 | 0.00 | 0.01 | 0.05 | 0.06 | 0.00 | 0.05 | 0.05 | 136.73 |
| Mass Grading Worker Trips | 0.08 | 0.20 | 2.60 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 303.49 |
| Time Slice 6/2/2010-7/1/2010 Active Days: 22 | 3.08 | 25.19 | 15.06 | 0.00 | 83.61 | 1.26 | 84.87 | 17.46 | 1.15 | 18.62 | 2,550.80 |
| Fine Grading 06/02/2010-07/01/2010 | 3.08 | 25.19 | 15.06 | 0.00 | 83.61 | 1.26 | 84.87 | 17.46 | 1.15 | 18.62 | 2,550.80 |
| Fine Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 83.60 | 0.00 | 83.60 | 17.46 | 0.00 | 17.46 | 0.00 |
| Fine Grading Off Road Diesel | 3.00 | 24.99 | 12.46 | 0.00 | 0.00 | 1.25 | 1.25 | 0.00 | 1.15 | 1.15 | 2,247.32 |
| Fine Grading On Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fine Grading Worker Trips | 0.08 | 0.20 | 2.60 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 303.49 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Time Slice 7/2/2010-10/1/2010 Active Days: 66 | 3.46 | 20.62 | 16.63 | 0.01 | 0.04 | 1.69 | 1.73 | 0.01 | 1.55 | 1.57 | 2,384.20 |
| Asphalt 07/02/2010-10/02/2010 | 3.46 | 20.62 | 16.63 | 0.01 | 0.04 | 1.69 | 1.73 | 0.01 | 1.55 | 1.57 | 2,384.20 |
| Paving Off-Gas | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving Off Road Diesel | 2.98 | 18.01 | 10.28 | 0.00 | 0.00 | 1.57 | 1.57 | 0.00 | 1.44 | 1.44 | 1,418.44 |
| Paving On Road Diesel | 0.14 | 2.17 | 0.50 | 0.00 | 0.01 | 0.11 | 0.12 | 0.00 | 0.10 | 0.10 | 282.91 |
| Paving Worker Trips | 0.17 | 0.45 | 5.85 | 0.01 | 0.03 | 0.01 | 0.05 | 0.01 | 0.01 | 0.02 | 682.84 |
| Time Slice 11/2/2010-12/31/2010 Active Days: 44 | **60.67** | **74.04** | **108.60** | **0.17** | 0.73 | **3.92** | 4.65 | 0.26 | **3.60** | 3.86 | 19,209.76 |
| Building 11/02/2010-06/01/2011 | 9.32 | 73.92 | 107.04 | 0.17 | 0.72 | 3.92 | 4.64 | 0.25 | 3.60 | 3.85 | 19,028.07 |
| Building Off Road Diesel | 3.65 | 16.55 | 11.20 | 0.00 | 0.00 | 1.19 | 1.19 | 0.00 | 1.10 | 1.10 | 1,621.20 |
| Building Vendor Trips | 3.68 | 52.17 | 27.41 | 0.09 | 0.36 | 2.55 | 2.91 | 0.12 | 2.35 | 2.47 | 9,426.39 |
| Building Worker Trips | 1.99 | 5.21 | 68.43 | 0.08 | 0.36 | 0.17 | 0.54 | 0.13 | 0.15 | 0.28 | 7,980.48 |
| Coating 11/02/2010-06/01/2011 | 51.34 | 0.12 | 1.56 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 181.69 |
| Architectural Coating | 51.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.05 | 0.12 | 1.56 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 181.69 |
| Time Slice 1/3/2011-6/1/2011 Active Days: 108 | 59.87 | 66.76 | 101.31 | **0.17** | 0.73 | 3.64 | 4.37 | 0.26 | 3.34 | 3.60 | **19,216.64** |
| Building 11/02/2010-06/01/2011 | 8.53 | 66.65 | 99.87 | 0.17 | 0.72 | 3.64 | 4.36 | 0.25 | 3.34 | 3.59 | 19,034.81 |
| Building Off Road Diesel | 3.39 | 15.67 | 10.85 | 0.00 | 0.00 | 1.14 | 1.14 | 0.00 | 1.05 | 1.05 | 1,621.20 |
| Building Vendor Trips | 3.33 | 46.25 | 25.86 | 0.09 | 0.36 | 2.33 | 2.68 | 0.12 | 2.14 | 2.26 | 9,427.28 |
| Building Worker Trips | 1.81 | 4.73 | 63.17 | 0.08 | 0.36 | 0.17 | 0.54 | 0.13 | 0.15 | 0.28 | 7,986.33 |
| Coating 11/02/2010-06/01/2011 | 51.34 | 0.11 | 1.44 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 181.83 |
| Architectural Coating | 51.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Coating Worker Trips | 0.04 | 0.11 | 1.44 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 181.83 |

## Phase Assumptions

Phase: Fine Grading 6/2/2010 - 7/1/2010 - Fine Site Grading

Total Acres Disturbed: 16.72

Maximum Daily Acreage Disturbed: 4.18

Fugitive Dust Level of Detail: Default

20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 6/1/2010 - Mass Site Grading
Total Acres Disturbed: 16.72
Maximum Daily Acreage Disturbed: 4.18
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 37.04
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/2/2010 - 10/2/2010 - Paving
Acres to be Paved: 4.18
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 11/2/2010 - 6/1/2011 - Building Construction
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 11/2/2010 - 6/1/2011 - Architectural Coating

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**1/27/2009 11:19:58 AM**

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name:

Project Name: cloverdale wastewater

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 | PM2.5 Dust | PM2.5 Exhaust | PM2.5 | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 TOTALS (tons/year unmitigated) | 0.30 | 1.85 | 1.85 | 0.00 | 0.65 | 0.11 | 0.76 | 0.14 | 0.10 | 0.24 | 239.18 |

**1/27/2009 11:20:17 AM**

Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name:

Project Name: cloverdale wastewater

Project Location: Sonoma County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

| | ROG | NOx | CO | SO2 | PM10 Dust | PM10 Exhaust | PM10 Total | PM2.5 Dust | PM2.5 Exhaust | PM2.5 Total | CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2010 | 0.30 | 1.85 | 1.85 | 0.00 | 0.65 | 0.11 | 0.76 | 0.14 | 0.10 | 0.24 | 239.18 |
| Mass Grading 01/01/2010-03/01/2010 | 0.06 | 0.53 | 0.29 | 0.00 | 0.42 | 0.03 | 0.45 | 0.09 | 0.02 | 0.11 | 49.33 |
| Mass Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 0.42 | 0.00 | 0.42 | 0.09 | 0.00 | 0.09 | 0.00 |
| Mass Grading Off Road Diesel | 0.06 | 0.52 | 0.26 | 0.00 | 0.00 | 0.03 | 0.03 | 0.00 | 0.02 | 0.02 | 47.19 |
| Mass Grading On Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mass Grading Worker Trips | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.14 |
| Trenching 01/01/2010-02/01/2010 | 0.02 | 0.20 | 0.10 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 19.98 |
| Trenching Off Road Diesel | 0.02 | 0.19 | 0.09 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 18.86 |
| Trenching Worker Trips | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.12 |
| Fine Grading 03/02/2010-04/01/2010 | 0.04 | 0.29 | 0.16 | 0.00 | 0.23 | 0.01 | 0.24 | 0.05 | 0.01 | 0.06 | 27.02 |
| Fine Grading Dust | 0.00 | 0.00 | 0.00 | 0.00 | 0.23 | 0.00 | 0.23 | 0.05 | 0.00 | 0.05 | 0.00 |
| Fine Grading Off Road Diesel | 0.03 | 0.29 | 0.14 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 25.84 |
| Fine Grading On Road Diesel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fine Grading Worker Trips | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.17 |
| Asphalt 04/02/2010-05/02/2010 | 0.03 | 0.18 | 0.13 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 16.33 |
| Paving Off-Gas | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Paving Off Road Diesel | 0.03 | 0.17 | 0.10 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 13.36 |
| Paving On Road Diesel | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.84 |
| Paving Worker Trips | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.14 |
| Building 04/02/2010-07/02/2010 | 0.15 | 0.66 | 1.17 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.04 | 0.04 | 126.52 |
| Building Off Road Diesel | 0.12 | 0.55 | 0.37 | 0.00 | 0.00 | 0.04 | 0.04 | 0.00 | 0.04 | 0.04 | 53.50 |
| Building Vendor Trips | 0.01 | 0.07 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 14.49 |
| Building Worker Trips | 0.02 | 0.04 | 0.74 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 58.53 |

## Phase Assumptions

Phase: Fine Grading 3/2/2010 - 4/1/2010 - Fine Site Grading

Total Acres Disturbed: 7

Maximum Daily Acreage Disturbed: 1

**1/27/2009 11:20:17 AM**

Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2010 - 3/1/2010 - Mass Site Grading
Total Acres Disturbed: 7
Maximum Daily Acreage Disturbed: 1
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2010 - 2/1/2010 - Trenching
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/2/2010 - 5/2/2010 - Paving
Acres to be Paved: 1.4
Off-Road Equipment:
4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 4/2/2010 - 7/2/2010 - Building Construction
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Cloverdale (ESA Project #207737)

| | | | | MCAPCD | | NSCAPCD | | BAAQMD | |
|---|---|---|---|---|---|---|---|---|---|
| | | Trip Length | Trip miles | % miles in MCAPCD | Miles in MCAPCD | % miles in NSCAPCD | Miles in NSCAPCD | % miles in BAAQMD | Miles in BAAQMD |
| Trips North | 7 | 30 | 210 | 0.84 | 176.4 | 0.16 | 33.6 | 0 | 0 |
| Trips South | 90 | 30 | 2700 | 0 | 0 | 0.64 | 1728 | 0.36 | 972 |
| Other Trips | 3 | 30 | 90 | 0 | 0 | 1 | 90 | 0 | 0 |
| Total Trips | 100 | | 3000 | | 176.4 | | 1851.6 | | 972 |
| **% of total URBEMIS emissions** | | | | | **6%** | | **62%** | | **32%** |

Check totals

| |
|---|
| 3000 |
| **100%** |

Cloverdale Operational Emissions Split Into 3 Air Districts
62% = Northern Sonoma 32% = BAAQMD 6% = Mendocino County

| | | Alt A | | | Alt B | | | Alt C | | | Alt D | | | Alt E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 62% | 32% | 6% | 62% | 32% | 6% | 62% | 32% | 6% | 62% | 32% | 6% | 62% | 32% | 6% |
| ROG | lbs/day | 182 | 94 | 18 | 127 | 66 | 12 | 117 | 61 | 11 | 153 | 79 | 15 | 159 | 82 | 15 |
| | tons/yr | 37 | 19 | 4 | 25 | 13 | 2 | 23 | 12 | 2 | 31 | 16 | 3 | 32 | 16 | 3 |
| NOx | lbs/day | 256 | 132 | 25 | 180 | 93 | 17 | 165 | 85 | 16 | 219 | 113 | 21 | 225 | 116 | 22 |
| | tons/yr | 55 | 28 | 5 | 38 | 20 | 4 | 35 | 18 | 3 | 47 | 24 | 5 | 48 | 25 | 5 |
| CO | lbs/day | 3020 | 1559 | 292 | 2116 | 1092 | 205 | 1948 | 1005 | 189 | 2579 | 1331 | 250 | 2656 | 1371 | 257 |
| | tons/yr | 585 | 302 | 57 | 409 | 211 | 40 | 377 | 194 | 36 | 498 | 257 | 48 | 513 | 265 | 50 |
| PM10 | lbs/day | 305 | 157 | 30 | 214 | 110 | 21 | 197 | 101 | 19 | 260 | 134 | 25 | 268 | 138 | 26 |
| | tons/yr | 56 | 29 | 5 | 39 | 20 | 4 | 36 | 19 | 3 | 48 | 25 | 5 | 49 | 25 | 5 |
| PM2.5 | lbs/day | 58 | 30 | 6 | 41 | 21 | 4 | 37 | 19 | 4 | 50 | 26 | 5 | 51 | 26 | 5 |
| | tons/yr | 11 | 5 | 1 | 7 | 4 | 1 | 7 | 4 | 1 | 9 | 5 | 1 | 9 | 5 | 1 |
| CO2 | lbs/day | 184963 | 95465 | 17900 | 129587 | 66884 | 12541 | 119312 | 61580 | 11546 | 157921 | 81508 | 15283 | 162348 | 83793 | 15711 |
| | tons/yr | 32743 | 16900 | 3169 | 22543 | 11635 | 2182 | 20756 | 10713 | 2009 | 27473 | 1457 | 273 | 2824 | 1457 | 273 |

Urbemios Output lbs/day

| | ROG | NOx | CO | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|
| Alt A | 293.98 | 413.57 | 4871 | 492.05 | 93.52 | 298328 |
| Alt B | 205.64 | 289.74 | 3413 | 344.75 | 65.51 | 209011 |
| Alt C | 189.46 | 266.77 | 3142 | 317 | 60 | 192438 |
| Alt D | 247 | 353.1 | 4160 | 420.1 | 79.85 | 254711 |
| Alt E | 256.96 | 362.96 | 4284 | 431.61 | 82.06 | 261852 |

Urbemis Output tons/year

| | ROG | NOx | CO | PM10 | PM2.5 | CO2 |
|---|---|---|---|---|---|---|
| Alt A | 59 | 88.9 | 943 | 89.8 | 17.08 | 52812 |
| Alt B | 40.93 | 61.76 | 659.66 | 62.92 | 11.96 | 36360 |
| Alt C | 37.7 | 56.86 | 607.36 | 57.93 | 11 | 33477 |
| Alt D | 49.45 | 75.26 | 804 | 76.66 | 14.58 | 44311 |
| Alt E | 51.2 | 77.36 | 827.73 | 78.77 | 14.98 | 4554.3 |

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (M) X1 | Y1 | X2 | Y2 | * TYPE | VPH | EF (G/MI) | H (M) | W (M) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. Link A | * | 1500 | 1200 | 1500 | 0 | * AG | 1800 | 6.6 | .0 | 22.2 |

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

| RECEPTOR | * | COORDINATES (M) X | Y | Z | * PRED BRG (DEG) | * CONC (PPM) |
|---|---|---|---|---|---|---|
| 1. Recpt 1 | * | 1560 | 600 | 1.8 | * 207. | * 1.9 |

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

| LINK DESCRIPTION | * LINK COORDINATES (M) * X1 | Y1 | X2 | Y2 | * TYPE | VPH | EF (G/MI) | H (M) | W (M) |
|---|---|---|---|---|---|---|---|---|---|
| A. Link A | * 1500 | 1200 | 1500 | 0 | * AG | 1970 | 6.6 | .0 | 22.2 |

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

| RECEPTOR | * COORDINATES (M) X | Y | Z | * PRED BRG (DEG) | * CONC (PPM) |
|---|---|---|---|---|---|
| 1. Recpt 1 | * 1560 | 600 | 1.8 | * 207. | * 1.9 |

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (M) X1 | Y1 | X2 | Y2 | * TYPE | VPH | EF (G/MI) | H (M) | W (M) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. Link A | * | 1500 | 1200 | 1500 | 0 | * AG | 2788 | 6.6 | .0 | 22.2 |

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

| RECEPTOR | * | COORDINATES (M) X | Y | Z | * BRG (DEG) | * PRED CONC (PPM) |
|---|---|---|---|---|---|---|
| 1. Recpt 1 | * | 1560 | 600 | 1.8 | * 225. | * 2.0 |

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (M) X1 | Y1 | X2 | Y2 | * TYPE | VPH | EF (G/MI) | H (M) | W (M) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. Link A | * | 1500 | 1200 | 1500 | 0 | * AG | 2588 | 6.6 | .0 | 22.2 |

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

| RECEPTOR | * | COORDINATES (M) X | Y | Z | * PRED BRG (DEG) | * CONC (PPM) |
|---|---|---|---|---|---|---|
| 1. Recpt 1 | * | 1560 | 600 | 1.8 | * 225. | * 2.0 |

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (M) X1 | Y1 | X2 | Y2 | * TYPE | EF VPH | H (G/MI) | W (M) | (M) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. Link A | * | 1500 | 1200 | 1500 | 0 | * AG | 2554 | 6.6 | .0 | 22.2 |

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

| RECEPTOR | * | COORDINATES (M) X | Y | Z | * BRG (DEG) | * PRED CONC (PPM) |
|---|---|---|---|---|---|---|
| 1. Recpt 1 | * | 1560 | 600 | 1.8 | * 224. | * 1.9 |

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (M) X1 | Y1 | X2 | Y2 | * TYPE | EF VPH | H (G/MI) | W (M) | (M) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. Link A | * | 1500 | 1200 | 1500 | 0 | * AG | 2468 | 6.6 | .0 | 22.2 |

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

| RECEPTOR | * | COORDINATES (M) X | Y | Z | * PRED BRG (DEG) | * CONC (PPM) |
|---|---|---|---|---|---|---|
| 1. Recpt 1 | * | 1560 | 600 | 1.8 | * 222. | * 1.9 |

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Cloverdale Northern Sonoma County
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 4 (D) VS= .0 CM/S
MIXH= 1000. M AMB= 1.7 PPM
SIGTH= 30. DEGREES TEMP= 28.0 DEGREE (C)

II. LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (M) X1 | Y1 | X2 | Y2 | * TYPE | EF VPH | H (G/MI) | W (M) | (M) |
|---|---|---|---|---|---|---|---|---|---|---|
| A. Link A | * | 1500 | 1200 | 1500 | 0 | * AG | 2272 | 6.6 | .0 | 22.2 |

III. RECEPTOR LOCATIONS AND MODEL RESULTS (WORST CASE WIND ANGLE)

| RECEPTOR | * | COORDINATES (M) X | Y | Z | * BRG (DEG) | * PRED CONC (PPM) |
|---|---|---|---|---|---|---|
| 1. Recpt 1 | * | 1560 | 600 | 1.8 | * 221. | * 1.9 |

## Greenhouse Gas (GHG) Emissions Calculations ALT A

Project Name: cloverdale
ESA Proj. Number: 207737

## Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

| | Annual Emissions | | |
|---|---|---|---|
| | pounds (lbs.) | Tons | Metric Tons |
| URBEMIS2007 Area Emissions | 1,827,900 | 914 | 829 |
| URBEMIS2007 Vehicle Emissions | 103,796,000 | 51,898 | 47,081 |
| **Total Emissions (area sources + vehicles)** | **105,623,900** | **52,812** | **47,910** |

## Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 11,766,259 kWh (kilowatt hours)/year
11,766 mWh (megawatt hours)/year

| | | Annual | | CO2 | Annual |
|---|---|---|---|---|---|
| | Emission Factor | Project | GHGs | Equivalent | CO2 Equivalent |
| Indirect GHG gases | lb/mWh | Electricity mWh | metric tons | Factor | Emissions (metric tons) |
| Carbon Dioxide (CO2) | 804.54 | 11,766 | 4,294 | 1 | 4294 |
| Nitrous Oxide (N2O) | 0.0037 | 11,766 | 0.0 | 296 | 6 |
| Methane (CH4) | 0.0067 | 11,766 | 0.0 | 23 | 1 |
| | | **Total Indirect GHG Emissions from Project Electricity Use=** | | | **4301** |

## Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

| | |
|---|---|
| **Area Sources** | **829** |
| **Vehicles** | **47,081** |
| **Electrical Use** | **4301** |
| **Total=** | **52,211** |

**Notes and References:**

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 208.8%
Percentage of 174 Million 0.030%

| | Tons from URBEMIS | Metric Tons |
|---|---|---|
| Construction | 1578 | 1432 |

## Greenhouse Gas (GHG) Emissions Calculations ALT B

Project Name: cloverdale
ESA Proj. Number: 207737

## Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

| | Annual Emissions | | |
|---|---|---|---|
| | pounds (lbs.) | Tons | Metric Tons |
| URBEMIS2007 Area Emissions | 1,192,000 | 596 | 541 |
| URBEMIS2007 Vehicle Emissions | 72,720,000 | 36,360 | 32,985 |
| **Total Emissions (area sources + vehicles)** | **73,912,000** | **36,956** | **33,526** |

## Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 8,814,561 kWh (kilowatt hours)/year
8,815 mWh (megawatt hours)/year

| | | Annual | | CO2 | Annual |
|---|---|---|---|---|---|
| | Emission Factor | Project | GHGs | Equivalent | CO2 Equivalent |
| Indirect GHG gases | lb/mWh | Electricity mWh | metric tons | Factor | Emissions (metric tons) |
| Carbon Dioxide (CO2) | 804.54 | 8,815 | 3,217 | 1 | 3217 |
| Nitrous Oxide (N2O) | 0.0037 | 8,815 | 0.0 | 296 | 4 |
| Methane (CH4) | 0.0067 | 8,815 | 0.0 | 23 | 1 |
| | | **Total Indirect GHG Emissions from Project Electricity Use=** | | | **3222** |

## Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

| | |
|---|---|
| **Area Sources** | **541** |
| **Vehicles** | **32,985** |
| **Electrical Use** | **3222** |
| **Total=** | **36,748** |

**Notes and References:**

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 147.0%
Percentage of 174 Million 0.021%

| | Tons from URBEMIS | Metric Tons |
|---|---|---|
| Construction | 1202 | 1090 |

## Greenhouse Gas (GHG) Emissions Calculations ALT C

Project Name: cloverdale
ESA Proj. Number: 207737

## Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

| | Annual Emissions | | |
|---|---|---|---|
| | pounds (lbs.) | Tons | Metric Tons |
| URBEMIS2007 Area Emissions | 1,135,240 | 568 | 515 |
| URBEMIS2007 Vehicle Emissions | 66,954,000 | 33,477 | 30,370 |
| **Total Emissions (area sources + vehicles)** | **68,089,240** | **34,045** | **30,885** |

## Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 8,325,941 kWh (kilowatt hours)/year
8,326 mWh (megawatt hours)/year

| | | Annual | | CO2 | Annual |
|---|---|---|---|---|---|
| | Emission Factor | Project | GHGs | Equivalent | CO2 Equivalent |
| Indirect GHG gases | lb/mWh | Electricity mWh | metric tons | Factor | Emissions (metric tons) |
| Carbon Dioxide (CO2) | 804.54 | 8,326 | 3,038 | 1 | 3038 |
| Nitrous Oxide (N2O) | 0.0037 | 8,326 | 0.0 | 296 | 4 |
| Methane (CH4) | 0.0067 | 8,326 | 0.0 | 23 | 1 |
| | | **Total Indirect GHG Emissions from Project Electricity Use=** | | | **3043** |

## Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

| | |
|---|---|
| **Area Sources** | **515** |
| **Vehicles** | **30,370** |
| **Electrical Use** | **3043** |
| **Total=** | **33,928** |

**Notes and References:**

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 135.7%
Percentage of 174 Million 0.019%

| | Tons from URBEMIS | Metric Tons |
|---|---|---|
| Construction | 1135 | 1030 |

# Greenhouse Gas (GHG) Emissions Calculations ALT D

Project Name: cloverdale
ESA Proj. Number: 207737

## Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

| | Annual Emissions | | |
|---|---|---|---|
| | pounds (lbs.) | Tons | Metric Tons |
| URBEMIS2007 Area Emissions | 544,000 | 272 | 247 |
| URBEMIS2007 Vehicle Emissions | 53,619,180 | 26,810 | 24,321 |
| **Total Emissions (area sources + vehicles)** | **54,163,180** | **27,082** | **24,568** |

## Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 5,094,287 kWh (kilowatt hours)/year
5,094 mWh (megawatt hours)/year

| | | Annual | | CO2 | Annual |
|---|---|---|---|---|---|
| | Emission Factor | Project | GHGs | Equivalent | CO2 Equivalent |
| Indirect GHG gases | lb/mWh | Electricity mWh | metric tons | Factor | Emissions (metric tons) |
| Carbon Dioxide (CO2) | 804.54 | 5,094 | 1,859 | 1 | 1859 |
| Nitrous Oxide (N2O) | 0.0037 | 5,094 | 0.0 | 296 | 3 |
| Methane (CH4) | 0.0067 | 5,094 | 0.0 | 23 | 0 |
| | | **Total Indirect GHG Emissions from Project Electricity Use=** | | | **1862** |

## Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

| | |
|---|---|
| **Area Sources** | **247** |
| **Vehicles** | **24,321** |
| **Electrical Use** | **1862** |
| **Total=** | **26,430** |

**Notes and References:**

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 105.7%
Percentage of 174 Million 0.015%

| | Tons from URBEMIS | Metric Tons |
|---|---|---|
| Construction | 424.39 | 385 |

## Greenhouse Gas (GHG) Emissions Calculations ALT E

Project Name: cloverdale
ESA Proj. Number: 207737

## Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

| | Annual Emissions | | |
|---|---|---|---|
| | pounds (lbs.) | Tons | Metric Tons |
| URBEMIS2007 Area Emissions | 1,058,000 | 529 | 480 |
| URBEMIS2007 Vehicle Emissions | 91,108,000 | 45,554 | 41,326 |
| **Total Emissions (area sources + vehicles)** | **92,166,000** | **46,083** | **41,806** |

## Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 5,341,600 kWh (kilowatt hours)/year
5,342 mWh (megawatt hours)/year

| | | Annual | | CO2 | Annual |
|---|---|---|---|---|---|
| | Emission Factor | Project | GHGs | Equivalent | CO2 Equivalent |
| Indirect GHG gases | lb/mWh | Electricity mWh | metric tons | Factor | Emissions (metric tons) |
| Carbon Dioxide (CO2) | 804.54 | 5,342 | 1,949 | 1 | 1949 |
| Nitrous Oxide (N2O) | 0.0037 | 5,342 | 0.0 | 296 | 3 |
| Methane (CH4) | 0.0067 | 5,342 | 0.0 | 23 | 0 |
| | | **Total Indirect GHG Emissions from Project Electricity Use=** | | | **1952** |

## Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

| | |
|---|---|
| **Area Sources** | **480** |
| **Vehicles** | **41,326** |
| **Electrical Use** | **1952** |
| **Total=** | **43,758** |

**Notes and References:**

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 175.0%
Percentage of 174 Million 0.025%

| | Tons from URBEMIS | Metric Tons |
|---|---|---|
| Construction | 1038 | 942 |

# Greenhouse Gas (GHG) Emissions Calculations

Project Name: Cloverdale WWTP
ESA Proj. Number: 207737

## Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

| | Annual Emissions | | |
|---|---|---|---|
| | pounds (lbs.) | Tons | Metric Tons |
| URBEMIS2007 Area Emissions | 0 | 0 | 0 |
| URBEMIS2007 Vehicle Emissions | 0 | 0 | 0 |
| **Total Emissions (area sources + vehicles)** | **0** | **0** | **0** |

## Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: 1,275,000 kWh (kilowatt hours)/year
1,275 mWh (megawatt hours)/year

| | | Annual | | CO2 | Annual |
|---|---|---|---|---|---|
| | Emission Factor | Project | GHGs | Equivalent | CO2 Equivalent |
| Indirect GHG gases | lb/mWh | Electricity mWh | metric tons | Factor | Emissions (metric to |
| Carbon Dioxide (CO2) | 804.54 | 1,275 | 465 | 1 | 465 |
| Nitrous Oxide (N2O) | 0.0037 | 1,275 | 0.0 | 296 | 1 |
| Methane (CH4) | 0.0067 | 1,275 | 0.0 | 23 | 0 |
| | | | **Total Indirect GHG Emissions from Project Electricity Use=** | | **466** |

## Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

| | |
|---|---|
| **Area Sources** | **0** |
| **Vehicles** | **0** |
| **Electrical Use** | **466** |
| **Total=** | **466** |

**Notes and References:**

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 35 (CCARRP) gives CO2 output emission rate (lbs/mWh)
804.54 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

lbs/metric ton = 2204.62

Percentage of 25,000 1.9%
Percentage of 174 Milli 0.0003%

| | Tons from URBEMIS | Metric Tons |
|---|---|---|
| Construction | 239.18 | 217 |

# Appendix D
## Biological Assessment

ESA

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT

## Biological Assessment

Prepared for
U.S. Department of Interior
United States Bureau of Indian Affairs
Pacific Region
2800 Cottage Way, Sacramento CA
95825

March 2009

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT

## Biological Assessment

Prepared for
U.S. Department of Interior
United States Bureau of Indian Affairs
Pacific Region
2800 Cottage Way, Sacramento CA
95825

March 2009

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Petaluma

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Tampa

Woodland Hills

207737

ESA

# TABLE OF CONTENTS

## Cloverdale Rancheria Fee to Trust and Resort Casino Project Biological Assessment


| | | Page |
|---|---|---|
| **A.** | **Executive Summary** | **A-1** |
| **B.** | **Project Description** | **B-1** |
| | Project Location | B-1 |
| | Action Area | B-1 |
| | Proposed Action | B-3 |
| **C.** | **Existing Environment** | **C-1** |
| | Methodology | C-1 |
| | Regional Setting | C-1 |
| | Project Site Setting | C-2 |
| | Potentially Affected Species | C-11 |
| | Critical Habitat | C-14 |
| | Essential Fish Habitat | C-15 |
| **D.** | **Effects of the Action** | **D-1** |
| | Overview of Potential Effects | D-1 |
| | Effects Summary | D-2 |
| **E.** | **Determination of Effect** | **E-1** |
| **F.** | **References** | **F-1** |

### Appendices

| | | |
|---|---|---|
| A. | Drainage Study | A-1 |
| B. | USFWS Species List | B-1 |

### List of Figures

| | | |
|---|---|---|
| B-1 | Regional Location | B-2 |
| B-2 | Aerial Photograph | B-4 |
| B-3 | Proposed Action Site Plan | B-5 |
| C-1 | Habitat and Water Features | C-3 |
| D-1 | Proposed Action Habitat Impacts | D-3 |

### List of Tables

| | | |
|---|---|---|
| A-1 | List of Potentially Affected Species | A-1 |
| B-1 | Proposed Trust Parcels | B-1 |
| B-2 | Proposed Action Facilities | B-3 |
| C-1 | Wildlife Habitats within the Project Study Area | C-2 |
| C-2 | Potential Corps Jurisdictional Features within the Project Study Area | C-8 |
| D-1 | Potential Effects to Upland Wildlife Habitat Types – Alternative A | D-4 |
| D-2 | Potential Direct Effects to Waters of the U.S. – Proposed Action | D-4 |

# SECTION A
# Executive Summary

The Cloverdale Rancheria of Pomo Indians have proposed an application to have the Bureau of Indian Affairs take 69.77± acres into federal trust for the subsequent development of a destination resort and casino (Proposed Action). The project site is located in northern Sonoma County, California within the sphere of influence of the City of Cloverdale. This Biological Assessment (BA) has been prepared pursuant to Section 7(c) of the Endangered Species Act (16 U.S.C. 1536(c) and 50 CFR 402) to identify federally listed species, designated critical habitat, and Essential Fish Habitat (EFH) within the Action Area that could be affected by the Proposed Action. Federally listed species and habitats that have the potential to be affected by this proposed project are listed in **Table A-1**.

**TABLE A-1**
**LIST OF POTENTIALLY AFFECTED SPECIES**

| Species | Federal Status | Suitable Habitat | Potential for Project to Effect |
|---|---|---|---|
| **Invertebrates** | | | |
| *Syncaris pacifica* California freshwater shrimp | Endangered | Occurs in 17 stream segments within Marin, Napa and Sonoma counties. Nearest documented occurrence in Franz Creek (Russian River tributary) east of Healdsburg. Low-gradient stream pool areas of low-elevation, living among exposed live tree roots. | No effect. No suitable habitat within Action Area. |
| **Fish** | | | |
| *Eucyclogobius newberryi* Tidewater goby | Endangered | Brackish lagoons formed by sandbars where streams feed into the ocean. | No effect. No suitable habitat within the Action Area. |
| *Hypomesus transpacificus* Delta smelt | Threatened | Only in the Sacramento-San Joaquin Delta. | No effect. Action Area is not within the range of species. |
| *Oncorhynchus mykiss* Central Valley steelhead | Threatened | Spawning in the Sacramento and San Joaquin Rivers and associated tributaries. | No effect. Action Area is not within the range of species. |
| *Oncorhynchus tshawytscha* California Coastal chinook salmon | Threatened/ Designated Critical Habitat | Northern California coastal streams where suitable spawning and rearing habitat occurs. | **May effect**. Within ESU for species. Only hatchery stock with no recent accounts of wild stock occurrences in the watershed. Most likely extirpated from Russian River. |
| *Oncorhynchus mykiss* Central California Coastal steelhead | Threatened/ Designated Critical Habitat | Northern California coastal streams where suitable spawning and rearing habitat occurs. | **May effect**. Within ESU for species. Lower reaches of Porterfield Creek may provide suitable rearing habitat. |

**TABLE A-1**
**LIST OF POTENTIALLY AFFECTED SPECIES**

| Species | Federal Status | Suitable Habitat | Potential for Project to Effect |
|---|---|---|---|
| *Oncorhynchus kisutch* Central California Coast coho salmon | Endangered/ Designated Critical Habitat | Northern California coastal streams where suitable spawning and rearing habitat occurs from Punta Gorda south to the San Lorenza River. | **May effec**t. Within ESU for species. Lower reaches of Porterfield Creek may provide suitable rearing habitat. Potential downstream water quality effects. |
| **Amphibians** | | | |
| *Rana aurora draytonii* California red-legged frog | Threatened | Occurs in a broad range of freshwater and associated upland habitats throughout the Coast Range from Marin County south, often found in perennial to seasonal drainages with dense vegetation. | No effect. Outside of known range of species. |
| **Birds** | | | |
| *Brachyramphus marmoratus* Marbled murrelet | Threatened | Open ocean near rocky coasts. Potentially nesting up to 45 miles inland on the ground or trees. | No effect. No suitable nesting habitat within Action Area. Site experiences a high level of human disturbance. |
| *Strix occidentalis caurina* Northern spotted owl | Threatened | Nests in dense old growth and multi-layered mixed conifer habitats in Northern California. | No effect. No suitable nesting habitat within Action Area. |
| **Plants** | | | |
| *Cordylanthus tenius ssp. capillaris* Pennell's bird's-beak | Endangered | Closed cone coniferous forest and chaparral in serpentine soils. | No effect. No suitable habitat exists in the Action Area. |
| **Essential Fish Habitat** | | | |
| Pacific Coast Chinook Salmon | Designated | Pacific Ocean, and unimpeded drainages through out Western U.S. coastal, valley, and foothill ranges. | **May effect**. Lower reaches of Porterfield Creek may provide suitable rearing habitat. Potential downstream water quality effects. |

SOURCE: California Natural Diversity Database (2009), USFWS (2008)

As shown in Table A-1, up three federally listed salmonids may be affected by the Proposed Action, as well as Essential Fish Habitat for Pacific Coast Chinook salmon. The potential effects include indirect effects associated with storm water discharges to the Russian River during construction and operation. Mitigation measures have been proposed to minimize these potential indirect effects. Based on this evaluation, we have determined that the Proposed Action will have no effect upon the following species:

- California freshwater shrimp, V *Syncaris pacifica* (E)
- Tidewater goby, *Eucyclogobius newberryi* (E)
- Delta smelt, *Hypomesus transpacificus* (T)
- Central Valley steelhead, *Oncorhynchus mykiss* (T)
- California red-legged fro*g, Rana aurora draytonii* (T)
- Marbled murrelet, *Brachyramphus marmoratus* (T)

- Northern spotted owl, *Strix occidentalis caurina* (T)
- Pennell's bird's-beak , *Cordylanthus tenius* ssp. *Capillaries* (E)

We have determined that the Proposed Action may effect, but is not likely to adversely affect, the following species and their associated critical habitat:

- California Coastal chinook salmon, *Oncorhynchus tshawytscha* (T)
- Central California Coastal steelhead, *Oncorhynchus mykiss* (T)
- Central California Coast coho salmon, *Oncorhynchus kisutch* (E)

We have determined that the Proposed Action may effect, but is not likely to adversely affect, the following Essential Fish Habitat:

- Pacific Coast Chinook Salmon

# SECTION B
# Project Description

## Project Location

The Project Site is located in the northern end of unincorporated Sonoma County, with a small portion located within the City of Cloverdale limits. The proposed fee-to-trust transfer includes the six contiguous parcels listed in **Table B-1**. These parcels contain a gross acreage of approximately 69.77-acres. Although a majority of the Project Site is located outside of the limits of the City of Cloverdale, it is within the City's sphere of influence for the purposes of General Plan compliance. The location corresponds to Township 11 North, Range 10 West, Sections 19 and 20 of the Cloverdale USGS 7.5-minute topographic quadrangle map (USGS, 1980). The Project Site is situated immediately east of Highway 101, and is bordered by Asti Road to the west and Lile Lane to the north and east. Santana Drive runs parallel to the southern boundary of the Project Site (**Figure B-1**). The gross acreage includes right-of-way and easements which will remain on title. The term Project Site throughout the EIS refers to the acreage of 69.77 where Tribal development and thus environmental impacts may occur.

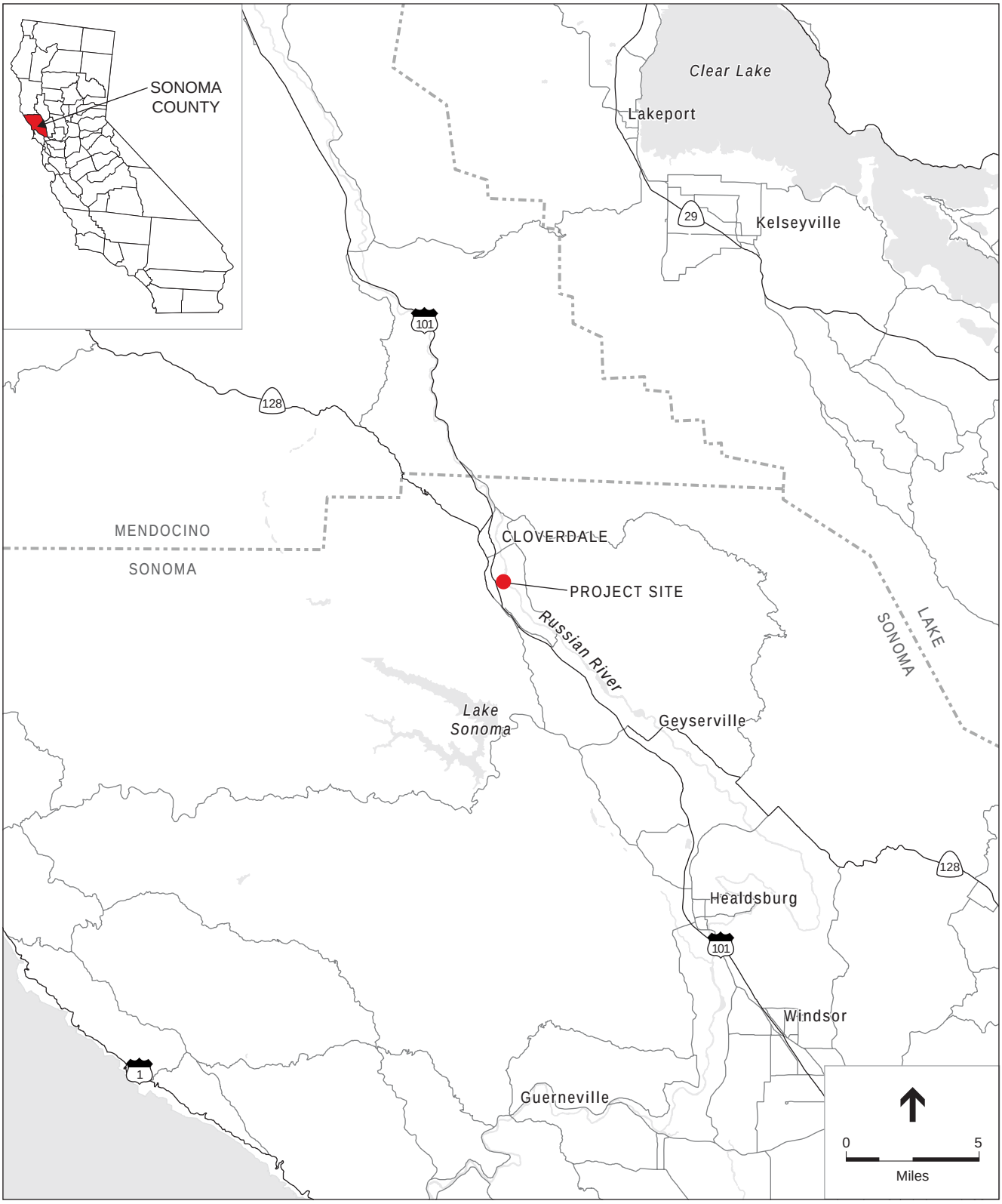
**TABLE B-1**
**PROPOSED TRUST PARCELS**

| Assessor's Parcel Number | Acreage | Jurisdiction |
|---|---|---|
| 116-310-020 | 2.05 | City of Cloverdale |
| 116-310-005 | 12.22 | Sonoma County |
| 116-310-035 | 16.44 | Sonoma County |
| 116-310-039 | 5.00 | Sonoma County |
| 116-310-040 | 8.53 | Sonoma County |
| 116-310-044 | 25.53 | Sonoma County |
| **Total** | **69.77** | |

Source: Adobe Associates, Inc., 2009 and ESA, 2009

## Action Area

The Action Area is defined as all areas that may be affected directly or indirectly by the Federal Action, and not merely defined by the limit of disturbance. The Action Area for this BA is defined as the reasonable extent of potential effects of the Proposed Action, and includes the Project Site, areas immediately adjacent to the Project Site, and downstream areas, including downstream areas of Coyote Creek, Porterfield Creek, and the Russian River that may be affected by pollutant discharges to these features from actions on the Project Site.




Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

SOURCE: ESRI, 2006; and ESA, 2008

**Figure B-1**
Regional Location

# Proposed Action

The Proposed Action consists of the placement of 6 parcels of land totaling 69.77± acres into federal trust for the Tribe and the subsequent development of a casino, hotel, convention center, entertainment center and other ancillary facilities (**Figures B-2** and **B-3**).

## Land Trust Action

The Proposed Action would occur as the result of the proposed land trust action that would be made in accordance with the procedures set forth in 25 C.F.R. Part 151 for the six parcels of land that makes up the Project Site. The fee-to-trust process includes an application which provides detailed information on the land being taken into trust, an effects analysis which details the potential effects on the surrounding community, and consultation to determine the costs and benefits the fee-to-trust transfer would have for the Tribal Government and the affected local jurisdiction(s). If the BIA finds that the fee-to-trust proposal meets all statutory requirements and the benefits outweigh any potential negative effects, the BIA may approve the Tribal Government's application and take the proposed lands into trust for the Tribal Government.

## Gaming Management Contract Approval

That National Indian Gaming Regulatory Commission (NIGC), established in 1988 by the Indian Gaming Regulatory Act (IGRA), is the federal agency charged with the oversight of tribal gaming enterprises. The Tribe and its management partners have entered into a development and management contract for the construction and operation of the Proposed Action. This management agreement will be reviewed by the NIGC to ensure consistency with IGRA, NIGC regulations, and other Tribal ordinances and policies.

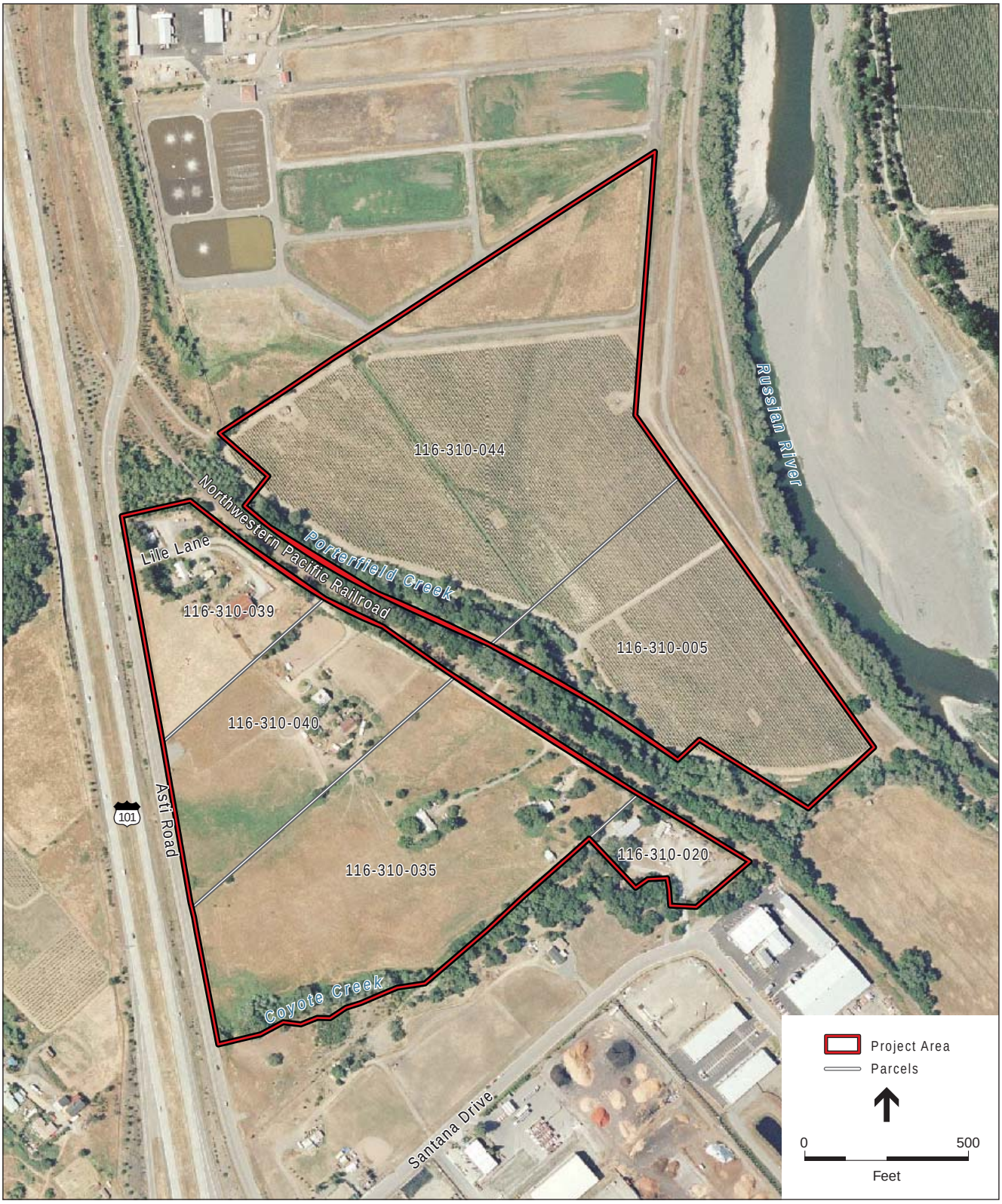
## Project Site Development

The proposed facilities under Proposed Action are summarized in **Table B-2**. Figure B-3 shows a detailed site plan for proposed development.

**TABLE B-2**
**PROPOSED ACTION FACILITIES**

| Facility Component | | Number | Size (Sq Ft) |
|---|---|---|---|
| Casino (2,000 slots, 45 tables) | | 2,270 Positions | 80,000 |
| Hotel | | 244 Rooms | 287,000 |
| Convention Center | | 984 Seats | 48,600 |
| Entertainment Center | | 1,300 Seats | 28,100 |
| Food & Beverage | | 984 Seats | 52,445 |
| Resort Support Facilities | | | 79,455 |
| Tribal Government Building | | | 20,000 |
| | ***Total*** | | ***595,600*** |
| Parking Spaces | | | |
| Surface Parking | | +/- 100 Spaces | |
| Garage Parking | | +/- 3,300 Spaces | |
| | ***Total*** | ***3,400 Spaces*** | |

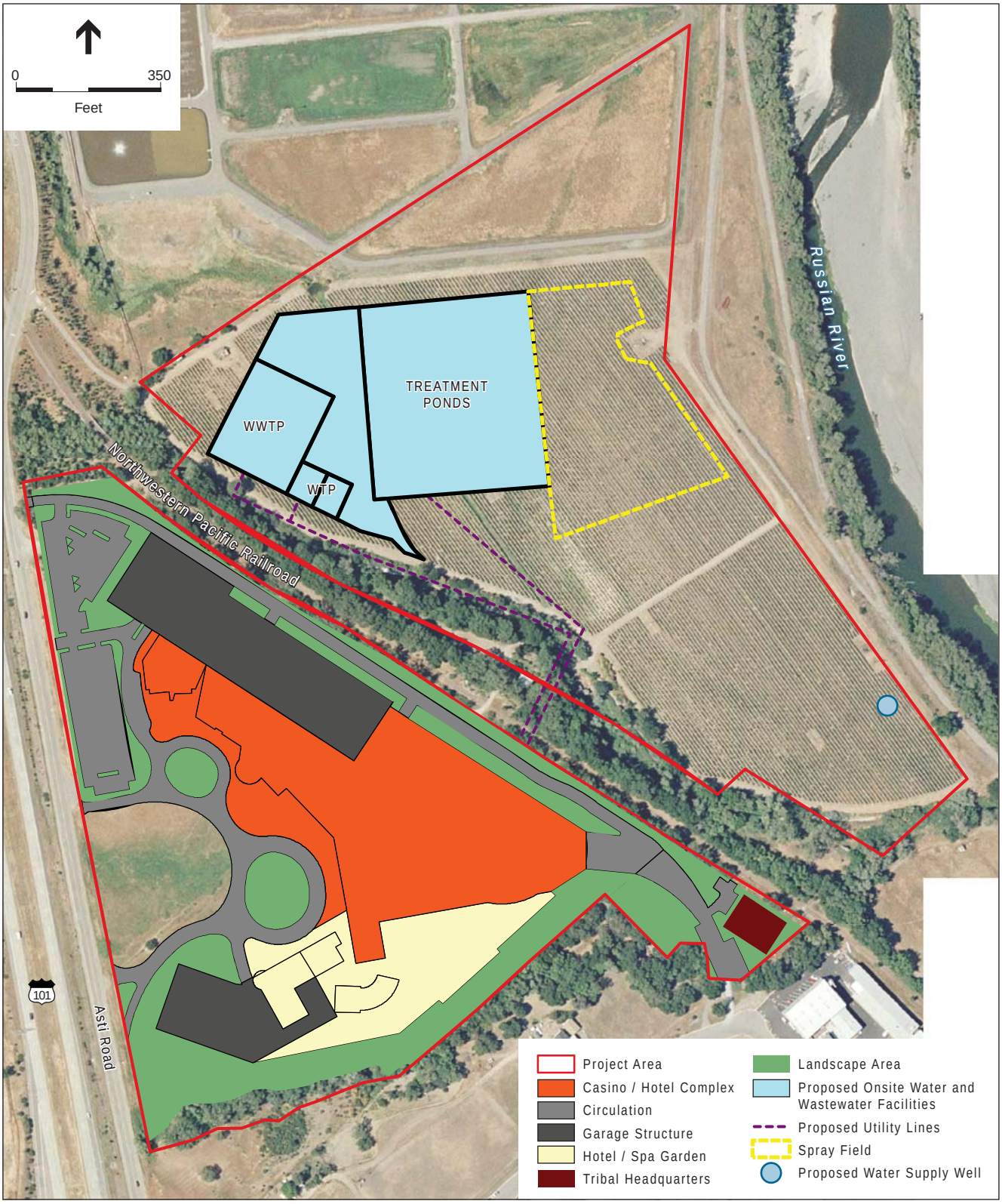
Source: JCJ Architecture, 2008; ESA, 2009




SOURCE: NAIP, 2006; GlobeXplorer, 2007; and ESA, 2008

Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

**Figure B-2**
Aerial Photograph




SOURCE: JCJ Architects, 2008; Adobe Associates, Inc., 2009; and ESA, 2009



**Figure B-3**
Proposed Action Site Plan

## Casino

The proposed two-story casino would consist of a mixture of uses including a gaming area, food and beverage facilities, retail shopping, administrative space and secure back-of-house facilities. The gaming area would include 80,000 square-feet of gaming with approximately 2,000 slot machines and 45 gaming tables. A non-smoking area is included within the main gaming hall. Food and beverage facilities would compose 52,445 square feet of the casino area and include a casual dining restaurant, noodle restaurant, pub/sports bar, buffet, food court, casino lounge, casino bar, and VIP lounge. The combined dining areas could accommodate up to 984 seats. Support facilities compose 79,455 square feet; the main components of this area include building support, casino support, administrative offices, public spaces, security, surveillance and employee dining and services. The casino would be open 24 hours a day.

The Tribe would obtain a license to serve alcohol from the State of California Department of Alcoholic Beverage Control. Casino patrons would be required to be 21 years of age or older in areas where alcohol is served and a "Responsible Alcoholic Beverage Policy" would be adopted to include provisions related to I.D. verification and refusal of service to individuals who are visibly intoxicated.

## Hotel

The 287,000 square-foot hotel would be located south of the casino. The hotel would be up to four stories tall and provide for 244 guest rooms distributed between floors. The hotel area also includes food and beverage facilities, reception and lobby areas, retail, recreation, back-of-house and building support. Food and beverage facilities include a coffee shop, wine-experience restaurant, and lobby lounge. The recreation areas include a spa, salon, health club, pool and kids' entertainment area. The hotel would be open 24 hours a day.

## Convention Center

The proposed 48,600 square-foot convention center would be located east of the casino and food and beverage facilities. The two-story convention center would provide space for both large events and smaller meetings. The facility could accommodate up to 984 seats in the events hall for large events. Four meeting rooms provide space for smaller meetings. Each meeting room could accommodate up to 60 seats or 240 seats total. The meeting rooms are not intended to be in use during use of the events hall for larger events.

## Entertainment Center

The 28,100 square-foot entertainment center would be located northwest of the casino. The two-story entertainment center would feature a showroom and stage for non-gaming related activities such as local and regional theatre and musical performances. The facility could accommodate up to 1,300 seats.

## Parking and Circulation

The Proposed Action would include approximately 3,400 parking spaces for patrons and employees through garage and surface parking. A breakdown of the spaces is provided in **Table B-1**. The parking garage structure would be four to five stories above grade. The proposed parking garage is adjacent to and north of the casino. On-site roads would be constructed to provide access from site entrances to proposed parking areas.

## Tribal Government Building

An approximately 20,000 square-foot building on the eastern end of the project site would be dedicated to a tribal government workspace and offices.

## Ancillary Components

The major ancillary components include the drainage system, water supply, wastewater service, fire protection, and law enforcement for the project site.

### *Drainage*

A preliminary drainage study was prepared and is included in **Appendix A**. The development includes features to reduce the level of stormwater runoff to pre-construction flows for up to a 10-year storm event.

Stormwater drainage west of the railroad tracks, exits the project site from four culvert outfall locations. The existing culvert locations and sizes will be maintained. On-site improvements include subterranean detention systems, upland drainage release systems and a 30-inch storm drain pipe to collect flows near the wetland mitigation area. An 18-inch culvert along the northeast boundary will be extended and energy dissipation will be provided at the end of the culvert, which drains to Porterfield Creek. Water lines will be removed from the 30-inch culvert along the northeast boundary. The development would route concentrated flows to the southern project boundary where existing sheet flow discharges occur. Upland drainage release systems are proposed at a minimum of two locations along the southern boundary. The upland drainage release system would consist of a field of large diameter rocks placed near the existing grade surface to spread concentrated flows to a sheet flow condition prior to being discharges on the surface to the unnamed creek. Stormwater drainage east of the railroad tracks exits the property at two locations. These drainage systems will be left in their natural condition.

To improve drainage conditions, pervious concrete surfaces are proposed for most driveway and surface parking areas. A subterranean detention system is proposed under surface parking areas to further mitigate for high-intensity rain events. The subterranean detention system would include a network of large diameter pipes for storage and an outlet structure which restricts discharge from the detention system to pre-development flow rates or less. The system would be designed to accommodate flows from at least the 10-year storm event which requires a volume of 60,100 cubic feet. Excess flows from greater storm events would bypass, via culverts, the detention facility and discharge into the upland drainage release system. Sump pumps would be located on the bottom

floors of the garage structure to provide drainage for seepage and garage floor cleaning. Sump pump discharges will be treated with a sand/oil separator and discharged to the sanitary sewer system.

## *Water Facilities*

The annual water demand for the project is estimated to be 74.6 acre-feet or 24.3 million gallons. The average daily demand is estimated to be 66,639 gallons with a constant withdrawal rate of 46 gallons per minute (gpm). The peak daily flow is estimated to be 126,147 gallons with a required pump rate of 88 gpm. A water supply report was prepared for the project and is included as (Adobe Associates Inc., 2009a).

Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected. If wastewater service is provided privately, the project would use tertiary –level treated wastewater for fire protection and irrigation uses. Fire protection uses include fire sprinkler systems and fire hydrants on the project site. Reclaimed water would be supplied through a 12-inch pipe originating at the pump house at the wastewater treatment storage pond. An estimated volume of 500,000 gallons of reclaimed water will be retained in an above ground storage pond. Fire pumps would be used to elevate pressure in the reclaimed water main during actual fire events. When pressure in the reclaimed water main exceeds 70 pounds per square inch, pressure-reducing devices on irrigation lines will be utilized. Irrigation use includes landscape plantings and water features. Reclaimed water for irrigation purposes would be stored near wastewater facilities in an above-ground storage tank with a volume of approximately 40,000 gallons. Anticipated peak landscape irrigation demand is 20,000 gallons per day.

Treated wastewater for toilet flushing purposes would be initially stored with landscape irrigation water. A separate and redundant pumping and plumbing system would be required to allow the use of recycled wastewater for toilet flushing.

### *Private Option*

Under the private option, the Tribe would construct and maintain water supply facilities on the project site. Facilities would include a groundwater well, water treatment plant, water storage tanks, a pumping system (including pressurized storage) and a piped delivery system. A separate and redundant pump and piping system would be required for emergency fire flows (fire sprinklers and fire hydrants). The water facilities would be constructed above anticipated flood elevations. The distribution lines would cross the railroad easement between the project parcels.

An on-site well would be constructed on the project site, east of the railroad tracks. The proposed location of private water facilities are shown on **Figure B-3**. The distribution system would provide domestic water demands while irrigation and fire flows would be provided by the reclaimed water supply. The distribution system would include approximately 2,500 lineal feet of 6-inch water main. A suspended domestic water pipe crossing over Porterfield Creek is proposed with support structures built outside of the creek banks.

#### *Municipal Option*

Under the municipal option, the Tribe would contract with the City of Cloverdale for water service. Under this option the 8-inch onsite water line would also be relocated along the southern project boundary. A 12-inch or 16-inch public water main would need to be constructed along Asti Road to connect the project to the City's water supply. Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected.

### *Wastewater Facilities*

Wastewater service would be provided either by facilities on the project site (private option) or by the City of Cloverdale (municipal option). The annual wastewater flow for the project is estimated to be 33.6 million gallons with a daily average of 92,023 gallons (Adobe Associates Inc., 2009b).

#### *Private Option*

Under this option, wastewater services for the Proposed Action would be privately provided by a new on-site collection system, wastewater treatment plant (WWTP) and sprayfields. The proposed location of private wastewater facilities are shown on **Figure B-3**.

The collection system would include the construction of approximately 2,500 lineal feet of 8-inch pipe. Flows would be conveyed from the project facilities through the railroad easement to the WWTP located east of the railroad tracks. The sewer crossing would require an encroachment permit from the railroad to install pipe within the railroad right-of-way and under the tracks. Pipe construction under the tracks would utilized directional drilling or jack and bore drilling for installation. Crossing over Porterfield Creek is proposed via a suspended pipe over the creek, with support structures constructed outside of the creek banks.

The WWTP would treat wastewater to a tertiary level for reuse and disposal. The WWTP would consist of initial screening and transfer to an equalization tank, treatment in a constant flow membrane bioreactor, chlorination and transfer to an effluent pump station. Treated effluent would be transferred to either the aerated storage pond or recycling storage for landscape irrigation and fire suppression. Sludge would be collected in the bioreactor periodically and removed and stored prior to off-site transfer to an approved disposal facility.

Treated wastewater would be stored in an above ground storage pond sized to accommodate peak project wastewater flows. The wastewater storage pond is sized to account for project wastewater generation, 100-year rainfall event, evaporation and discharge of treated wastewater onsite. The storage pond will be enclosed by an earthen embankment, the top of which will be at least 2 feet above anticipated flood levels. The pond will be lined to prevent infiltration into the ground with either a natural soil liner or artificial welded seam plastic liner. The pond will be fitted with an aeration system designed to maintain an aerobic condition in the pond. A wet well and fire pump system would be located at the pond for fire flows. A floating intake system will be installed to permit withdrawal of stored water to be filtered and discharged to the wastewater disposal field.

Treated effluent would be filtered and discharged to a spray irrigation disposal field on the eastern portion of the project site and landscape area on the western portion of the project site. The spray irrigation disposal field is located outside of the 600 foot radius for the proposed well site, South Cloverdale Water System well, and Six-Acre Water System well. The disposal field will be designed using soil absorption rates and irrigation absorption capacity for the selected non-food crop vegetation and landscaping. Assuming a soil absorption rate of 0.8 gallons per square foot per day for the disposal field and 0.6 gallons per square foot per day for the landscape area, approximately 4 acres of disposal field and 2.5 acres of landscape area would be required. No discharge of treated wastewater would occur from October 1 to May 14.

#### Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for wastewater service. The City of Cloverdale has an existing 18-inch sewer main which runs along the southern and northeastern project boundary.

### *Fire Protection and Emergency Medical Services*

The Tribe would contract with local service providers for fire protection and emergency medical services. It is anticipated that the Tribe would contract with the Cloverdale Fire Protection District (CFPD) and Cloverdale Health Care District for fire protection and emergency medical services, including ambulance transport. On-site defibrillators would be located onsite and staff would be trained to operate defibrillator equipment prior to emergency service provider arrival.

### *Security and Law Enforcement*

The Tribe would provide 24-hour security surveillance of proposed facilities and parking areas through the use of private security guard patrols and security surveillance equipment typical of casino gaming facilities. The Tribe would also work cooperatively with area law enforcement agencies such as the Sonoma County Sheriff, City of Cloverdale Police Department, and the California Highway Patrol. Either the City of Cloverdale Police Department or Sonoma County Sheriff's Department would provide primary law enforcement services.

## Construction Techniques

The Tribal Government will adopt the development standards prescribed by the California Building Code (CBC) including all fire, plumbing, electrical, mechanical, and seismic standards. All electrical systems and equipment will be grounded in compliance with the National Electric Code (NEC) and lighting will be at levels suggested in the Illumination Engineering Society handbook and in accordance with the California Title 24 Energy Code. In addition, the Proposed Action will comply with the Federal Americans with Disabilities Act (ADA), P.L. 101-336, as amended, 42 U.S.C Section 12101 et seq.

The project will be constructed in a single phase, beginning in the spring of 2010. Project construction is expected to be completed late spring to early summer 2012 for a total construction length of 24-28 months. Infrastructure improvements would be constructed first, followed by construction of the

main gaming hall, parking structure, hotel, convention center, entertainment center and tribal administration building. Construction would occur daily between 7 a.m. and 6 p.m. The construction period may vary slightly depending on the weather. Construction and related activities would directly employ 75 to 85 people continuously over the 24 to 28 month construction period. On-site construction storage space for equipment and materials will be required during the construction period. Staging areas for construction activities will be appropriately designated onsite. Project construction involves grading and excavation for building pads, parking lots, and utility lines.

Typical construction activities would include:

- Site preparation – tree and brush removal, structure demolition, and off-site disposal and recycling of non-reusable demolished material.
- Earthwork – grading, excavation, soils processing, backfill, import of additional fill material (if necessary), off-site disposal of excess or unsuitable materials.
- Paving – Delivery, placement, and compaction of base material. Asphalt material delivery, placement, and paving.
- Concrete – forming, rebar placement, finishing, concrete delivery, and placement
- Pipelines – on-site (and potentially offsite) trenching and field welding
- Structural steel work – assembly and welding
- Mechanical equipment and piping installation
- Electrical/instrumentation work
- Steel and/or wood framing
- Stucco and/or fiber cement siding
- Masonry construction

Construction Equipment may include, but is not limited to the following:

- Earthmovers
- Fork lifts
- Cranes
- Concrete trucks and pumping equipment
- Dump trucks and flat bed delivery trucks
- Water trucks
- Paving, stucco, and concrete equipment
- Equipment necessary for wood and steel construction
- Power generators

In addition to project development, an area for potential wetland mitigation has been designated on the project site. As shown on the site plan this area is located on the west side of the project site adjacent to the project boundary and Asti Road.

# Avoidance and Minimization Measures

In order to minimize effects of the Proposed Action and to provide mitigation for anticipated impacts, a number of Best Management Practices (BMPs) and avoidance measures have been incorporated into the project design.

## Water Quality and Aquatic Habitat

Proposed source treatment controls for the project site include the following (design locations and examples included in **Appendix A**):

- Implementation of BMPs during construction as detailed within a Storm Water Pollution Prevention Plan and erosion and sediment control plan
- Use of slope protection practices, including hydro-seeding, planting, soil reinforcement mats, and retaining walls to prevent erosion and sediment transport
- Design landscaping to prevent sediment transport to storm drain systems
- Design landscaping to mosquito vector control requirements, thereby avoiding water ponding
- Use of porous concrete surfacing in driveways and parking areas
- Treat runoff in landscaping or porous concrete prior to storing in stormwater detention facility
- Use of upland drainage release system to release water to existing creeks (instead of a direct discharge into creeks)
- Discharge roof drainage directly to landscape or porous concrete surfaces, thereby allowing treatment prior to entering storm drain system
- Incorporate Integrated Pest Management principles and techniques for design and maintenance of landscaping
- Use of bioswales to channel and treat surface water
- Equipment and soil stock areas shall be placed at least 50 feet away from aquatic water sources.

# SECTION C
# Existing Environment

## Methodology

The information contained in this section is based upon field reconnaissance, agency consultation, literature searches, and database queries. The following sources were reviewed to prepare for field reconnaissance:

- Digital color aerial photographs (Spring 2007);
- *Soil Survey of Sonoma County, California* (NRCS, 2008);
- *National Hydric Soils List for California, Sonoma County* (NRCS, 2008);
- California Natural Diversity Database, Rarefind 3 computer program (CDFG, 2009);
- List of Federal Endangered and Threatened Species that may be Affected by Actions in the Asti and Cloverdale, California 7 ½ Minute Quadrangles (USFWS, 2008); and
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants found in the Asti, Big Foot Mountain, Cloverdale, Geyserville, Highland Springs, Hopland, Jimtown, Keyserville, The Geysers, Tombs Creek, Warm Springs Dam, and Yorkville California 7 ½ Minute Quadrangles (CNPS, 2007).

In addition to these references, ESA biologists reviewed species literature and other reports pertinent to the Action Area. All of the above resources were used to determine the potential for federally listed species to occur in the Action Area.

Field surveys of biological resources included a reconnaissance-level inventory of plants and animals observed in the Action Area, habitat assessments for special status species, and a delineation of jurisdictional wetlands. The delineation has not been verified by the U.S. Army Corps of Engineers (Corps). Surveys were conducted by ESA biologists on March 18 and 19, 2008, and January 14, 2009. Habitats were mapped using a Global Positioning System (GPS) data logger, and field notes were recorded in field notebooks.

## Regional Setting

The Action Area is located west of the Russian River and in the northeastern portion of Sonoma County, California. This region is characterized by rolling hills with instances of steep, rugged slopes that are densely vegetated with native grasses, trees, and brush. Regional natural plant communities in the Project Site include those that are common to the Central Franciscan subsection of the Northern California Coast Ranges, such as mixed oak, mixed conifer forest, and needlegrass grassland (Miles and Goudey, 1997). Climate is typically temperate and humid. Typical elevations within this ecological subsection range from 300 feet above sea level up to 6,175 feet at Big Signal

Peak. Mean annual precipitation is approximately 35 to 110 inches. Mean annual temperature ranges from 40 to 58 degrees Fahrenheit (Miles and Goudey, 1997).

# Project Site Setting

The Project Site covers approximately 69.77 rural acres located in unincorporated Sonoma County. A small south portion of the Project Site is within the City of Cloverdale's boundaries. The Project Site is composed of six parcels: Assessor Parcel Numbers (APN) 116-310-039, 116-310-040, 116-310-035, 116-310-020, 116-310-044, and 116-310-005. Although a majority of the Project Site is located outside of the limits of the City of Cloverdale, it is within the City's sphere of influence for the purposes of General Plan compliance. The Project Site is situated immediately east of Highway 101, and is bordered by Asti Road to the west. Santana Drive runs parallel to the southern boundary of the Project Site. The portion of the Project Site northeast of the railroad tracks currently consists of grape vineyards, which are bordered to the east by Kelly Road and the Russian River. The portion of the Project Site southwest of the railroad tracks currently consists of rural residences and pasture land. Surrounding land uses include the City of Cloverdale's wastewater treatment facility to the north, industrial warehouses and storage to the south, Highway 101, residential neighborhoods, and vineyards to the west, and open space (consisting of the Russian River corridor) to the east.

Elevation at the Project Site ranges from 302 to 332 feet above mean sea level (msl), sloping very gently in a southeasterly direction. Portions of Coyote Creek (channel I-2), a relatively permanent surface tributary, crosses the southern portion of the Project Site; the channel is a tributary to Porterfield Creek (channel I-1), which flows generally south between the parcels along the railroad and the Russian River.

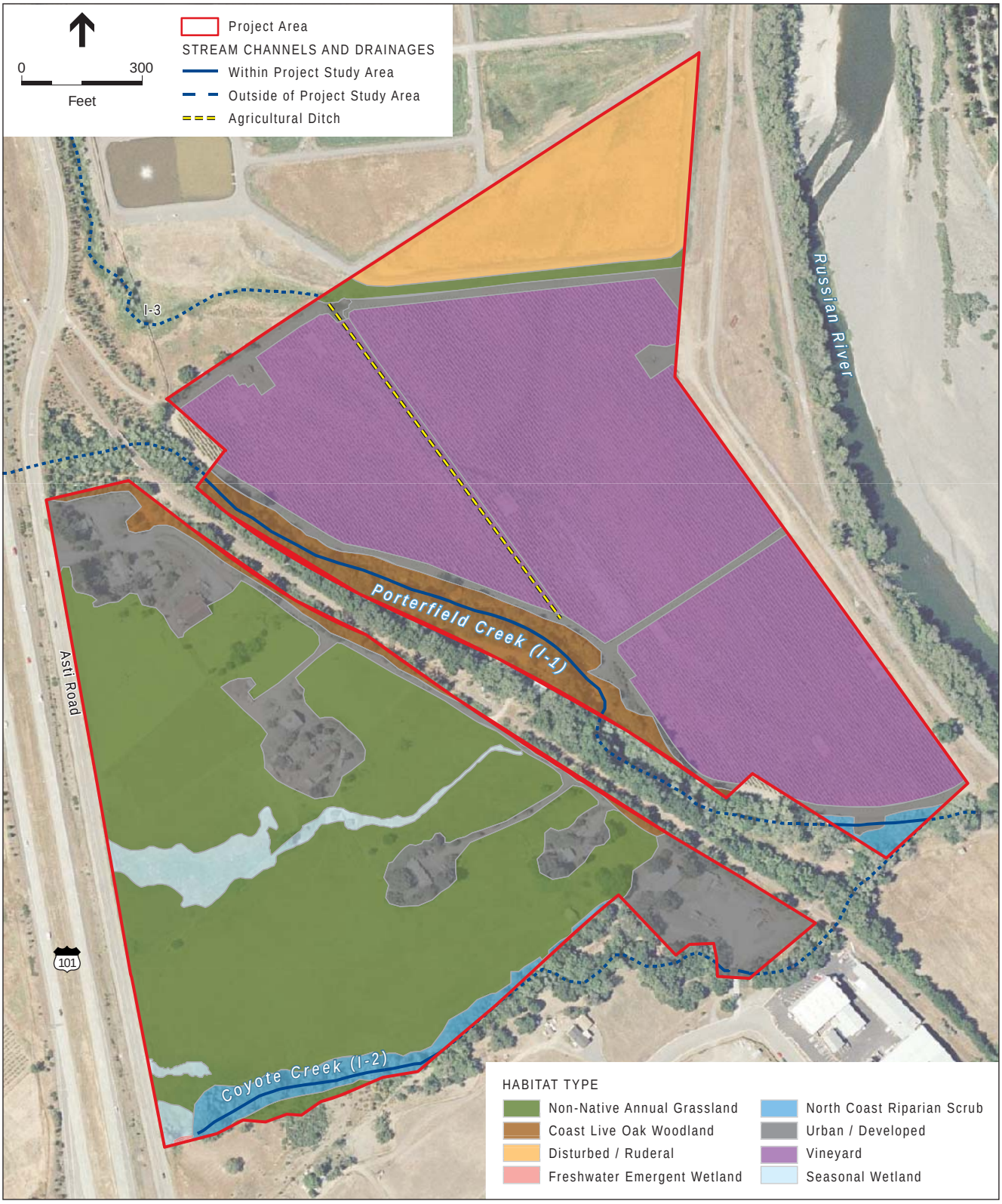
## Vegetative Communities and Wildlife Habitats

Vegetative communities are assemblages of plant species that occur together in the same area. They are defined by species composition and relative abundance. The vegetative community descriptions and nomenclature described in this section generally follow the classification system provided in Sawyer and Keeler-Wolf's *A Manual of California Vegetation* (1995) and Mayer and Laudenslayer's *A Guide to Wildlife Habitats of California* (1988). Non-native annual grassland and vineyard are the dominant upland habitat types in the Project Site (**Figure C-1** and **Table C-1**).

**TABLE C-1**
**WILDLIFE HABITATS WITHIN THE PROJECT STUDY AREA**

| Habitat Type | | Acres in PSA | Percent Composition of PSA |
|---|---|---|---|
| Urban/Developed | | 9.93 | 14.2% |
| Disturbed (Ruderal) | | 4.05 | 5.8% |
| Agricultural Lands: Vineyards | | 26.10 | 37.4% |
| Coast Live Oak Woodland | | 4.10 | 5.9% |
| Non-native Annual Grassland | | 22.75 | 32.6% |
| North Coast Riparian Scrub | | 1.37 | 2.0% |
| Seasonal Wetland | | 1.47 | 2.1% |
| | **Total** | **69.77** | |

SOURCE: ESA, 2009




SOURCE: GlobeXplorer, 2007; and ESA, 2009

Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

**Figure C-1**

Habitat and Water Features

## Upland Habitats

### *Urban/Developed*

Urban habitats are those dominated by plant species introduced by humans and established or maintained by human disturbances or activities (Holland and Keil, 1990). Some are entirely artificial, such as areas influenced by urban or suburban landscaping or plantings. On such sites, the native vegetation has typically been removed by clearing in preparation for landscaping or development. Cleared areas that are planted with or colonized by non-indigenous plant species can create distinct communities dominated by annual grasses and forbs, shrubs, or trees. Some of these communities are only perpetuated with direct human intervention such as irrigation, weed control, or application of fertilizers, while others are capable of becoming naturalized. In some situations, introduced non-indigenous species invade native habitats, altering the composition of the native understory or canopy, or both. Within the Project Site, urban habitats include roadways, buildings, and the areas around the residences, barns, horse paddocks, and corrals. There are six rural residences within the Project Site.

Planted trees around the residences include tulip tree (*Liriodendron tulipifera*), coast redwood (*Sequoia sempervirens*), Monterey pine (*Pinus radiata*), English walnut (*Juglans regia*), flowering cherry (*Prunus cerasifera*), pear (*Pyrus communis*), peach (*Prunus persica*), persimmon (*Diospyros kaki*), olive (*Olea europaea*), and apple (*Malus* sp.). Ornamental shrubs include spiraea (*Spiraea* sp.), oleander (*Nerium oleander*), and rose (*Rosa* sp.). Ruderal non-native species present in disturbed areas around the horse paddocks and corrals include Italian thistle (*Carduus pycnocephalus*), rough pigweed (*Amaranthus retroflexus*), yellow star thistle, spiny cocklebur (*Xanthium spinosum*), horehound (*Marrubium vulgare*), and teasel (*Dipsacus sativus*).

Native and introduced wildlife species that are tolerant of human activities often thrive in urban habitats. Urban land use components such as buildings and domestic landscaping provide habitat for some wildlife species. For example, common birds such as house finch (*Carpodacus mexicanus*) build their nests on structures, and less abundant species like black phoebe (*Sayornis nigricans*), cliff swallow (*Hirundo pyrrhonota*), and barn swallow (*Hirundo rustica*), also use buildings, especially near water. Common wildlife such as killdeer (*Charadrius vociferus*), American robin (*Turdus migratorius*), and American pipit (*Anthus rubescens*) are likely to use urban habitat. Mammals such as raccoon (*Procyon lotor*), Botta's pocket gopher (*Thomomys bottae*), Norway rat (*Rattus norvegicus*), and house mouse (*Mus musculus*) are common in urban habitats. Older farm structures, such as barns and stables, may also provide suitable roosting and maternity sites for bats, including pallid bat (*Antrozous pallidus*), Mexican free-tailed bat (*Tadarida brasiliensis*), and yuma myotis (*Myotis yumanensis*).

### *Disturbed (Ruderal)*

Disturbed (ruderal) communities occur in areas of disturbances such as along roadsides, trails, parking lots, disked fields, etc. These communities are subjected to ongoing or past disturbances (e.g., vehicle activities, mountain bikes, mowing). A distinguishing characteristic of ruderal habitats is the mixture of native and exotic plant species. Exotic plant species may provide valuable habitat elements such as cover for nesting and roosting, as well as food sources such as nuts or berries. Ruderal habitat

in these disturbed areas supports a diverse weedy flora. Within the Project Site, disturbed (ruderal) habitat includes the wastewater treatment settling pond at the northeast corner.

Dominant species found within ruderal habitat include introduced grasses such as: bromes (i.e. *Bromus hordeaceus*), Italian wildrye (*Lolium multiflorum*), and wild oat (*Avena fatua*). Common forbs associated with annual grassland include clover (*Medicago sp.*), filaree (*Erodium sp.*), wild radish (*Raphanus sativus*), mustards (i.e. *Brassica nigra*), winter vetch (*Vicia villosa*), field bindweed (*Convolvulus arvensis*), and milk thistle (*Silybum marianum*). Wildlife species that inhabit urban habitats are likely to be found in disturbed habitats as well.

### *Agricultural Lands: Vineyards*

Vineyards are composed of a grapes planted in rows usually supported on wood and wire trellises. Vines are normally intertwined in the rows but open between rows. The understory in vineyards are usually sprayed with herbicides to prevent growth of herbaceous plants, but may contain a diverse weedy flora consisting of Bermuda grass (*Cynodon dactylon*), wild oats (*Avena fatuca*), Johnson grass, annual ryegrass (*Lolium multiflorum*), barnyard grass (*Echinochloa crusgalli*), field mustard (*Brassica rapa*), fiddleneck (*Amsinckia menziesii var. intermedia*), and filaree. Vineyards have been planted on deep fertile soils which once supported productive and diverse natural habitats. Vineyards occur within the eastern section of the Project Site adjacent to the Russian River.

Vineyards and other agricultural lands generally occur in areas that once supported productive and diverse biological communities. The conversion of native vegetation to agricultural lands has greatly reduced the wildlife species diversity and habitat value. However, some common and agricultural "pest" species forage in these habitats, and cultivated vegetation can provide benefits such as cover, shade, and moisture for these and other species during hot summer months. Wildlife such as deer and rabbits may browse on the vines and other wildlife such as squirrels and numerous birds may feed on the fruit. Some wildlife may use the vines as nesting habitat such as mourning dove (*Zenaida macroura*). Vineyards are not considered suitable foraging habitat for most raptors. Typical species found in agricultural lands include American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), house finch, California ground squirrel (*Spermophilus beecheyi*), and western harvest mouse (*Reithrodontomys megalotis*), among others.

### *Coast Live Oak Woodland*

Coast live oak woodland is typically found on north-facing slopes and shaded ravines in the southern and inland portions of the state and on more exposed, mesic sites in the north. This community is dominated by coast live oak, which frequently occurs in pure, dense stands with a closed canopy. Coast live oak woodland is restricted primarily to the coast side of the state and is distributed from Sonoma County to Baja California. It occurs throughout the outer South Coast ranges and coastal slopes of the Transverse and Peninsular ranges, usually below 4,000 feet in elevation. Coastal live oak woodlands are extremely variable. The overstory consists of deciduous and evergreen hardwoods. From Sonoma County south, the coastal oak woodlands are usually dominated by coast live oak (*Quercus agrifolia*). In many coastal regions, coast live oak is the only overstory

species. In mesic sites, trees characteristic of mixed evergreen forests mix with coast live oak, such as California bay (*Umbellularia californica*), madrone (*Arbutus menziesii*), tanbark oak (*Lithocarpus densiflorus*), and canyon live oak (*Quercus chrysolepis*). Typical plants in dense coast live oak woodlands are shade tolerant shrubs such as California blackberry (*Rubus ursinus*), common snowberry (*Symphoricarpos albus*), toyon (*Heteromeles arbutifolia*), and herbaceous plants such as bracken fern (*Pteridium aquilinum*), California polypody (Polypodium californicum), fiesta flower (*Pholistoma auritum*), and miner's lettuce (*Claytonia perfoliata*). Within the Project Site, coast live oak woodland is present in a narrow band along the northern and eastern boundary of the Project Site. This habitat is dominated by coast live oak, with scattered California bay and California buckeye (*Aesculus californica*). Native shrub species commonly found include toyon, poison oak (*Toxicodendron diversilobum*), among others.

Coastal oak woodlands provide habitat for a variety of wildlife species. California quail (*Callipepla californica*), wild turkeys (*Meleagris gallopavo*), squirrels, and deer may be so dependent on acorns in fall and early winter that poor acorn year can result in significant declines in their populations. The vegetation within coastal oak woodland represents suitable nesting habitat for raptors, including red-shouldered hawk (*Buteo lineatus*) and Cooper's hawk (*Accipiter cooperii*), and migratory birds that may forage in adjacent annual grasslands.

### *Non-Native Annual Grassland*

Non-native annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California. It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub and woodland as a result of human disturbance. Scattered native wildflowers and grasses, representing remnants of the original vegetation may also be common.

Within the Project Site, non-native annual grassland is present in the pastures that are used for livestock grazing (e.g., horses). Barbed wire fences and gates surround and bisect these pastures. Characteristic non-native annual grasses commonly found within the Project Site include wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum* ssp.*gussoneanum*), hare barley (*Hordeum murinum* ssp. *leporinum*), big quaking grass (*Briza maxima*), Italian ryegrass (*Lolium multiflorum*), medusa-head (*Taeniatherum caput-medusae*), hedgehog dogtail (*Cynosurus echinatus*), nit grass (*Gastridium ventricosum*), and rattail fescue (*Vulpia myuros*), among others. Common nonnative forbs include English plantain (*Plantago lanceolata*), field bindweed (*Convolvulus arvensis*), fiddle dock (*Rumex pulcher*), Italian thistle (*Carduus pycnocephalus*), yellow star thistle (*Centauria solstitialis*), bristly ox-tongue (*Picris echioides*), little hop clover (*Trifolium dubium*), birdfoot trefoil (*Lotus corniculatus*), and red-stemmed filaree (*Erodium cicutarium*), among others. Non-native Himalayan blackberry (*Rubus discolor*) is also present within the Project Site. Despite the dominance of non-native annual grasses and forbs, native plant species are also present in the grasslands. These native species include Fitch's spikeweed (*Centromadia fitchii*), hayfield tarweed (*Hemizonia congesta* ssp. *luzulifolia*), and Spanish-clover (*Lotus purshianus*), among others. Native shrubs, including coyote brush (*Baccharis pilularis*) and poison oak, are scattered throughout the non-

native grassland but not in sufficient densities to be considered a distinct vegetation community. As described previously, the majority of the non-native grassland within the Project Site is subject to livestock grazing.

Many wildlife species use grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, fence posts, or habitats with woody plants for breeding, resting, and cover. Characteristic reptiles that breed in grasslands include the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*) and western rattlesnake (*Crotalus viridis helleri*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher, western harvest mouse, California vole (*Microtus californicus*), and coyote (*Canis latrans*). Birds known to breed in annual grasslands include western burrowing owl (*Athene cunicularia hypugaea*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*). This habitat also provides important foraging habitat for turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), white-tailed kite (*Elanus leucurus*), and American kestrel (*Falco sparverius*).

### *North Coast Riparian Scrub*

North coast riparian scrub is typically comprised of several species of willow (*Salix* spp.) and other fast-growing shrubs and vines that form open to impenetrable thickets along stream banks. This plant community occurs on sand and gravel bars along streams within the coastal fog incursion zone from Sonoma County into Oregon, usually below 1,000 feet in elevation. North coast riparian scrub is generally considered early "seral," meaning that it typically precedes the development of other riparian woodland or forest communities in the absence of severe flooding. This broad-leafed deciduous riparian community is typically dominated by California blackberry (*Rubus ursinus*), coyote brush (*Baccharis pilularis*), golden yarrow (*Eriophyllum confertiflorum*), toyon, and arroyo willow (*Salix lasiolepis*).

Within the Project Site, North Coast riparian scrub is present along Coyote Creek (channel I-2). Dominant overstory species include red willow (*Salix laevigata*), arroyo willow, shining willow (*Salix lucida* ssp. *lasiandra*), valley oak (*Quercus lobata*), coast live oak, California buckeye, box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*) and California bay. The understory consists of native species such as mugwort (*Artemisia douglasiana*), willow-herb (*Epilobium ciliatum* ssp. *ciliatum*), poison oak, and coyote brush, among others. Non-native understory species include klamathweed (*Hypericum perforatum*) and Himalayan blackberry, among others.

Riparian habitat is generally of high value for wildlife. Birds that are typical inhabit these areas include Anna's (*Calypte anna*) and Allen's (*Selasphorus sasin*) hummingbirds, western kingbird (*Tyrannus verticalis*), Bewick's wren (*Thryomanes bewickii*), California quail, Nuttall's white-crowned sparrow (*Zonotrichia leucophrys nuttalli*), wild turkey (*Meleagris gallopavo*), screech owl (*Megascops kennicottii*), and red-tailed hawk. Mammals that occur in these areas typically include white-tailed deer (*Odocoileus virginianus*), coyote, opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), beaver (*Castor canadensis*), and western gray squirrel (*Sciurus carolinensis*). Other wildlife species may include, western fence lizard, California slender salamander (*Batrachoseps attenuatus*), and western alligator lizard (*Elgaria coerulea*).

## Wetlands and Other Waters of the U.S.

Regulated wetlands and other waters of the U.S. are subject to jurisdiction under Section 404 of the Clean Water Act. Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The federal government defines wetlands in Section 404 of the Clean Water Act as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b] and 40 CFR 230.3). The Corps is the agency responsible for regulating wetlands under Section 404 of the Clean Water Act, while the EPA has overall responsibility for the Act. Under normal circumstances, the federal definition of wetlands requires three wetland parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of jurisdictional wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a significant ecological link to navigable waterways. "Other waters of the U.S." refer to those hydric features that are regulated by the Clean Water Act but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank, an ordinary high-water mark, and are tributary to a navigable waterway. Examples of other waters of the U.S. may include rivers, creeks, intermittent channels, ponds, and lakes that meet the jurisdictional criteria.

The potential Corps jurisdictional features that are located within the Project Site include relatively permanent waters, freshwater emergent wetland, and seasonal wetland. They are described in greater detail below.

**TABLE C-2**
**POTENTIAL CORPS JURISDICTIONAL FEATURES WITHIN THE PROJECT STUDY AREA**

| Map ID | Type of Jurisdictional Feature | Average Width (feet) | Linear Feet | Acres |
|---|---|---|---|---|
| **Relatively Permanent Waters** | | | | |
| | Porterfield Creek (I-1) | 11.2 | 1,462 | 0.45 |
| | Coyote Creek (I-2) | 4.6 | 545 | 0.05 |
| **Wetlands** | | | | |
| | Seasonal Wetland | | | 1.47 |
| **Total area of potential jurisdictional features:** | | | | **1.97** |

Source: ESA, 2009

### *Riverine (Relatively Permanent Waters)*

There are two intermittent stream channels that flow through the Project Site. Both channels meet the definition of being "relatively permanent waters" by the Corps and EPA; that is, they have continuous seasonal flow for at least three months per year. Porterfield Creek (I-1) flows south between the proposed trust parcels and along the railroad; it then meanders east along the southern boundary of the eastern portion of the Project Site. Porterfield Creek has an average width of 11.2

feet. Immediately south of the Project Site at the downstream portion, and prior to its' terminus at the Russian River approximately 500 feet south east of the Project Site, Porterfield Creek it is characterized by a mature riparian corridor.

Coyote Creek (I-2), a tributary to Porterfield Creek, flows along the southern boundary of the western portion of the Project Site. Channel I-2has an average width of 7.6-feet and is comprised of well-developed over- and understory growth with infrequent openings. The stream banks vary from gently sloping to steeply incised with dense bank vegetation, exposed roots, and areas of active erosion. The main channel is comprised of a low-grade riffle, run, and pool complexes with a limited number of shallow to moderately deep pools up to one foot in depth. The main channel contains root wads, small woody debris, and overhanging vegetation. Overall the substrate is silty with scattered gravel to cobble-sized rocks. This reach of creek provides moderate quality habitat for aquatic flora and fauna, and exhibits few adverse effects due to human activities.

Heron Creek (channel I-3) enters the eastern portion of the Project Site from the north. Channel I-3 is strongly influenced by storm drain flows from Highway 101. Due to recent off-site road work associated with Highway 101 and Asti Road, the drainage patterns associated with I-3 have been altered approximately 500-feet north west of the Project Site before entering the project at the northern boundary (**Figure C-1**).

Upon entering the Project Site, water from this channel flows into a north-to-south excavated channel (agricultural ditch) located centrally in the vineyard. When the agricultural ditch fills with water, it then spreads across the Project Site through sheet flow. Near the southern boundary of the vineyard, the channel begins to diminish with no apparent surface connection to Porterfield Creek. This agricultural ditch is an upland ditch that is ephemeral in nature. The ditch is maintained for agricultural purposes and no aquatic vegetation was present during the Winter 2009 site visit.

The channels on the site provide riverine habitat for wildlife. The Russian River also provides riverine habitat as it flows south, immediately east of the Project Site. The open water zones of large rivers provide resting and escape cover for many species of waterfowl. Gulls (*Larus* spp.), terns (*Sterna* spp.), osprey (*Pandion haliaetus*) and bald eagle (*Haliaeetus leucocaphalus*) hunt in open water. Near-shore waters provide food for waterfowl, herons, shorebirds, belted kingfisher (*Megaceryle alcyon*) and American dipper (*Cinclus mexicanus*). Many species of insectivorous birds (swallows, swifts, flycatchers) hawk their prey over water. Some of the more common mammals found in riverine habitats include Northern river otter (*Lontra canadensis*), mink (*Mustela vison*), common muskrat (*Ondatra zibethicus*), and beaver. Native anadromous salmonids, including steehead (*Oncorhynchus mykiss)*, spawn and rear in the Russian River and its' associated tributaries.

### *Freshwater Emergent Wetland*

Freshwater emergent wetland typically occurs in low-lying sites that are permanently flooded with fresh water and lacking significant current. This plant community is found on nutrient-rich mineral soils that are saturated for all or most of the year. Freshwater marsh is most extensive where surface flow is slow or stagnant or where a shallow water table saturates the soil from below. Freshwater emergent wetland is distributed along the coast and in coastal valleys near river mouths and around

the margins of lakes, springs, and streams (Holland 1986). This vegetation community characteristically forms a dense vegetative cover dominated by perennial, emergent monocots one to 15-feet high that reproduce by underground rhizomes. The vegetation may vary in size from small clumps to vast areas covering several kilometers. On the upper margins of this habitat, saturated or periodically flooded soils support several moist soil plant species including big-leaf sedge, Baltic rush, redroot nutgrass, and on more alkali sites, saltgrass (*Distichlis spicata*). On wetter sites, common cattail (*Typha latifolia*), tule bulrush (*Scirpus acutus*), river bulrush (*Scirpus fluviatilis*), and arrowhead (*Sagittaria* spp.) are potential dominant species. The upland limit of fresh emergent wetlands and deep water habitats is the deep water edge of the emergent vegetation. It is generally accepted that the demarcation is at or above the 2 meter (6.6 ft) depth to which emergent wetland plants normally grow.

Freshwater emergent wetland habitat is not located within the PSA, but is located immediately south of the PSA adjacent with channel I-2. Freshwater emergent wetland is restricted to an opening in the North Coast riparian scrub canopy at the upstream end of channel I-2. Aquatic plant species recorded here include umbrella sedge (*Cyperus eragrostis*), narrow-leaved cattail (*Typha angustifolia*), low bulrush (*Scirpus cernuus*), punctuate smartweed (*Polygonum punctatum*), watercress (*Nasturtium officinale*), whorled dock (*Rumex conglomeratus*), dallis grass (*Paspalum dilatatum*), and pennyroyal (*Mentha pulegium*), among others.

Freshwater emergent wetlands are among the most productive wildlife habitats in California. They provide food, cover, and water for more than 160 species of birds, and numerous mammals, reptiles and amphibians. Many species rely on fresh emergent wetlands for their entire life cycle. Many wildlife species are dependent on wetland habitats for foraging, nesting, and cover. Slow-moving waters provide important resting and foraging habitats for migratory water birds such as the Canada goose, mallard, and cinnamon teal. The bald eagle and peregrine falcon (*Falco peregrinus*) use freshwater emergent wetlands as feeding areas and roost sites. Wetlands also provide habitat for the American coot (*Fulica americana*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), and black phoebe.

### *Seasonal Wetland*

Seasonal wetlands are relatively shallow topographic depressions that pond for a short duration, support a fairly low diversity of plant species, and tend to support species with a high tolerance for disturbance. Seasonal wetlands are freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are dry through the summer and fall. Seasonal wetlands are defined by a hydrologic regime that is dominated by saturation, rather than inundation. Seasonal wetlands inundate for short periods of time following a storm event but the primary hydrologic regime is one of saturation. Vegetation is characterized by species of annual and perennial, native and non-native grasses and forbs that begin their growth as aquatic or semi-aquatic plants, typically resembling a wetland community, that make a transition to a dry-land environment as the pool dries. Wetland plant species that are either low-growing, tenacious perennials that tolerate disturbance or annuals that tolerate seasonal wetness often colonize seasonal wetlands. Upland grasses and forbs can become established while wetland species desiccate. Although seasonal wetlands and vernal pools share similar hydrologic characteristics, species composition of seasonal wetlands

is typically more ruderal in nature. Therefore, seasonal wetlands are not considered vernal pools, which support a more specialized and less common native flora.

Within the Project Site, seasonal wetlands are distributed in topographic depressions throughout the non-native annual grasslands (pastures). Plant species found within seasonal wetlands are adapted to withstand short periods of inundation, but will not withstand long periods of inundation. Herbaceous plant species present in seasonal wetlands within the Project Site include pennyroyal, fiddle dock (*Rumex pulcher*), birdfoot trefoil (*Lotus corniculatus*), rabbitsfoot grass (*Polypogon monspeliensis*), and Mediterranean barley.

# Potentially Affected Species

Pursuant to Section 7(c) of the Endangered Species Act, the USFWS provided a list of species potentially found within the Action Area (**Appendix B**). **Table A-1** lists the species with the potential to occur in the Action Area and the determination of the potential effects the Proposed Action may have upon them. This determination was made based upon the several factors, including presence of suitable habitat, species distribution data, and the types of potential effects (including direct, indirect, and cumulative effects). A "no effect" determination was made if there was no suitable habitat present in or around the Action Area and/or if the Action Area was outside of the known range of the species. A "may effect" determination was made if suitable habitat was identified within the Action Area and if it was determined that the Proposed Action may affect that habitat. Detailed descriptions of the species determined to be potentially affected by the Proposed Action are presented below.

## Fish

### Central California Coast Coho Salmon

Coho salmon are highly adaptive to local or regional environments. Coho salmon have thousands of semi-isolated populations in coastal streams over a wide range of North America. The likelihood of coho salmon potentially mixing with separate regional fish while in the Pacific Ocean exists, as individuals may spawn in non-natal streams. This occurs within the Central California Coastal ESU (Moyle, 2002). Interbreeding populations from Punta Gorda south to the San Lorenzo River contribute to the adaptive characteristic of this species.

Coho salmon once supported a commercial fishery on the Russian River, and once inhabited nearly all of the tributaries to the lower Russian including the Guerneville and Austin Creek sub- basins. The Coyote Valley Steelhead Facility (CVSF) recorded no returns in 2000 and 2001, while the Warm Springs Salmon and Steelhead Hatchery (WSH) recorded eight returns in 1999 and one return in 2000. Spawning at the hatcheries has ceased due to the low return numbers (CDFG, 2002).

Wild coho returning to WSH are currently relocated to tributaries of Dry Creek, where suitable habitat occurs. Recent non-hatchery coho distribution in the Russian River is much reduced from the historic range. Limited CDFG sampling efforts conducted in 2001 found coho in only three of

the 32 historic streams. Russian River Watershed Hydrologic Sub-Areas, including Austin Creek, Warm Springs, Geyserville, Guerneville and Mark West, all have had occurrences since 1993 (CDFG, 2002).

There have been no sightings or historic documentation of coho within the Project Site. However, stream channel conditions within the lower reaches of Porterfield Creek provide potential rearing or holding habitat within and immediately downstream of the Project Site.

### *Habitat Requirements*

Timing for upstream migration by adult coho is primarily dependent upon flows and temperature which are dependent upon rainfall and local temperatures. The Russian River has a later run timing than many Northern California streams with coho entering the system from November through January with most spawning taking place in December (CDFG, 2002). Like the chinook salmon, a steady deposition of coarse rock substrates within the channel, proper temperature (Coho prefer temperatures from 40° to 49° F), and minimal sedimentation (less than 5% sand and silt) provides for suitable spawning habitat. Coho salmon generally prefer substrate sizes of 0.5 to 6 inches dominated by 2- to 3-inch gravel (CDFG, 1997). Eggs hatch in 50 to 60 days from the time the female deposits her eggs into a redd, depending on water temperature.

Unlike most Chinook, coho salmon have a more extended freshwater stage in their life history. Juvenile coho prefer deep cool pools with plenty of overhead cover, but are known to use a variety of habitats. During the high flows of spring, juvenile coho are equally disturbed throughout stream riffle, run and pool habitat. As stream flows diminish into the summer, higher occurrences of juvenile coho are found within pools and deeper runs. During winter, juvenile coho seek refuge from high flow velocities within off-channel pools or spring-fed tributary systems (Moyle, 2002). Overwintering habitat is an important resource for coho, as they spread their first year of life in the riverine environment prior to emigrating to the ocean. Successful coho rearing streams must be very clear, as silt loads can reduce growth rates. Juveniles prefer water temperatures of 53° to 57° F, and cannot survive within streams with temperatures exceeding 77° F (Moyle, 2002).

## Central California Coastal Steelhead

NOAA Fisheries classified six distinct ESU's of steelhead in California based on genetic and life history data. The Central California coast steelhead ESU comprises coastal populations from the Russian River south to Aptos Creek in Santa Cruz County. Along with the Klamath and Sacramento rivers, the Russian River steelhead runs have been historically prolific. Steelhead use all perennial and intermittent streams within the Russian River basin, and their distribution has not changed much, with the exception to areas upstream of created channel impediments (CDFG, 2002). CDFG operates two anadromous fish hatcheries within the Russian River Watershed; the WSH, located on Dry Creek at the base of Lake Sonoma, and the CVSF, located in Ukiah at the base of Lake Mendocino. The WSH and CVSF have managed a successful production of hatchery steelhead. As with all wild anadromous stocks entering the hatcheries, the WSH and CVSF relocate wild steelhead to local watershed tributaries.

The lower reaches of Porterfield Creek near the confluence with the Russian River provide suitable holding and rearing habitat for steelhead, as it contains adequate riparian canopy, stream substrate, water temperature, and channel morphology.

### *Habitat Requirements*

Steelhead may enter the Russian River between December and April, with most spawning taking place from January through March (CDFG, 2002). The life history patterns of California steelhead are both variable and flexible, but they can be generally categorized into two patterns (winter and summer). Winter steelheads enter the system during winter wet weather events that provide cold temperatures for migration and spawning. Summer steelhead generally enter the system during high flows associated with the spring run-off, and ascend to the headwaters to hold out and mature in cold deep pools and spawn the following winter or spring (Moyle, 2002). Steelhead prefers temperatures from 46° to 52° (Rich, 1997). Inadequate flows and low water levels also contribute to water quality problems during the hot summer months.

Generally, spawning habitat is not thought to limit steelhead production. Steelhead prefer temperatures from 46° to 52° F for spawning. During the 50 to 60 days from the time the female deposits eggs, gravels must be well oxygenated and free of silt and fine sediments. Juvenile steelhead generally rear within the stream habitat for two years but may emigrate after only one year. Steelhead are generally found in relatively shallow areas, with cobble or boulder bottoms at the tails of pools, or in riffles less than 24 inches deep (CDFG, 2002). Surface turbulence is a very important habitat component in many of these areas. In winter, steelheads utilize large cover or backwater areas for protection from extreme currents.

## California Coastal Chinook Salmon

Information or existing data on the historic use of the Russian River by chinook salmon is inconclusive, but given the suitable habitat conditions prior to anthropogenic disturbances of the drainage system, it is likely to have supported a run. A native endemic stock of chinook salmon (i.e., California Coastal) currently utilizing the Russian River watershed is highly unlikely. Chinook salmon disappeared with the advent of agriculture and water projects in the basin (Moyle, 2002). However, suitable spawning habitat still exists today in the upper mainstem of the river and in the larger low gradient tributaries. The WSH and CVSF hatchery fish have been of multiple origin including Sacramento and Klamath River stocks. Currently, CDFG has halted hatchery spawning due to potential genetic bottlenecking. Hatchery attempts to potentially revive a run utilizing the Russian River has been relatively unsuccessful, although some spawning has been observed in the watershed (Moyle, 2002).

The lower reaches of Porterfield Creek near the confluence with the Russian River provide suitable holding and rearing habitat for Chinook salmon, as it contains adequate riparian canopy, stream substrate, water temperature, and channel morphology.

### *Habitat Requirements*

Chinook salmon enter the Russian River between August and January with a majority of the spawning occurring in November and December. Gravel and cobble, ranging from 0.5 to 10 inches and dominated by 1- to 3-inch cobble, are essential in successful spawning ranging from 0.5 to 10 inches dominated by l- to 3-inch cobble (CDFG, 1997). These substrates must be clean and the gravels must be free of silt and fine sediments to allow the permeation of flowing water. This will help prevent mortality by keeping eggs well oxygenated while they incubate in redds. Ideally, gravel and cobble should contain less than 5% sand and silt (McEwan et. al., 1996). Chinook salmon generally spawn in water from one to three feet deep, but have spawned in depths from 0.5 to greater than 20 feet deep (CDFG, 2002). Stream flow velocities must range from 1 to 3 feet per second. Chinook eggs hatch in 50 to 60 days, depending on water temperature.

Most chinook smolts migrate to the estuary or ocean in the spring. Once juvenile salmon emerge from gravel, they initially seek areas of shallow water and low velocities while absorbing the yolk sac. The next stage of juvenile development requires rearing within the stream channel. Optimal temperatures for chinook fry to grow are 55–64° F (CDFG, 2002). Chinook salmon need a variety of habitat types such as pools, riffles and flat waters to accommodate different life stages. Stream bank and channel cover is essential for rearing salmonid survival. Natural features such as large and small woody debris, undercut banks, root wads, overhanging terrestrial vegetation, aquatic vegetation, boulders, and bedrock ledges provide cover from predators. Deep pools provide depth for cool refugia especially where general water and air temperatures are high. In general, chinook salmon shifts to deeper and faster water as they grow larger (Moyle, 2002). Some juveniles may remain in large pools with complex cover until they emigrate to the ocean in the fall, but most are likely to emigrate in the Spring.

# Critical Habitat

The USFWS designates critical habitat for federally listed species to ensure habitat that is critical to species long-term survival is conserved. Within the region, critical habitat has been identified for Central California Coast Coho salmon, California Coastal Chinook salmon, and Central California Coastal steelhead.

## Central California Coast Coho Salmon Critical Habitat

The Central California Coast Coho Salmon Evolutionarily Significant Unit (ESU) was listed as threatened on October 31, 1996 (61 FR 56138), and later downgraded to endangered status on June 28, 2005. On May 5, 1999, NOAA Fisheries designated critical habitat for the California Coast Coho Salmon ESU. Designated critical habitat consists of all river reaches accessible to listed coho salmon from Punta Gorda in northern California south to the San Lorenzo River in central California, including Mill Valley (Arroyo Corte Madera Del Presidio) and Corte Madera Creeks tributaries to San Francisco Bay. Areas above specific dams or above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) are excluded. The Action Area is located within designated critical habitat for the Central California Coast Coho Salmon ESU.

## California Coastal Chinook Salmon Critical Habitat

The California Coastal Chinook Salmon ESU was listed as threatened on September 16, 1999, and reconfirmed on June 28th, 2005. Critical habitat was designated for this population on September 2, 2005, with an effective date of January 2, 2006. The ESU includes all naturally spawned populations of chinook salmon from rivers and streams south of the Klamath River to the Russian River in California. The Action Area is located within designated critical habitat for the California Coastal Chinook Salmon ESU.

## Central California Coastal Steelhead Critical Habitat

The Central California Coastal Steelhead Salmon ESU was listed as threatened on August 18, 1997, with threatened status reaffirmed on January 5, 2006. A final designation for critical habitat was published on September 2, 2005, with an effective date of January 2, 2006. The ESU includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin. The Action Area is located within designated critical habitat for the Central California Coastal Steelhead ESU.

# Essential Fish Habitat

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish new requirements for Essential Fish Habitat (EFH) descriptions in federal Fisheries Management Plans and to require federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH. The Magnuson-Stevens Act requires all fishery management councils to amend their Fishery Management Plans (FMPS) to describe and identify EFH for each managed fishery. The Act also requires consultation for all federal agency actions that may adversely affect EFH (i.e., direct and indirect effects). It does not distinguish between actions in EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside of EFH, such as upstream and upslope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of the activity's location. Under section 305(b)(4) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. However, state agencies and private parties are not required to consult with NOAA Fisheries unless state or private actions require a federal permit or receive federal funding. EFH is managed under the FMPs as directed under the Magnuson-Stevens Fishery Conservation and Management Act. Based on the proposed project location, the Pacific Coast Chinook Salmon EFH will be analyzed for potential effects.

# SECTION D
# Effects of the Action

## Overview of Potential Effects

### Approach to Analysis

The purpose of this section is to analyze the potential effects of the Proposed Action on biological resources including wildlife, habitats, and federally listed species. This section describes the potential direct, indirect, and cumulative effects the Proposed Action may have to those species identified in Section C. Possible interrelated and interdependent actions to the Proposed Action are also considered. Categories for types of effects are defined in the Code of Federal Regulations (CFR) as follows:

- **Direct Effect:** Effects generated directly from the Proposed Action. Examples of direct effects to listed species include incidental take during construction, elimination of suitable habitat due to project construction, and degradation of habitats due to construction-related activities. (50 CFR 402.02).
- **Indirect Effect:** Effects that are caused by the Proposed Action and are later in time. Examples of these types of effects to biological resources include increased runoff or sedimentation that adversely affect water quality downstream of the project site, an increase in human activity during project operations, and potential growth-inducement effects. (50 CFR 402.02).
- **Cumulative Effect:** Effects of future State or private activities that are reasonably certain to occur within the Service Area, and which may cumulatively increase the magnitude of direct and indirect effects described previously. Examples of these types of effects to biological resources include the effects of a cumulative loss of habitat for a special status species due to other planned projects in the area (50 CFR 402.02).
- **Interrelated Actions:** Those actions that are part of, and dependent upon, a larger action, such as the need for utilities for project development (50 CFR 402.02).
- **Interdependent Actions:** Actions that have no independent utility apart from the proposed action, such as future actions that are dependent upon the proposed action taking place (50 CFR 402.02).

The Proposed Action would be implemented to avoid listed species and sensitive habitats to the greatest extent possible. Avoidance and minimization measures were developed to decrease potential effects. These avoidance and minimization measures are based on widely applied and proven measures for the protection of listed species and their habitats.

# Effects Summary

## General Discussion

Implementation of Proposed Action would have several potential effects to biological resources in the Project Site. This includes an increase in human activity, reduction in habitat, and potential effects to aquatic habitats within the Action Area. Each of these potential effects is described in greater detail below.

### *Increase in Human Activity*

Implementation of Proposed Action would cause an increase in human activity within the Action Area. Many species of wildlife will avoid areas that have a high degree of human activity, thereby causing them to forage over greater distances and reducing the number of breeding and resting sites that are available to them. Large terrestrial mammals, such as deer, mountain lion, and coyote would likely be most affected by an increase in human presence. Other species, such as scrub jay, American crow, and Brewer's blackbird may actually increase in numbers within the Action Area. This may in turn have an adverse effect upon other, smaller passerines, such as warblers and vireos, due to increased interspecific competition for resources.

### *Reduction in Habitat*

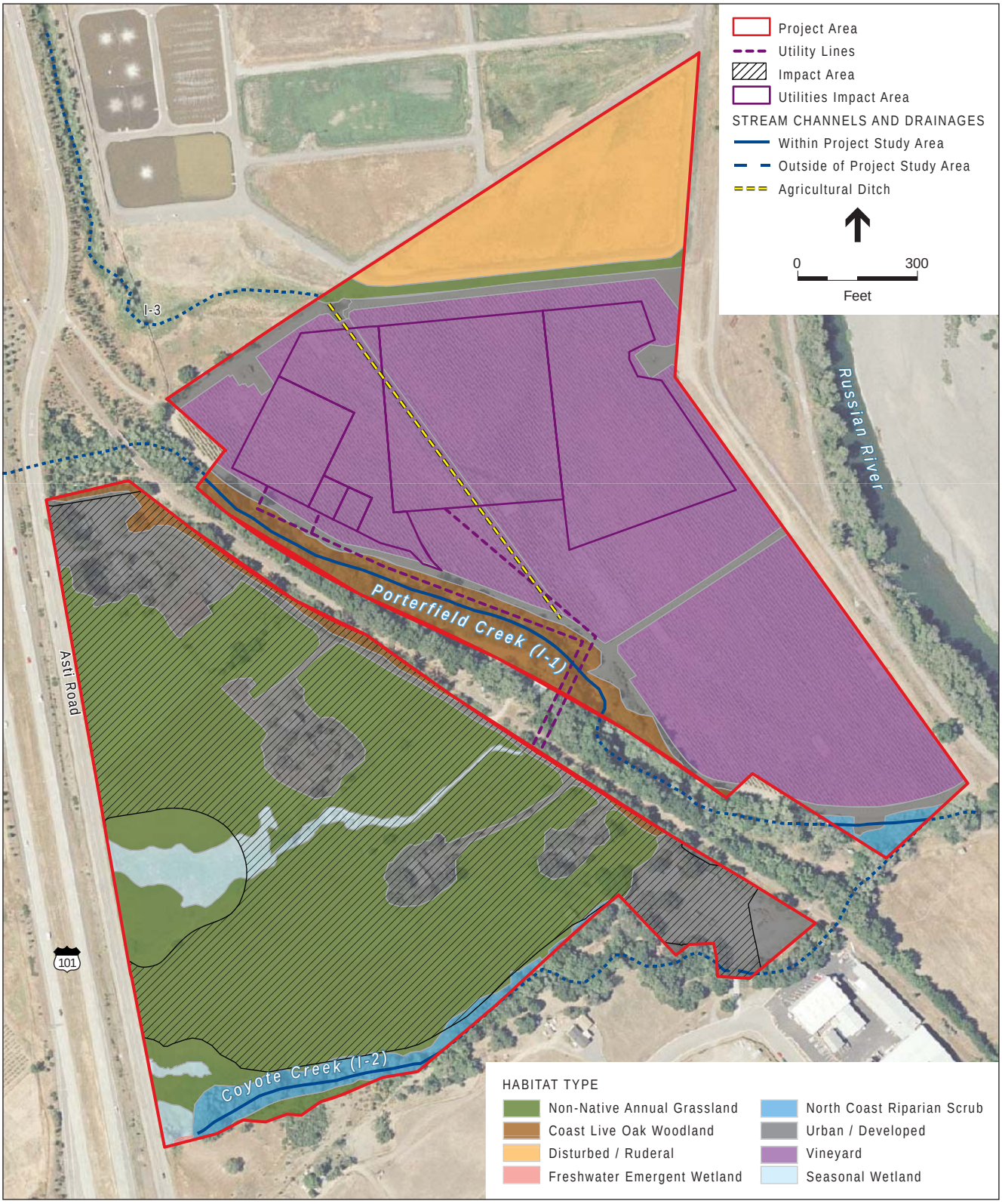
Implementation of Proposed Action would require the removal of habitats that are relied upon by many species of wildlife (refer to the general habitat descriptions in Section C). Based upon preliminary design drawings, implementation of Proposed Action would directly affect approximately 11.9 acres of the 26.10 total acres of vineyard, 0.58 acres of the 4.10 total acres of Coast live oak woodland, 20.18 acres of the 22.75 total acres of non-native annual grassland, and 0.11 acres of the 1.37 total acres of North Coast riparian. In addition, approximately 0.48 acres of the 1.47 total acres of seasonal wetland would be permanently impacted as a result of the Proposed Action (**Figure D-1**).

### *Effects to Water Quality and Local Hydrology*

The Proposed Action may generate adverse impacts to water quality and downstream hydrology (flooding). These impacts may be generated through the construction of new impervious surfaces, including parking lots and buildings, as well as through introducing additional sources of pollutants, including vehicle fluids and trash. These impacts could adversely affect aquatic life in habitats located within the Action Area.

### *Effects to Upland Habitats*

Development of Proposed Action would affect upland habitats that are used by a variety of plant and wildlife species. **Table D-1** provides a summary of the acreage of each upland habitat type that would be directly affected by the Proposed Action.




SOURCE: GlobeXplorer, 2007; and ESA, 2009

Cloverdale Rancheria Resort Casino Project Biological Assessment . 207737

**Figure D-1**

Proposed Action Habitat Impacts

**TABLE D-1**
**POTENTIAL EFFECTS TO UPLAND WILDLIFE HABITAT TYPES**

| Habitat Type | Acres Affected | Percent Affected[1] |
|---|---|---|
| Urban/Developed | 6.46 | 65.0% |
| Agricultural Lands: Vineyards | 11.90 | 45.6% |
| Coast Live Oak Woodland | 0.58 | 14.1% |
| Non-native Annual Grassland | 20.18 | 88.7% |
| North Coast Riparian Scrub | 0.11 | 8.0% |
| **Total** | **39.23** | **56.2%** |

[1]Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2009

Most of the above communities, including urban/developed, vineyards, and non-native annual grassland, are either regionally abundant (grasslands and vineyards) or are of little value to native plants and wildlife (urban). However, two of the communities, coast live oak woodland and north coast riparian scrub, are considered important biological communities (in terms of providing habitat) and are less regionally abundant.

### *Effects to Wetlands and Other Waters of the U.S.*

Development of the Proposed Action would fill approximately 0.48 acres of wetlands. **Table D-2** provides a summary of the acreage for each wetland type that would be directly affected under the Proposed Action. There would be no direct effects to stream channels or freshwater emergent wetlands.

**TABLE D-2**
**POTENTIAL DIRECT EFFECTS TO WATERS OF THE U.S.- PROPOSED ACTION**

| Type of Jurisdictional Feature | Acres Affected | Percent Affected[1] |
|---|---|---|
| **Wetlands** | | |
| Seasonal Wetland | 0.48 | 32.6% |

[1]Based upon amount of habitat available within Project Site for each type as reflected in Table C-2

Source: ESA, 2009

Wetlands are ecologically important features that provide habitat for a variety of fish and wildlife, in addition to providing important water quality and hydrological functions.

## Effects on Federally Listed Species

The Proposed Action has the potential to affect California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead and their associated critical and EFH habitats.

## Direct Effects

Implementation of Proposed Action would not directly remove or degrade any riparian habitat or in-channel substrate within areas that are suitable for rearing or holding of native salmonids. Stream channels within the Project Site do not likely provide suitable spawning opportunities for anadromous species, as existing culverts likely block upstream migration. In addition, beyond the lower reaches of the Porterfield Creek (channel I-1) confluence with the Russian River, channel substrate lacks suitable cobble/gravel complexes, and exhibits increased sedimentation and lack of gravels and cobbles within the bed and bank. Proposed construction will occur within upland habitat not associated with suitable aquatic habitat, and no direct effects associated with the construction of these facilities are anticipated.

## Indirect Effects

Indirect effects are defined as effects that may be caused by the Proposed Action, but would occur later in time. Long-term effects on listed species, designated critical habitat, and EFH may occur as result of the Proposed Action.

Construction and placement of storm drain outfall structures along Porterfield Creek and the upland drainage release system located along channel I-2 may result in a discharge of sediments downstream of these sites. Increased sedimentation may cause reduced survival of eggs or alevins, reduce primary and secondary creek/river productivity, interfere with feedings, and cause behavioral avoidance to native fish species downstream of the discharge area. However, by incorporating bioswales, a subterranean stormwater detention system, and porous concrete into the project design (see Drainage Study, **Appendix A**), along with implementing appropriate BMPs and erosion control measures, potential effects to emigrating juveniles or migrating adult California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead would be minimized.

Water quality may also be impacted if a spill or discharge of sediment-laden stormwater were to occur during construction of these improvements. The introduction of pollutants into these water bodies by a spill or discharge may result in the introduction of heavy metals, nutrients, hydrocarbons, or synthetic compounds, which may cause increased temperatures, disease susceptibility, or algal blooming. Sediment-laden stormwater may impact these species as described above. These potential effects would adversely affect native fish populations within Porterfield Creek and the Russian River. Application of the avoidance and minimization measures listed in Section B would reduce the magnitude of these potential effects.

## Cumulative, Interrelated, and Interdependent Effects

With population increases and the subsequent development of the region, as well as the advent of agriculture and mining activities within the Russian River Basin, the deterioration of salmonid habitat within the Russian River and associated tributaries has led to the decline of native anadromous salmonid populations. The general transformation of the mainstem Russian River from deep cool pools and gravel riffle complexes into slower meandering, shallow warm water habitat with high sediment loading, has had a cumulative effect on the decline of these native fish populations.

The need for comprehensive water quality planning in the Russian River Basin and other coastal watersheds led to the development and adoption of the North Coast Region Water Quality Control Plan for the North Coast Region (NCRWQCB, 1993). The plan provides specific guidance on factors which must be considered in adoption of water quality objectives and implementation measures for the basin. The planning process considered past, existing, and future population and land uses based on recent population trends and projections contained in county general plans. With these projections, as well as current land-use practices, guidelines associated with surface water and groundwater use and discharge are adopted in order to benefit future water resources in the region.

As described previously, the Proposed Action avoids directly affecting suitable aquatic habitat for salmonids. In addition, the Proposed Action proposes several project features that would minimize potential effects to downstream water quality and hydrology during operations. Based on these factors, and because regional development is guided by the requirements of the North Coast Region Water Quality Control Plan, it is unlikely that the Proposed Action would have a significant, cumulative impact to salmonid habitat in the region.

Potential interrelated effects, such as water and wastewater service have been addressed in the project description and analyzed within this document. As previously stated under the private option, these services will be developed within the Project Site and the Tribe would construct and maintain water supply facilities on the project site. Facilities would include a groundwater well, water treatment plant, water storage tanks, a pumping system (including pressurized storage) and a piped delivery system. The WWTP would treat wastewater to a tertiary level for reuse and onsite disposal. Disposal of wastewater would only occur during the dry season at rates that would avoid any runoff, thereby reducing the potential of an incidental discharge into surface waters. Under the municipal option, these services would provided by the City of Cloverdale through existing facilities.

Off-site road improvements required to mitigate potential effects to traffic, would require the project sponsor to pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Northbound Ramps/South Interchange. The project sponsor would pay their fair share contribution towards the construction of a roundabout that encompasses the intersections of U.S. 101 Northbound Ramps/South Interchange and Asti Road/South Interchange. The project sponsor would install traffic signals at one central main entrance to the project site on Asti Road, and construct a northbound right-turn lane and southbound left-turn lane on Asti Road at the site entrance. Supplementary driveways to the north and south of this signalized access would be configured to limit access to right-turn in/right-turn out only. These offsite improvements would occur in uplands and areas outside of suitable habitat for federally listed anadromous salmonids. In order to minimize water quality effects to local waterways from construction related run-off, a number of Best Management Practices (BMPs) would be required and incorporated in the proposed construction, thereby reducing potential effects.

# SECTION E
# Determination of Effect

We have determined that the Proposed Action will have no effect upon the following species:

- California freshwater shrimp, V *Syncaris pacifica* (E)
- Tidewater goby, *Eucyclogobius newberryi* (E)
- Delta smelt, *Hypomesus transpacificus* (T)
- Central Valley steelhead, *Oncorhynchus mykiss* (T)
- California red-legged fro*g, Rana aurora draytonii* (T)
- Marbled murrelet, *Brachyramphus marmoratus* (T)
- Northern spotted owl, *Strix occidentalis caurina* (T)
- Pennell's bird's-beak , *Cordylanthus tenius* ssp. *Capillaries* (E)

We have determined that the Proposed Action may affect, but is not likely to adversely affect, the following species and their associated critical habitats:

- California Coastal chinook salmon, *Oncorhynchus tshawytscha* (T)
- Central California Coastal steelhead, *Oncorhynchus mykiss* (T)
- Central California Coast coho salmon, *Oncorhynchus kisutch* (E)

We have determined that the Proposed Action may affect, but is not likely to adversely affect, the following Essential Fish Habitat:

- Pacific Coast Chinook Salmon

# SECTION F
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# Appendix A
## Drainage Study

ESA

# PRELIMINARY DRAINAGE STUDY

**For**

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

**January 2009**

Prepared for:

**ESA**
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Prepared by:

**Adobe Associates, Inc.**
**1220 North Dutton Avenue**
**Santa Rosa, California 95401**
**Phone: (707) 541-2300**

# TABLE OF CONTENTS

## Preliminary Drainage Study


| | Page Number |
|---|---|
| Existing Terrain and Topography | 1 |
| Sensitive Areas | 1 |
| Storm Water Run-On | 2 |
| Wetlands | 3 |
| Drainage System Discharge Outfalls | 3-4 |
| Storm Water Runoff | 4-5 |
| Storm Water Quality | 5-6 |

Exhibits

Preliminary Overall Site Plan
Preliminary Drainage Plan – Alternative A
Preliminary Drainage Plan – Alternative B
Preliminary Drainage Plan – Alternative C
Preliminary Drainage Plan – Alternative D
Preliminary Drainage Plan – Alternative E

## Preliminary Drainage

### Existing Terrain and Topography:

The proposed 69.8-acre project site is a trapezoidal shaped site bounded by the Russian River on the east side, the City of Cloverdale Wastewater Treatment Plant on the north side, Coyote Creek on the southern boundary, and State Highway 101 along the western boundary. Refer to the exhibit herein titled, "Preliminary Overall Site Plan".

Porterfield Creek flows from the northwest corner of the project site to the southeast corner parallel to and along the east side of the railroad tracks which bisects the project.

Surface drainage from the western 32-acre portion of the site flows across a gently sloping existing ground surface from the west to the east to Porterfield Creek, and then to the Russian River. Typical ground slopes range from one and a half percent to three percent. Presently, this area is primarily pasture land with several residential and barn structures.

The eastern 37.8-acre portion of the site is currently used as a vineyard and surface drainage flows from the north to the south. Surface runoff from the northern half of the vineyard flows to Porterfield Creek near the middle of the site. The southern half of the vineyard flows to Porterfield Creek near the southeast corner of the vineyard.

### Sensitive Areas:

The Russian River is the receiving water body for drainage in the vicinity of the City of Cloverdale. Considered a sensitive water body, the Russian River is listed on the State 303(d) list of impaired water bodies. Listed impairments include nutrients, pathogens, and sedimentation/siltation.

The Environmental Protection Agency (EPA) Region 9 is the Federal agency responsible for compliance with the Federal Clean Water Act (CWA). Considerations for storm water quality mitigations during construction and post-construction will be required. The proposed construction activities and post-construction improvements require compliance with the CWA regulations through the National Pollutant Discharge Elimination System (NPDES) permits and requirements.

NDPES requirements include the filing of an application for permit coverage and the preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is a document in which pollutants from construction activities and ultimate development uses are identified and specific best management practices (BMPs) are specified to mitigate and eliminate pollutant runoff from the project site. BMPs will consist of a combination of physical improvements (i.e. silt fences, fiber rolls, hydro-seed, etc.) and practices (i.e. water sampling, subcontractor training, BMP inspection and maintenance, etc).

Preliminary wetland delineations have been conducted for the project site and are discussed further in the wetlands section herein.

**Storm Water Run-On:**
Drainage from offsite areas run on to the project site at several locations along the project's north and west boundaries. Refer to the exhibit titled, "Preliminary Overall Site Plan."

Significant storm water run-on occurs at the north end of the project from Heron Creek which has a watershed area of over 1,000 acres. Prior to the construction of Highway 101 in the early 1990's, Heron Creek flowed along the west side of the City's wastewater treatment plant (WWTP) and became tributary to Porterfield Creek near the northwest corner of the project. During the construction of Highway 101, Asti Road was re-aligned causing Porterfield Creek to be altered. Drainage problems arose subsequent to highway construction and the Asti Road realignment and have become a subject of litigation between locals and the City, and between the City and Caltrans.

The project is awaiting the outcome of this litigation to determine the improvements to be made by the City, necessary to address Heron Creek drainage problems. The City intends to explore solutions for mitigating the litigated drainage issues. It is presently unknown what impacts the City's ultimate drainage solution may have on the project.

In the absence of information about future mitigation impacts, the project has planned for the existing condition, where surface water from an approximate 1,000 acre watershed enters the project site. To address this existing condition, a surface drainage channel is proposed to be constructed to the east along the north boundary to the east boundary and then to the south to Porterfield Creek, replacing the existing surface ditch through the vineyard. The constructed drainage channel would move storm water around the proposed wastewater treatment facilities and spray fields.

Porterfield Creek is a defined water course originating from offsite areas to the west. Porterfield Creek appears to have diminished flow capacity from near the middle of the project site to its confluence with the Russian River. The agricultural diversion channel characteristics give way to a shallow, wider and more natural appearing creek in this section. Large storm events appear to breach the low-lying constructed berm along the creek's east bank and spill into the vineyard. Storm water which breeches the east bank of Porterfield Creek returns to the creek near the southeast corner of the project.

Another source of storm water run-on to the project site is Highway 101 and the area immediately west of the highway. Two existing 30-inch diameter culverts discharge storm water at the west boundary of the project. Evidence of potential wetlands exists near the discharge end of both of these culverts. The tributary area to each of these culverts is approximately 20 acres. Preliminary wetland delineations have been conducted at each location of run-on drainage and are shown on the drainage exhibits for Alternatives A-E herein.

**Wetlands:**
A wetland mitigation area has been planned on the project site and is located at the east side of Asti Road between the project entrances. Site improvements in the vicinity of both preliminary wetland delineation areas will be designed and constructed to avoid the wetlands areas. Alternatives A through D propose the use of retaining walls to protect proposed fill locations from impacting both wetland areas. Alternative E proposes the use of retaining walls to protect the wetland area between the project entrances on Asti Road. Wetlands are impacted by the south entrance location proposed in Alternative E and will require additional mitigation. Mitigation options include: a.) wetlands creation/replacement adjacent to the wetlands between the two project entrances leading to the retail use areas, b.) the creation of a wetlands replacement area elsewhere on the project site, or c.) a site plan modification to relocate the southern access road on Alternative E.

**Drainage System Discharge Outfalls:**

*Site portion west of railroad tracks:*
Presently concentrated storm water drainage on the portion of the site west of the railroad tracks exits the site from four culvert outfall locations. Pre-development sheet flow runoff occurs at the northwest end of the site, at the easterly most portions of the site, and along the southern boundary adjacent to the Coyote Creek.

Existing culvert locations and sizes are proposed to be maintained for the developed site alternatives. Project improvements are proposed to mitigate post-construction storm water runoff to pre-construction run-off rates, reducing potential development impacts to the pre-development (existing) conditions. Improvements proposed include subterranean detention systems and upland drainage release systems.

Two storm drain outfalls exist along the northeast boundary, passing under the railroad track and discharging indirectly to Porterfield Creek. The northern culvert is an 18-inch pipe which discharges upstream to an area showing highly erodible soil conditions. Proposed site improvements would extend the 18-inch culvert through the erodible areas and discharge to the existing drainage course downstream. Energy dissipation would be provided at the discharge end of the culvert.

Slope protection practices such as hydro-seeding, planting, and soil reinforcement mats are proposed during construction to prevent erosion and sediment transport to Porterfield Creek. This would mitigate pollutants from being transported from this area to Porterfield Creek.

The southern culvert crossing the railroad tracks is a 24-inch culvert. Field inspection of this culvert revealed the existence of two water lines within the culvert, which appear to be used as a way to move well water from Porterfield Creek to locations on the west side of the railroad track. These water lines will be removed or relocated during construction of site utilities, to provide full capacity of the drainage culvert.

Proposed building improvements for alternatives A-E require concentrated flows to be directed toward the southern project boundary where existing sheet flow discharges occur. Upland drainage release systems are proposed at a minimum of two locations along the south boundary. Upland drainage release systems consist of a field of large diameter rock placed near the existing grade surface which spreads concentrated flow to a sheet flow condition prior to being discharged over the natural ground surface to Coyote Creek. Upland drainage release systems are an increasingly common and effective way to discharge to creeks and waterways without the construction of pipe outfalls, head walls, and erosion protection within the flow areas of the waterway.

*Site portion east of railroad tracks:*
Surface water leaves the east portion of the site at two locations. Natural low points exist at both locations where storm water runoff is discharged over the existing ground surface to Porterfield Creek. One existing outfall location, located near the middle of the project site discharging to the east bank of Porterfield Creek, is proposed be left in its natural condition.

A second outfall location, near the southeast corner of the site, is also proposed to be left in its natural condition. This location will be the downstream end of the constructed drainage ditch conveying the flows from Heron Creek.

**Storm Water Runoff:**
Storm water runoff from the project site is proposed to be limited to the pre-development runoff conditions. Increased runoff from the developed site would be mitigated by several methods including detention facilities and pervious surfaces.

Pervious concrete surfaces are proposed for a considerable portion of the driveway and parking surfaces. Refer to the exhibits titled, "Preliminary Drainage Plan – Alternative (A-E)" for porous surface locations and for pervious and non-pervious surface areas.

Minimizing the amount of impervious surfacing has the benefit of reducing runoff by allowing more opportunity for infiltration and groundwater recharge. Additional benefits to porous concrete surfaces are surface water filtration, storm water storage, reduced storm drainage piping and structures, and reduced heat surface versus asphalt paving surfaces.

Increased storm water runoff from the project site would be mitigated further by detaining runoff during periods of high intensity rain events and metering the discharge to pre-development discharges. A detention system would provide a reservoir to collect the runoff during the periods of high rainfall.

Subterranean detention systems are proposed under the parking areas in alternatives A-E. A subterranean detention system would be constructed using a network of large diameter pipes for storage and an outlet structure which restricts discharges from the detention system to pre-development flow rates. Storm water detention storage design determines the storage volume required to detain the increased runoff from a 10-year storm event, to discharge the runoff at the pre-development runoff rate or less. Storm events greater than 10-year events will be detained to the storage capacities designed for the 10-year event

and excess flows will bypass, via culverts, the detention facility and discharge into the upland drainage release system.

Subterranean detention system locations and discharge locations are shown on the exhibits titled, "Preliminary Drainage Plan – Alternative (A-E)." Approximate detention storage volumes are shown in Table 1 below and assume that no other means (i.e. porous concrete surfaces) of onsite storm water storage is utilized.

**Table 1 – Subterranean Detention System Volume Requirements**

| Alternative | 10-year Storm Volume (cf) | 10-year Storm Volume (ac-ft) |
|---|---|---|
| A-D | 60,100 | 1.38 |
| E | 31,800 | 0.73 |

**Storm Water Quality:**
Cloverdale Rancheria site runoff enters Porterfield Creek along the northeast boundary and Coyote Creek along the southern boundary. Both creeks are tributary to the Russian River, the receiving water body, approximately 1/3 of a mile southeast of the project site. Pollutants of concern for the Russian River basin, according to the State of California 303 (d) list, include nutrients, pathogens, and sediment/siltation.

Potential sources for nutrients are agricultural activities. Pathogens are a pollutant associated with urban runoff, while the source of sediment and siltation includes agriculture, construction and land development, and urban runoff. Treatment of runoff is accomplished through a combination of source controls and treatment controls.

Proposed source treatment controls to be used on the project site for storm water quality mitigation include the following:

- Landscaping designs to prevent sediment transport to storm drain systems.
- Design landscaping to vector control requirements - avoid water ponding.
- Use porous concrete surfacing in driveways and parking areas – maximizes pervious surfaces and reduces runoff while filtering pollutant particles from runoff, reduces required stormwater detention volumes, reduces storm drain pipe and structure improvements.
- Treat runoff in landscaping or porous concrete surfaces prior to storing in storm water detention facility.
- Use upland drainage release system to release water to existing creeks – avoids the need to place storm drain outfall piping, headwall structures, and energy dissipation improvements within existing creek banks.
- Discharge roof drainage directly to landscape or porous concrete surfaces – allows treatment prior to entering storm drain system.
- Incorporate Integrated Pest Management (IPM) principles and techniques for design and maintenance.

Proposed treatment controls to maintain or improve water quality include the following:

- Use bio-swales to channel and treat surface water
- Proprietary treatment systems maybe used as an alternative to porous concrete surfaces.

In addition to the above source and treatment controls, which are post-construction or permanent controls, best management practices (BMPs) will be implemented during the construction phase. These BMPs control the transport of pollutants from the construction site to the natural water ways. An erosion and sediment control plan will be prepared with the construction design drawings and a Storm Water Pollution Prevention Plan (SWPPP) as required by the EPA Region 9 prior to the start of construction. Both documents will describe the devices and practices to control pollutant runoff during and after construction.

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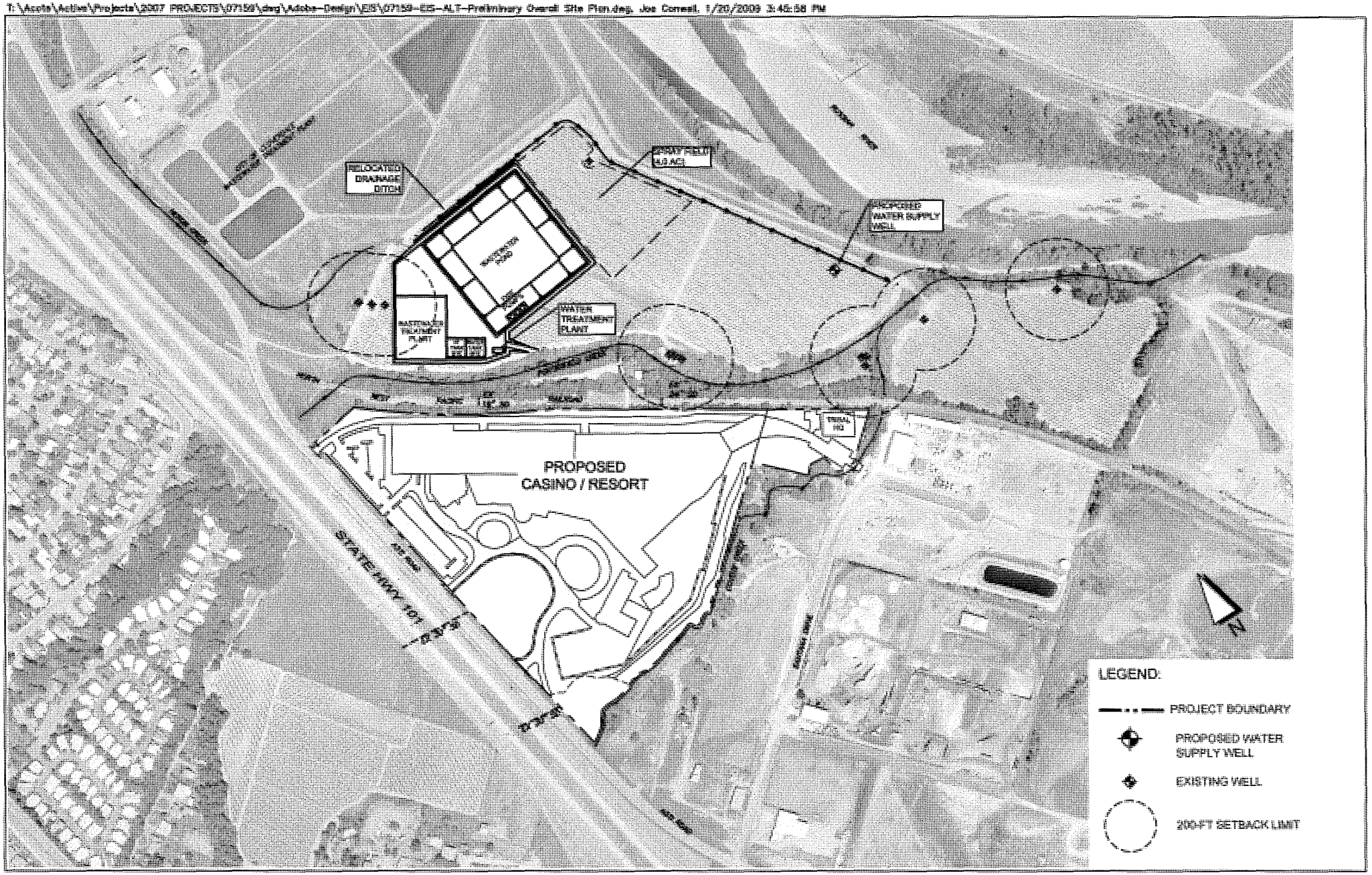


*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

GRAPHIC SCALE: 1" = 500'

0 250 500 1,000

**PRELIMINARY OVERALL SITE PLAN**


Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

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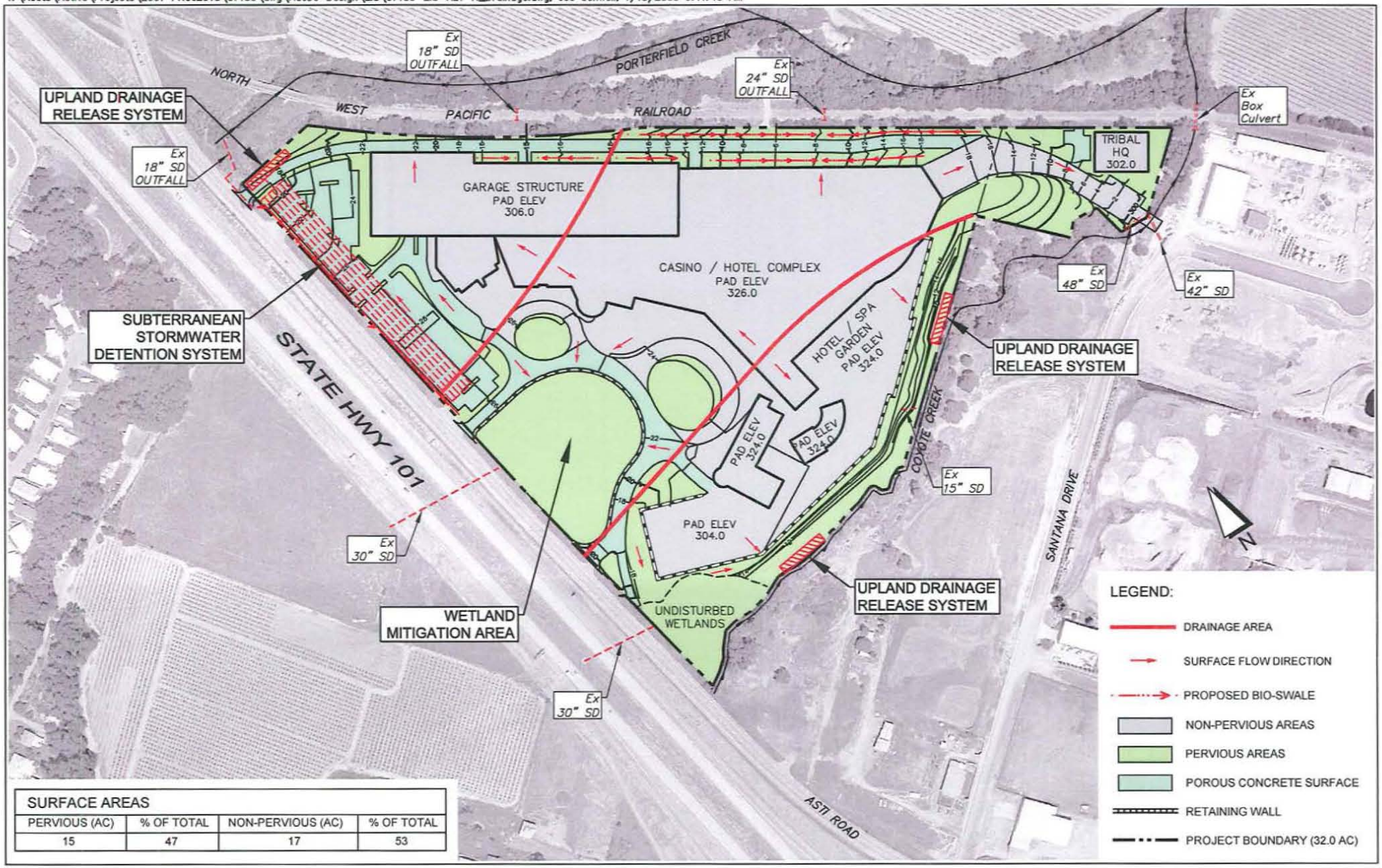


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 15 | 47 | 17 | 53 |

*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE A**

GRAPHIC SCALE: 1" = 300'

0 150 300 600


Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

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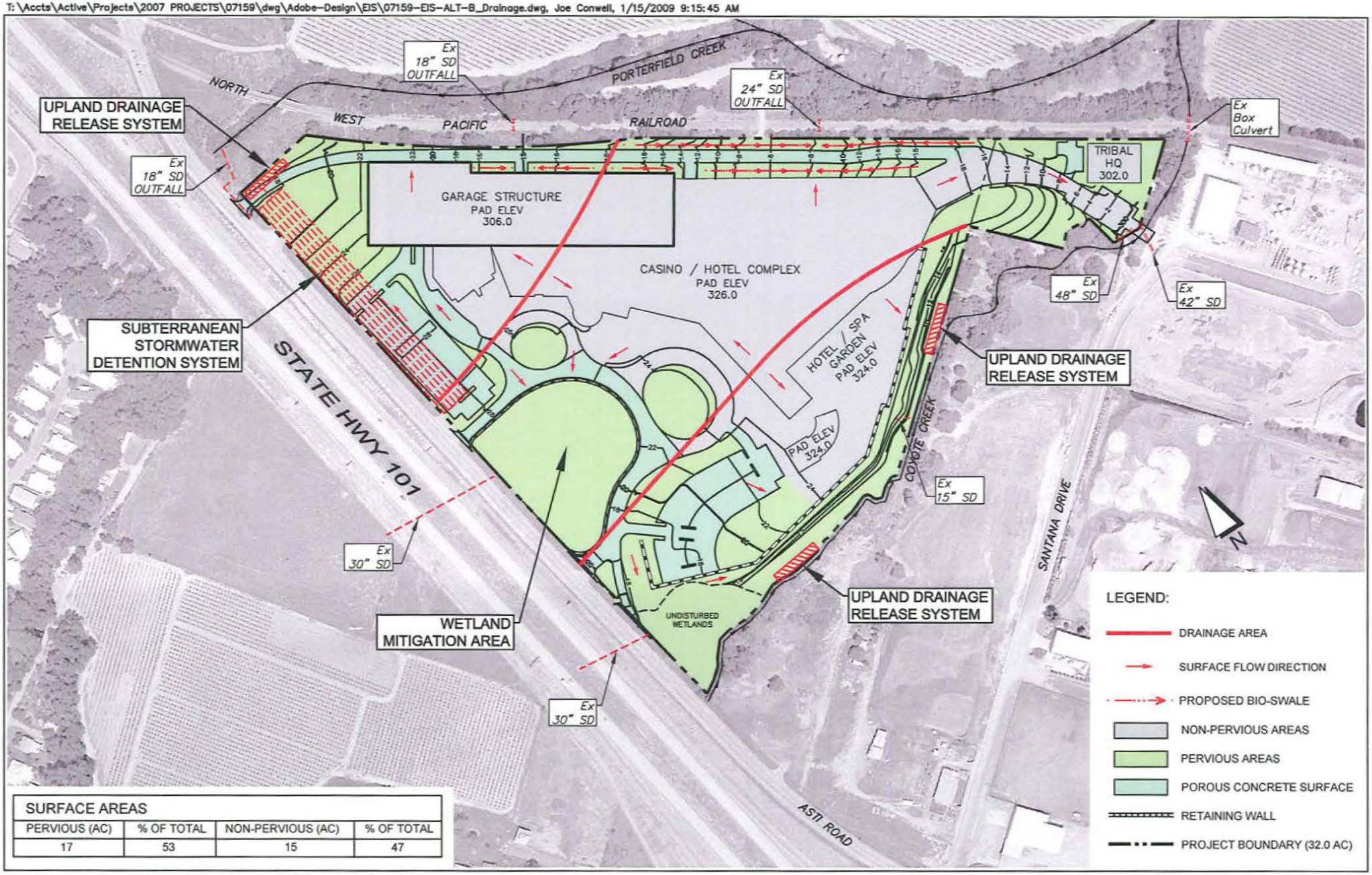


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 17 | 53 | 15 | 47 |

*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE B**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

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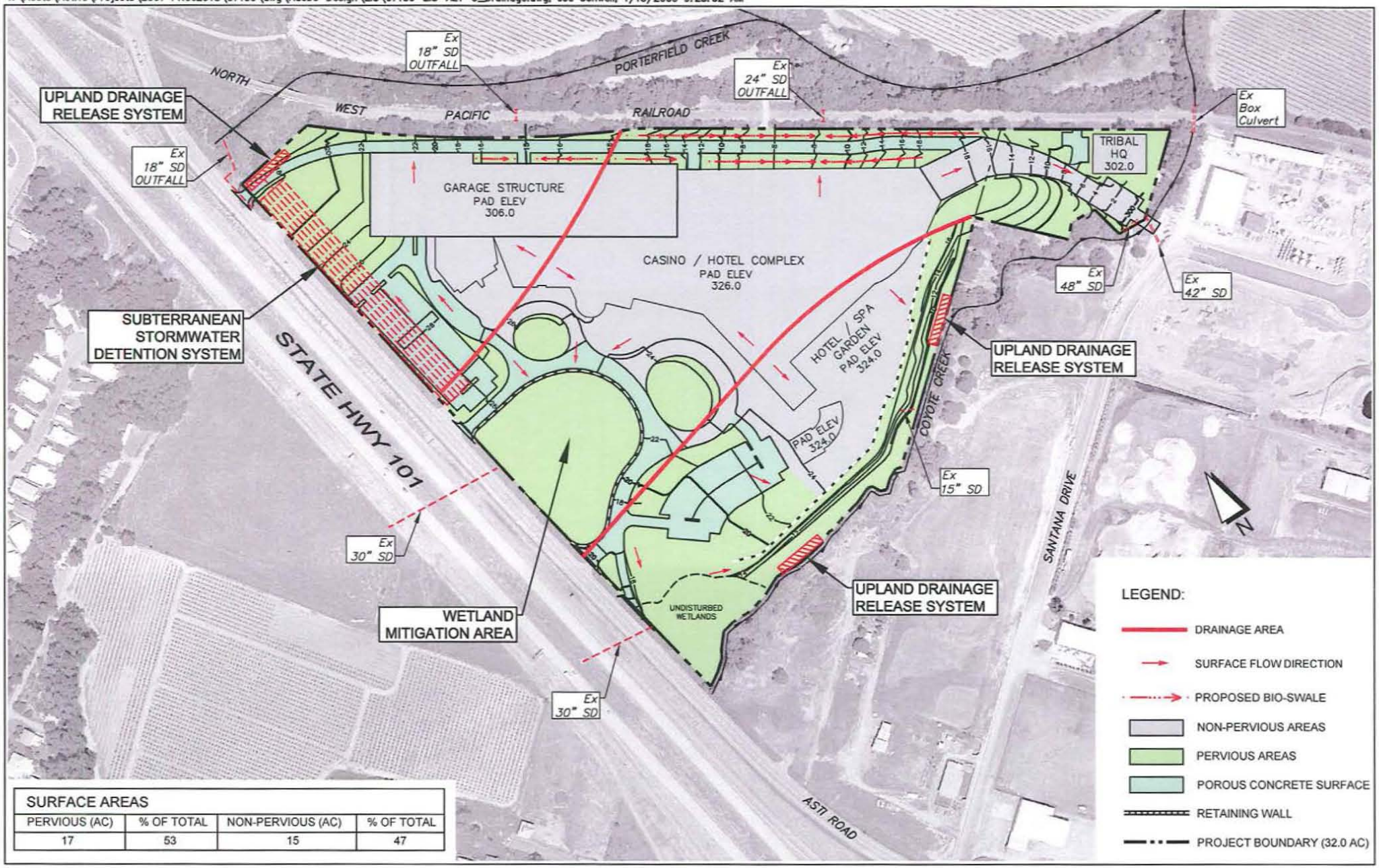


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 17 | 53 | 15 | 47 |

*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE C**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

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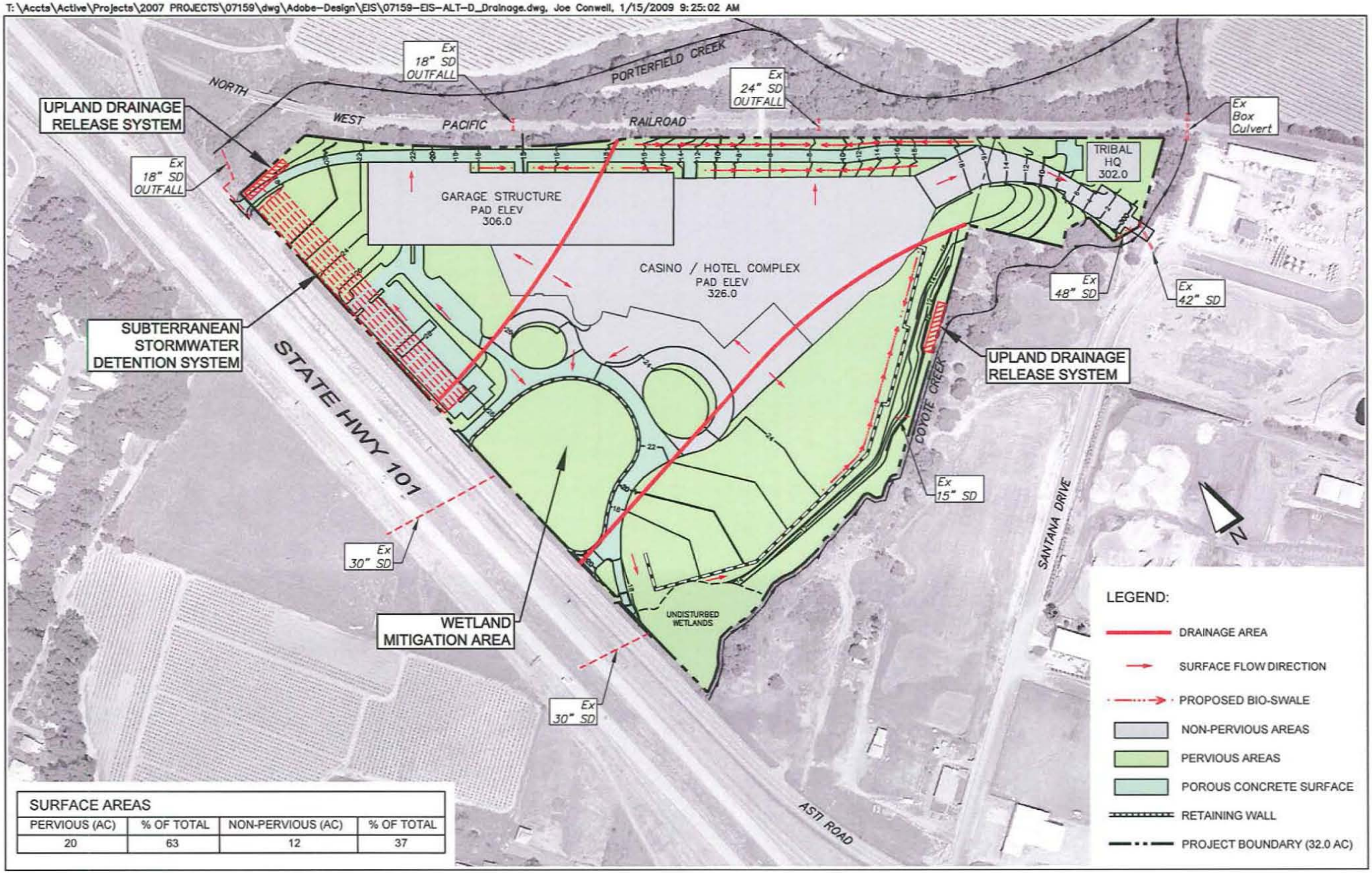


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 20 | 63 | 12 | 37 |

*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE D**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

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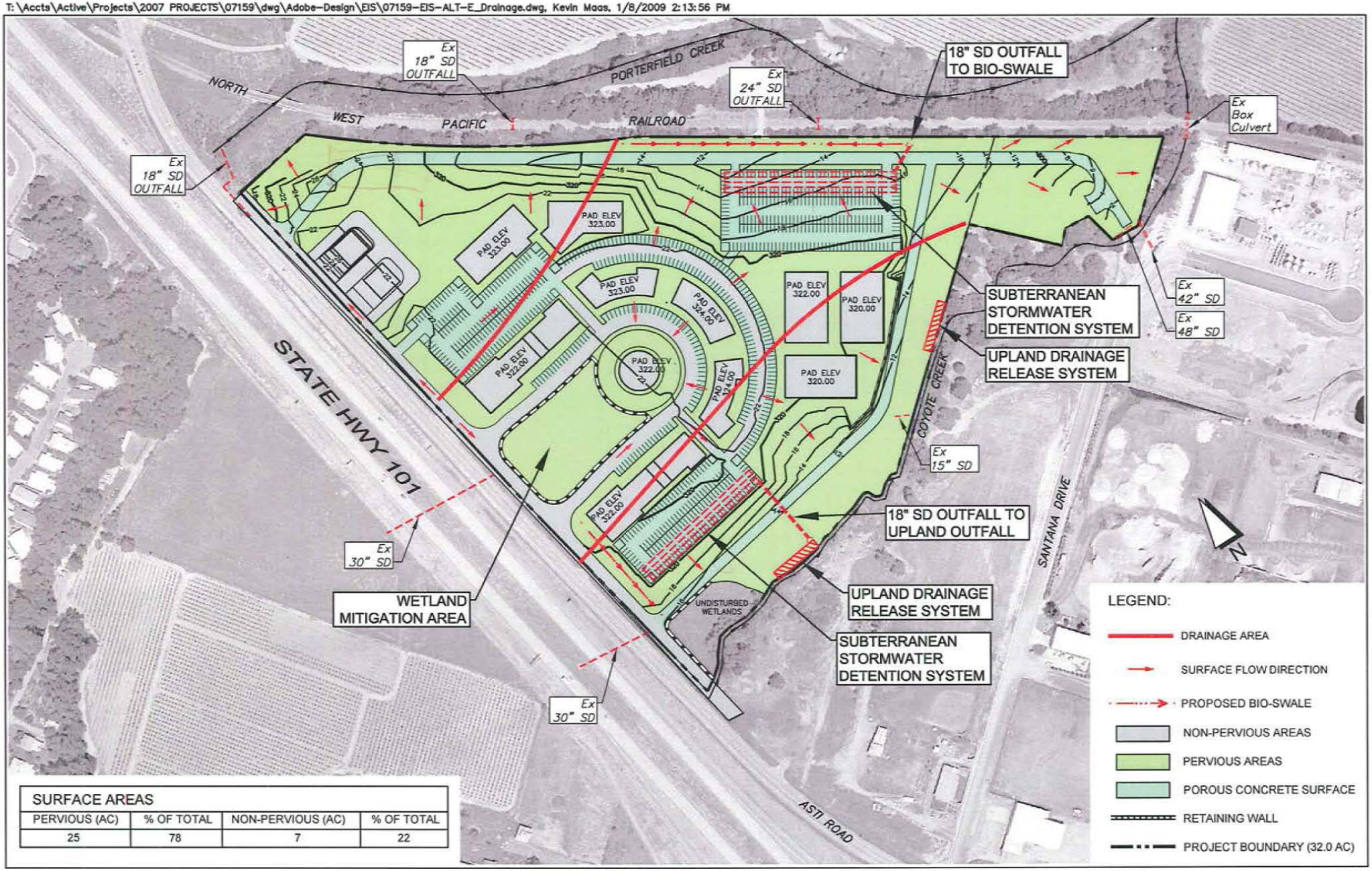


| SURFACE AREAS | | | |
|---|---|---|---|
| PERVIOUS (AC) | % OF TOTAL | NON-PERVIOUS (AC) | % OF TOTAL |
| 25 | 78 | 7 | 22 |

*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY DRAINAGE PLAN - ALTERNATIVE E**

GRAPHIC SCALE: 1" = 300'

0 150 300 600


Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

# Appendix B
## USFWS Species List

ESA

**United States Department of the Interior**
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

December 11, 2008

Document Number: 081211032846

Chariss Tweedy
Environmental Science Associates
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Subject: Species List for Cloverdale EIS

Dear: Ms. Tweedy

We are sending this official species list in response to your December 11, 2008 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 11, 2009.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

TAKE PRIDE IN AMERICA

# U.S. Fish & Wildlife Service
# Sacramento Fish & Wildlife Office
## Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 081211032846

Database Last Updated: September 11, 2008

## Quad Lists

### Listed Species

#### Invertebrates

*Syncaris pacifica*
- California freshwater shrimp (E)

#### Fish

*Eucyclogobius newberryi*
- tidewater goby (E)

*Hypomesus transpacificus*
- delta smelt (T)

*Oncorhynchus kisutch*
- coho salmon - central CA coast (E) (NMFS)
- Critical habitat, coho salmon - central CA coast (X) (NMFS)

*Oncorhynchus mykiss*
- Central California Coastal steelhead (T) (NMFS)
- Central Valley steelhead (T) (NMFS)
- Critical habitat, Central California coastal steelhead (X) (NMFS)
- Critical habitat, Northern California steelhead (X) (NMFS)
- Northern California steelhead (T) (NMFS)

*Oncorhynchus tshawytscha*
- California coastal chinook salmon (T) (NMFS)
- Critical habitat, California coastal chinook salmon (X) (NMFS)

#### Amphibians

*Rana aurora draytonii*
- California red-legged frog (T)

#### Birds

*Brachyramphus marmoratus*
- marbled murrelet (T)

*Strix occidentalis caurina*
- northern spotted owl (T)

#### Plants

*Cordylanthus tenuis ssp. capillaris*
- Pennell's bird's-beak (E)

### Quads Containing Listed, Proposed or Candidate Species:

GEYSERVILLE (518B)

WARM SPRINGS DAM (519A)
TOMBS CREEK (519B)
HIGHLAND SPRINGS (534B)
ASTI (534C)
HOPLAND (535A)
Yorkville (535B)
BIG FOOT MTN. (535C)
CLOVERDALE (535D)

## County Lists

No county species lists requested.

## Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

*Critical Habitat* - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

## Important Information About Your Species List

### How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

### Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

### Surveying

Some of the species on your list may not be affected by your project. A trained biologist

and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

## Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

## Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

## Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

## Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

## Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

## Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

## Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 11, 2009.

# Appendix E
## CNDDB and USFWS Species List

ESA

## Actinemys marmorata marmorata

northwestern pond turtle

**Element Code:** ARAAD02031

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3G4T3
**State:** S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS.
**Micro:** REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

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**Occurrence No.** 26 **Map Index:** 31353 **EO Index:** 20287

**Dates Last Seen**
**Element:** 1995-05-15
**Site:** 1995-05-15
**Record Last Updated:** 1996-01-22

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Warm Springs Dam (3812361/519A)
**County Summary:** Sonoma

**Lat/Long:** 38.69974° / -123.04806°
**UTM:** Zone-10 N4283458 E495821
**Area:**
**Elevation:** 300 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON
**Township:** 10N
**Range:** 11W
**Section:** 23 **Qtr:** XX
**Meridian:** M

**Location:** WARM SPRINGS ARM OF LAKE SONOMA.
**Location Detail:** ADULTS FOUND THROUGHOUT THE WARM SPRINGS ARM.
**Ecological:** HABITAT CONSISTS OF A LARGE, MAN-MADE RESERVOIR, WITH AN ADJACENT EVERGREEN FOREST; LOTS OF DOWN TREES LAYING ON THE BANK AND IN THE WATER. NO GRAZING FOR PAST 10-12 YEARS. SOME STEEP SLOPES WITH EROSION. LARGEMOUTH BASS IN THE LAKE.
**General:** 11 ADULTS OBSERVED ON 15 MAY 1995. CAS SPECIMEN #23016, DATE UNKNOWN.
**Owner/Manager:** DOD-COE

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**Occurrence No.** 100 **Map Index:** 38444 **EO Index:** 33452

**Dates Last Seen**
**Element:** 1997-05-07
**Site:** 1997-05-07
**Record Last Updated:** 1998-03-24

**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93838° / -122.94187°
**UTM:** Zone-10 N4309940 E505037
**Area:** 28.5 acres
**Elevation:** 1,760 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 10W
**Section:** 35 **Qtr:** NW
**Meridian:** M

**Location:** HIGHLAND CREEK, ON THE NORTH SIDE OF HIGHLAND SPRINGS ROAD, ABOUT 2 MILES UPSTREAM FROM HIGHLAND RESERVOIR.
**Ecological:** HABITAT CONSISTS A PERENNIAL STREAM WITH RIPARIAN DOMINATED BY SALIX LASIANDRA AND ABUNDANT EMERGENT CAREX NUDATA.
**General:** A SINGLE ADULT MALE WAS CAPTURED ON 7 MAY 1997 WHILE CROSSING THE DIRT BED OF HIGHLAND SPRINGS ROAD.
**Owner/Manager:** BLM-CLEAR LAKE RA

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**Occurrence No.** 108 **Map Index:** 41688 **EO Index:** 41688

**Dates Last Seen**
**Element:** 1999-05-21
**Site:** 1999-05-21
**Record Last Updated:** 1999-09-27

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Mendocino

**Lat/Long:** 38.87173° / -123.05632°
**UTM:** Zone-10 N4302544 E495114
**Area:** 3.0 acres
**Elevation:** 500 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 12N
**Range:** 11W
**Section:** 23 **Qtr:** SW
**Meridian:** M

**Location:** 0.6 MILE WEST OF HIGHWAY 101, 4.5 MILES NNW OF CLOVERDALE.
**Ecological:** HABITAT CONSISTS OF A STOCK POND THAT IS USED FOR VINEYARD IRRIGATION; SURROUNDED BY GRASSLANDS AND VINEYARDS.
**General:** 1 INDIVIDUAL OBSERVED ON 21 MAY 1999.
**Owner/Manager:** PVT

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## Actinemys marmorata marmorata

northwestern pond turtle — **Element Code:** ARAAD02031

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G3G4T3 | **CDFG Status:** SC |
| **State:** None | **State:** S3 | |

**Habitat Associations**

**General:** ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS.

**Micro:** REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

**Occurrence No.** 142 **Map Index:** 46847 **EO Index:** 46847

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2001-10-09
**Site:** 2001-10-09
**Record Last Updated:** 2001-12-17

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.94001° / -122.90721°
**UTM:** Zone-10 N4310123 E508041
**Area:**
**Elevation:** 1,500 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 09W
**Section:** 30 **Qtr:** SW
**Meridian:** M

**Location:** SOUTH END OF HIGHLAND SPRINGS RESERVOIR; 0.2 MILES NORTH OF HIGHLAND SPRINGS.

**Threat:** CHANGE IN WATER REGIME.

**General:** 9 OCT 2001: 2 INDIVIDUALS OBSERVED BASKING.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 168 **Map Index:** 49542 **EO Index:** 49542

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2002-08-13
**Site:** 2002-08-13
**Record Last Updated:** 2002-12-03

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Sonoma

**Lat/Long:** 38.82086° / -123.01047°
**UTM:** Zone-10 N4296898 E499091
**Area:**
**Elevation:** 650 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON
**Township:** 11N
**Range:** 10W
**Section:** 07 **Qtr:** XX
**Meridian:** M

**Location:** RUSSIAN RIVER, BETWEEN GEYSERS ROAD BRIDGE AND CROCKER BRIDGE (ON HIGHWAY 101), CLOVERDALE

**Location Detail:** TURTLES WERE FOUND BASKING ON LARGE, WOODY DEBRIS ALONG THE BANKS IN WATER DEPTHS >3 FEET.

**Ecological:** HABITAT CONSISTS OF RIVERINE IN A WELL-DEVELOPED RIPARIAN ZONE; PREVIOUS BANKSIDE EROSION CONTROL HAS LIMITED RIPARIAN VEGETATION GROWTH IN SOME AREAS.

**General:** 6 ADULT POND TURTLES OBSERVED DURING A KAYAK SURVEY ON 13 AUG 2002.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 171 **Map Index:** 49546 **EO Index:** 49546

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2002-08-14
**Site:** 2002-08-14
**Record Last Updated:** 2002-12-04

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.94367° / -123.08145°
**UTM:** Zone-10 N4310528 E492941
**Area:**
**Elevation:** 650 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 11W
**Section:** 33 **Qtr:** XX
**Meridian:** M

**Location:** RUSSIAN RIVER, FROM SQUAW ROCK NORTH TO THE HIGHWAY 175 CROSSING, SE OF HOPLAND

**Ecological:** HABITAT CONSISTS OF RIVERINE IN A WELL-DEVELOPED RIPARIAN ZONE; PREVIOUS BANKSIDE EROSION CONTROL HAS LIMITED RIPARIAN VEGETATION GROWTH IN SOME AREAS. SURROUNDED BY AGGREGATE MINING, OPEN SPACE, AND VINEYARDS.

**General:** 14 AUG 2002: 4 ADULT WESTERN POND TURLES OBSERVED (1 CAPTURED/RELEASED; CARAPACE = 150MM) BETWEEN THE HIGHWAY 101 OVERPASS AND SQUAW ROCK; 4 ADULT TURTLES OBSERVED BETWEEN HIGHWAY 101 AND HIGHWAY 175.

**Owner/Manager:** UNKNOWN

## Actinemys marmorata marmorata

northwestern pond turtle — **Element Code:** ARAAD02031

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G3G4T3 | **CDFG Status:** SC |
| **State:** None | **State:** S3 | |

**Habitat Associations**

**General:** ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS.

**Micro:** REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

**Occurrence No.** 173 **Map Index:** 49556 **EO Index:** 49556

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2002-08-20
**Site:** 2002-08-20
**Record Last Updated:** 2002-12-04

**Quad Summary:** Geyserville (3812268/518B), Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.73620° / -122.93627°
**UTM:** Zone-10 N4287505 E505538
**Area:**
**Elevation:** 600 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON
**Township:** 10N
**Range:** 10W
**Section:** 11 **Qtr:** XX
**Meridian:** M

**Location:** RUSSIAN RIVER, BETWEEN WASHINGTON SCHOOL BRIDGE AND HIGHWAY 128 BRIDGE, IN ALEXANDER VALLEY

**Ecological:** HABITAT CONSISTS OF RIVERINE IN A WELL-DEVELOPED RIPARIAN ZONE; PREVIOUS BANKSIDE EROSION CONTROL HAS LIMITED RIPARIAN VEGETATION GROWTH IN SOME AREAS. SURROUNDED BY AGGREGATE MINING, OPEN SPACE, AND VINEYARDS.

**General:** 24 ADULT WESTERN POND TURTLES OBSERVED ON 20 AUG 2002 DURING A KAYAK SURVEY OF THE RIVER.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 176 **Map Index:** 51831 **EO Index:** 51831

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-06-XX
**Site:** 1999-06-XX
**Record Last Updated:** 2003-07-22

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93695° / -122.88468°
**UTM:** Zone-10 N4309786 E509994
**Radius:** 80 meters
**Elevation:** 1,460 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 09W
**Section:** 32 **Qtr:** NE
**Meridian:** M

**Location:** ADOBE CREEK, SW OF HIGHLAND SPRINGS CUTOFF, 1 MILE EAST OF HIGHLAND SPRINGS RESERVOIR

**Location Detail:** SITE IS LOCATED ~100' WEST OF POLE #3973+80.

**General:** 1 INDIVIDUAL OBSERVED DURING MAY-JUN 1999.

**Owner/Manager:** PVT

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**Occurrence No.** 277 **Map Index:** 69851 **EO Index:** 70674

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2005-05-13
**Site:** 2005-05-13
**Record Last Updated:** 2007-09-05

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.98127° / -123.11442°
**UTM:** Zone-10 N4314704 E490089
**Area:** 23.0 acres
**Elevation:** 505 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 11W
**Section:** 18 **Qtr:** SW
**Meridian:** M

**Location:** EAST SIDE OF HIGHWAY 101, 0.5 MILE NORTH OF HOPLAND.

**Ecological:** HABITAT CONSISTS OF AN INTERMITTENT STREAM IMPOUNDED INTO A SERIES OF LARGE PONDS; SUPPORTS RIPARIAN VEGETATION OF WILLOWS, VALLEY OAKS, OREGON ASH, COTTONWOODS, AND HIMILAYAN BLACKBERRY.

**Threat:** THREATENED BY THE PROPOSED HOPLAND BYPASS HIGHWAY PROJECT AND VINEYARD MAINTENANCE ACTIVITIES.

**General:** 2 TURTLES OBSERVED DURING MAY AND JUNE 2004, AND ON 13 MAY 2005.

**Owner/Manager:** PVT

## Actinemys marmorata marmorata

northwestern pond turtle — **Element Code:** ARAAD02031

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G3G4T3 | **CDFG Status:** SC |
| **State:** None | **State:** S3 | |

**Habitat Associations**

**General:** ASSOCIATED WITH PERMANENT OR NEARLY PERMANENT WATER IN A WIDE VARIETY OF HABITATS.

**Micro:** REQUIRES BASKING SITES. NESTS SITES MAY BE FOUND UP TO 0.5 KM FROM WATER.

**Occurrence No.** 278 **Map Index:** 69853 **EO Index:** 70676

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2005-05-13
**Site:** 2005-05-13
**Record Last Updated:** 2007-09-05

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.99702º / -123.10235º
**UTM:** Zone-10 N4316450 E491136
**Area:** 14.0 acres
**Elevation:** 560 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 11W
**Section:** 08 **Qtr:** XX
**Meridian:** M

**Location:** 0.25 MILE EAST OF RIVER ROAD AND 1 MILE WSW OF THE UC-HOPLAND FIELD STATION, 1.8 MILES NNE OF HOPLAND.

**Location Detail:** SITE IS LOCATED EAST OF THE FETZER VINEYARD COOPERAGE FACILITY.

**Ecological:** HABITAT CONSISTS OF A LARGE POND, WITH EMERGENT VEGETATION OF CATTAILS, BULRUSHES, HIMALAYAN BLACKBERRY, AND SEVERAL DEAD TREE SNAGS.

**Threat:** THREATENED BY THE PROPOSED HOPLAND BYPASS HIGHWAY PROJECT AND VINEYARD MAINTENANCE ACTIVITIES.

**General:** 3 TURTLES OBSERVED DURING MAY AND JUNE 2004, AND ON 13 MAY 2005.

**Owner/Manager:** PVT-FETZER VINEYARDS

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**Occurrence No.** 366 **Map Index:** 70720 **EO Index:** 71630

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2006-12-06
**Site:** 2006-12-06
**Record Last Updated:** 2008-02-25

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.71312º / -122.98649º
**UTM:** Zone-10 N4284943 E501173
**Radius:** 80 meters
**Elevation:** 190 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 10N
**Range:** 10W
**Section:** 17 **Qtr:** XX
**Meridian:** M

**Location:** DRY CREEK, 1.3 MILES SE (DOWNSTREAM) OF WARM SPRINGS DAM ON LAKE SONOMA.

**Ecological:** PERENNIAL DRY CREEK WITH DENSE ALDER/WILLOW RIPARIAN HABITAT. FLATWATER AREAS WITH LARGE WOODY DEBRIS ALONG THE BANKS PROVIDE BASKING HABITAT FOR TURTLES. FLOWS AUGMENTED BY DAM RELEASES.

**General:** 1 ADULT OBSERVED BASKING ON A LOG. THIS TURTLE OBSERVATION IS FROM LATE FALL WHEN MOST TURTLES ARE LIKELY INACTIVE. CREEK SURVEYED BY KAYAK FROM WARM SPRINGS DAM TO LAMBERT BRIDGE.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 369 **Map Index:** 71004 **EO Index:** 71922

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2007-11-22
**Site:** 2007-11-22
**Record Last Updated:** 2008-03-07

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.62723º / -122.89775º
**UTM:** Zone-10 N4275416 E508899
**Radius:** 80 meters
**Elevation:** 100 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 09N
**Range:** 09W
**Section:** 18 **Qtr:** Ξ
**Meridian:** M

**Location:** DRY CREEK, 1.8 MILES UPSTREAM FROM THE WESTSIDE ROAD CROSSING, WEST OF HEALDSBURG.

**Ecological:** HABITAT CONSISTS OF A CREEK WITH MATURE WILLOW/ALDER RIPARIAN.

**General:** 2 POND TURTLES OBSERVED BASKING ON A LOG ON 22 NOV 2007. TURTLES SEEN DURING A CHINOOK SALMON KAYAK SURVEY.

**Owner/Manager:** UNKNOWN

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## Agelaius tricolor

tricolored blackbird

**Element Code:** ABPBXB0020

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2G3
**State:** S2

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** HIGHLY COLONIAL SPECIES, MOST NUMBEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.
**Micro:** REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, & FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

**Occurrence No.** 173 **Map Index:** 17172 **EO Index:** 12054
**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1990-05-20
**Site:** 1990-05-20
**Record Last Updated:** 1990-11-26

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.92436º / -123.07772º
**UTM:** Zone-10 N4308385 E493262
**Radius:** 80 meters
**Elevation:** 600 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 12N
**Range:** 11W
**Section:** 03 **Qtr:** NW
**Meridian:** M

**Location:** SE ARM OF BRADFORD POND, APPROXIMATELY 3 MI SE OF HOPLAND.
**Location Detail:** 50+ ADULTS NESTING IN CATTAILS IN THE SE ARM OF A 50-ACRE RESERVOIR; THIS PORTION OF RESERVOIR IS FENCED TO EXCLUDE
**Ecological:** ALTHOUGH A WORKING CATTLE RANCH, THERE ARE NO KNOWN THREATS; AREA IS FENCED TO EXCLUDE CATTLE FROM RANCH HOUSE AREA.
**General:** BRADFORD POND IS A NEW RESERVOIR, APPROXIMATELY 6 YEARS OLD.
**Owner/Manager:** PVT

## Allium peninsulare var. franciscanum

Franciscan onion

**Element Code:** PMLIL021R1

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5T2
**State:** S2.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** CLAY SOILS; OFTEN ON SERPENTINE. DRY HILLSIDES. 100-300M.

**Occurrence No.** 13 **Map Index:** 63842 **EO Index:** 63937
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-06-01
**Site:** 1999-06-01
**Record Last Updated:** 2006-02-01

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Mendocino

**Lat/Long:** 38.86960° / -123.06581°
**UTM:** Zone-10 N4302308 E494290
**Area:**
**Elevation:** 1,050 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON
**Township:** 12N
**Range:** 11W
**Section:** 22 **Qtr:** SE
**Meridian:** M

**Location:** NORTH OF CONFLUENCE OF EDWARDS CREEK AND RUSSIAN RIVER; WEST OF HWY 101 AT GEYERS RD EXIT; 5.5 AIR MI NNW OF CLOVERDALE.

**Location Detail:** ON JEEP ROAD ASCENDING RIDGE, IN THE SE 1/4 OF SE 1/4 OF SECTION 22.

**Ecological:** SERPENTINE BARRENS AND CHAPARRAL WITH SPARSE QUERCUS DURATA THICKETS, PERENNIAL GRASSLAND WITH NASELLA SPP.

**General:** 1999 TAYLOR COLLECTION IS THE ONLY SOURCE FOR THIS SITE. TAYLOR NOTES "FLOWERS WHITE; ATYPICAL?" ID UNCERTAIN? NEEDS FIELDWORK.

**Owner/Manager:** UNKNOWN

## Ammodramus savannarum

grasshopper sparrow

**Element Code:** ABPBXA0020

**Status**

**Federal:** None
**State:** None

**NDDB Element Ranks**

**Global:** G5
**State:** S2

**Other Lists**

**CDFG Status:** SC

**Habitat Associations**

**General:** DENSE GRASSLANDS ON ROLLING HILLS, LOWLAND PLAINS, IN VALLEYS & ON HILLSIDES ON LOWER MOUNTAIN SLOPES.

**Micro:** FAVORS NATIVE GRASSLANDS WITH A MIX OF GRASSES, FORBS & SCATTERED SHRUBS. LOOSELY COLONIAL WHEN NESTING.

**Occurrence No.** 1 **Map Index:** 47283 **EO Index:** 47283

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**

**Element:** 1991-06-XX
**Site:** 1991-06-XX

**Record Last Updated:** 2002-02-25

**Quad Summary:** Hopland (3812381/535A)

**County Summary:** Mendocino

**Lat/Long:** 38.98529º / -123.08567º
**UTM:** Zone-10 N4315147 E492580
**Radius:** 1/10 mile
**Elevation:** 840 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 13N
**Range:** 11W
**Section:** 17 **Qtr:** XX
**Meridian:** M

**Location:** NORTH EDGE OF SANEL VALLEY, 0.8 MILES EAST OF RIVER ROAD, 1.8 MILES NE OF HOPLAND.

**Ecological:** HABITAT CONSISTS OF MODERATELY GRAZED (BY SHEEP AND CATTLE) GRASSLAND DOMINATED BY NON-NATIVE ANNUALS.

**Threat:** THREAT IS THE PROPOSED HOPLAND BYPASS.

**General:** JUNE 1991 TO PRESENT DATE (DATE UNKNOWN, BUT RECEIVED IN CNDDB 13 FEB 2002): A BREEDING COLONY CONSISTING OF APPROXIMATELY 10 INDIVIDUALS.

**Owner/Manager:** UC-HOPLAND FIELD STATION

## Amphispiza belli belli

Bell's sage sparrow

**Element Code:** ABPBX97021

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5T2T4
**State:** S2?

**Other Lists**
**CDFG Status:**

**Habitat Associations**
**General:** NESTS IN CHAPARRAL DOMINATED BY FAIRLY DENSE STANDS OF CHAMISE. FOUND IN COASTAL SAGE SCRUB IN SOUTH OF RANGE.
**Micro:** NEST LOCATED ON THE GROUND BENEATH A SHRUB OR IN A SHRUB 6-18 INCHES ABOVE GROUND. TERRITORIES ABOUT 50 YDS APART.

**Occurrence No.** 1 **Map Index:** 44020 **EO Index:** 44020
**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2000-06-XX
**Site:** 2000-06-XX
**Record Last Updated:** 2000-10-12

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake, Mendocino

**Lat/Long:** 38.90232º / -122.92051º
**UTM:** Zone-10 N4305940 E506892
**Area:** 572.0 acres
**Elevation:** 2,700 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 12N
**Range:** 10W
**Section:** 12 **Qtr:** XX
**Meridian:** M

**Location:** ROAD TO MONUMENT PEAK, ADOBE CREEK ROAD, AND CUTOFF TO HIGHLAND SPRINGS ROAD, COW GLADE, MAYACMAS MOUNTAINS
**Location Detail:** SURVEYS TAKEN ALONG THE 3 ROADS, UTM COORDINATES GIVE LOCATIONS TO SUB-METER ACCURACY (POST PROCESSED, DATUM USED NOT GIVEN) AS PER GALEA.
**Ecological:** CHAPARRAL, SOME RECENTLY BURNED (1999). SURROUNDING LAND USE: SOME CATTLE GRAZING.
**General:** >50 OBSERVED NESTING, RELATIVELY HIGH DENSITY OF THIS SPECIES, 2000.
**Owner/Manager:** PVT

**Occurrence No.** 2 **Map Index:** 17131 **EO Index:** 44022
**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2000-06-XX
**Site:** 2000-06-XX
**Record Last Updated:** 2000-10-12

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93143º / -122.92345º
**UTM:** Zone-10 N4309170 E506635
**Area:**
**Elevation:** 1,525 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 10W
**Section:** 36 **Qtr:** S
**Meridian:** M

**Location:** HIGHLAND SPRINGS ROAD, 0.8 MILES SOUTHWEST OF HIGHLAND SPRINGS.
**Location Detail:** NO COORDINATE DATA GIVEN WITH ROUGH DRAWING ON MAP.
**General:** UNKNOWN NUMBER OF BIRDS OBSERVED.
**Owner/Manager:** UNKNOWN

## Amsinckia lunaris

bent-flowered fiddleneck

**Element Code:** PDBOR01070

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** 50-500M.

**Occurrence No.** 22 **Map Index:** 17131 **EO Index:** 49071

**Dates Last Seen**
**Element:** 1952-05-03
**Site:** 1952-05-03
**Record Last Updated:** 2002-10-17

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93143º / -122.92345º
**UTM:** Zone-10 N4309170 E506635
**Area:**
**Elevation:** 1,525 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 10W
**Section:** 36 **Qtr:** S
**Meridian:** M

**Location:** 1.2 MILES SOUTHWEST OF HIGHLAND SPRINGS.

**Ecological:** IN SHALLOW ROCKY SOIL ON 3 YEAR BURN, SOUTH FACING SLOPE.

**General:** NEEDS FIELDWORK.

**Owner/Manager:** UNKNOWN

## Antirrhinum subcordatum

dimorphic snapdragon

**Element Code:** PDSCR2S070

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S3.3

**Other Lists**
**CNPS List:** 4.3

**Habitat Associations**
**General:** CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
**Micro:** GENERALLY ON SERPENTINE OR SHALE IN FOOTHILL WOODLAND OR CHAPARRAL ON S- AND W-FACING SLOPES. 185-800M.

**Occurrence No.** 25 **Map Index:** 17131 **EO Index:** 17883

**Dates Last Seen**
**Element:** 1951-05-13
**Site:** 1978-07-18
**Record Last Updated:** 2007-10-16

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93143º / -122.92345º
**UTM:** Zone-10 N4309170 E506635
**Area:**
**Elevation:** 1,525 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 10W
**Section:** 36 **Qtr:** S
**Meridian:** M

**Location:** 1.2 MILES SOUTHWEST OF HIGHLAND SPRINGS.

**Ecological:** IN 2 YEAR OLD CHAPARRAL BURN IN SHALLOW ROCKY SOIL. ASSOCIATED WITH QUERCUS WISLIZENII, Q. DUMOSA, ADENOSTOMA, CEANOTHUS, ARCTOSTAPHYLOS. SOUTH-FACING SLOPE.

**General:** SEEN IN 1951. VISITED IN 1977 AND 1978 AND NO PLANTS SEEN.

**Owner/Manager:** UNKNOWN

## Antrozous pallidus

pallid bat

**Element Code:** AMACC10010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5
**State:** S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.
**Micro:** ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.

**Occurrence No.** 51 **Map Index:** 43661 **EO Index:** 43661
**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1994-05-20
**Site:** 1994-05-20
**Record Last Updated:** 2000-08-29

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.65267º / -122.93261º
**UTM:** Zone-10 N4278236 E505863
**Radius:** 80 meters **Mapping Precision**SPECIFIC
**Elevation:** 150 ft **Symbol Type:**POINT

**Township:** 09N
**Range:** 10W
**Section:** 02 **Qtr:** XX
**Meridian:** M

**Location:** VINEYARD, NE CORNER OF WEST DRY CREEK ROAD AND LAMBERT BRIDGE ROAD, ~3 MILES WNW OF HEALDSBURG.
**Location Detail:** ON REAR OF BUILDING AT WINERY. MAPPED TO LAT-LONG COORDINATES GIVEN.
**Ecological:** VINEYARD ADJACENT TO RIPARIAN TO AND MIXED HARDWOOD.
**Threat:** PROPERTY CHANGED OWNERS, STATUS UNKNOWN
**General:** NIGHT ROOST ONLY, NUMBER NOT KNOWN, 1994.
**Owner/Manager:** PVT

---

**Occurrence No.** 52 **Map Index:** 43666 **EO Index:** 43666
**Occ Rank:** None
**Origin:** Natural/Native occurrence
**Presence:** Extirpated
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1996-04-02
**Site:** 1996-04-02
**Record Last Updated:** 2000-08-29

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.65238º / -122.93401º
**UTM:** Zone-10 N4278204 E505741
**Radius:** 80 meters **Mapping Precision**SPECIFIC
**Elevation:** 153 ft **Symbol Type:**POINT

**Township:** 09N
**Range:** 10W
**Section:** 02 **Qtr:** XX
**Meridian:** M

**Location:** VINEYARD BUILDING, 0.1 MILE NW OF JUNCTION WEST DRY CREEK ROAD AND LAMBERT BRIDGE ROAD, ~3 MILES WNW OF HEALDSBURG.
**Location Detail:** MAPPED TO LAT-LONG COORDINATES GIVEN.
**Ecological:** VINEYARD BORDERED BY RIPARIAN HABITAT ALONG DRY CREEK.
**Threat:** BUILDING MODIFICATIONS EVICTED NIGHT ROOSTING BATS.
**General:** 50 TO 60 BATS OBSERVED, 1996.
**Owner/Manager:** PVT

---

**Occurrence No.** 53 **Map Index:** 43667 **EO Index:** 43667
**Occ Rank:** None
**Origin:** Natural/Native occurrence
**Presence:** Extirpated
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1996-04-02
**Site:** 1996-04-02
**Record Last Updated:** 2000-08-29

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.65400º / -122.92462º
**UTM:** Zone-10 N4278384 E506558
**Radius:** 80 meters **Mapping Precision**SPECIFIC
**Elevation:** 160 ft **Symbol Type:**POINT

**Township:** 09N
**Range:** 10W
**Section:** 01 **Qtr:** XX
**Meridian:** M

**Location:** WINERY, N SIDE OF LAMBERT BRIDGE RD AND 0.15 MILE WSW OF JCT WITH EAST DRY CREEK RD, ~2.5 MILES WNW OF HEALDSBURG.
**Location Detail:** MAPPED TO LAT-LONG COORDINATES GIVEN.
**Ecological:** VINEYARD, NON-NATIVE SHRUBS, SOME ADJACENT RIPARIAN VEGETATION.
**Threat:** BATS EXCULDED FROM DAY ROOST INSIDE STRUCTURE.
**General:** TOTAL NUMBERS OF INDIVIDUALS UNKNOWN.
**Owner/Manager:** PVT

---

## Antrozous pallidus

pallid bat

**Element Code:** AMACC10010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5
**State:** S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.
**Micro:** ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.

---

**Occurrence No.** 61 **Map Index:** 43689 **EO Index:** 43689

**Dates Last Seen**
**Element:** 1999-07-08
**Site:** 1999-07-08
**Record Last Updated:** 2000-08-31

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Tombs Creek (3812362/519B)
**County Summary:** Sonoma

**Lat/Long:** 38.66220º / -123.23451º
**UTM:** Zone-10 N4279318 E479596
**Radius:** 80 meters
**Elevation:** 620 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 09N
**Range:** 12W
**Section:** 06 **Qtr:** NW
**Meridian:** M

**Location:** BRIDGE ON STEWART'S POINT SKAGGS SPRING ROAD AT HOUSE CREEK, 0.3 MILE NORTH OF DOE RIDGE.
**Location Detail:** MAPPED TO SITE DESCRIPTION GIVEN, COORDINATES ARE 0.05 MILE WEST (LAT:38 39' 44"; LONG:123 14' 03").
**Ecological:** RIPARIAN AT BRIDGE, CHAPARRAL AND NON-NATIVE GRASSLAND, RURAL.
**Threat:** BRIDGE SEISMIC RETROFIT SCHEDULED FOR DAY WORK ONLY.
**General:** PALLID BAT NIGHT ROOST, SPEICES IDENTIFIED BY SIGN ONLY (FECAL PELLETS AND PREY REMAINS), ALSO, OTHER UNIDENTIFIED BAT SPECIES USING THE BRDGE, WORK WILL TEMPORARILY IMPACT MATERNITY DAY ROOST OF MYOTIS YUMANESIS.
**Owner/Manager:** SON COUNTY

---

**Occurrence No.** 70 **Map Index:** 47144 **EO Index:** 47144

**Dates Last Seen**
**Element:** 2001-04-09
**Site:** 2001-04-09
**Record Last Updated:** 2002-01-30

**Occ Rank:** None
**Origin:** Natural/Native occurrence
**Presence:** Possibly Extirpated
**Trend:** Unknown

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.65419º / -122.92829º
**UTM:** Zone-10 N4278405 E506239
**Radius:** 80 meters
**Elevation:** 144 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 09N
**Range:** 10W
**Section:** 02 **Qtr:** XX
**Meridian:** M

**Location:** WEST SIDE OF DRY CREEK, AT LAMBERT BRIDGE ROAD, NW OF HEALDSBURG
**Ecological:** HABITAT SURROUNDING RESIDENTIAL ROOST SITE CONSISTS OF VINEYARD AND RIPARIAN.
**Threat:** THREATENED BY LOSS OF ROOSTING HABITAT.
**General:** THIS DAY/NIGHT ROOST WAS EXCLUDED FROM A RESIDENTIAL STRUCTURE; OBSERVED ON 4 SEP 2001.
**Owner/Manager:** PVT

---

**Occurrence No.** 208 **Map Index:** 66543 **EO Index:** 66671

**Dates Last Seen**
**Element:** 1927-06-07
**Site:** 1927-06-07
**Record Last Updated:** 2006-10-03

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.92659º / -123.05461º
**UTM:** Zone-10 N4308631 E495266
**Radius:** 1/5 mile
**Elevation:** 500 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 12N
**Range:** 11W
**Section:** 02 **Qtr:** NW
**Meridian:** M

**Location:** PIETA.
**Location Detail:** MAPPED ACCORDING TO LAT/LONG COORDINATES GIVEN IN MANIS, WITH UNCERTAINTY OF 164.592M.
**General:** 1 MALE SPECIMEN COLLECTED BY LEO K. WILSON ON 7 JUN 1927, MVZ #71628.
**Owner/Manager:** UNKNOWN

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## Antrozous pallidus

pallid bat

**Element Code:** AMACC10010

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G5 | **CDFG Status:** SC |
| **State:** None | **State:** S3 | |

**Habitat Associations**

**General:** DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.

**Micro:** ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.

**Occurrence No.** 300 **Map Index:** 66630 **EO Index:** 66773

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1976-07-03
**Site:** 1976-07-03

**Record Last Updated:** 2006-10-04

**Quad Summary:** Asti (3812278/534C)

**County Summary:** Sonoma

| | | | | | |
|---|---|---|---|---|---|
| **Lat/Long:** | 38.77716º / -122.97263º | | **Township:** | 11N | |
| **UTM:** | Zone-10 N4292049 E502377 | | **Range:** | 10W | |
| **Radius:** | 1 mile | **Mapping Precision** NON-SPECIFIC | **Section:** | 28 | **Qtr:** XX |
| **Elevation:** | 440 ft | **Symbol Type:** POINT | **Meridian:** | M | |

**Location:** 0.5 MI N ITALIAN SWISS COLONY WINERY, ASTI.

**Location Detail:** MAPPED ACCORDING TO LAT/LONG COORDINATES GIVEN IN MANIS, WITH UNCERTAINTY 4662.2696M.

**Ecological:** COLLECTED FROM AN OLD BARN.

**General:** 1 MALE SPECIMEN COLLECTED BY DONALD O. STRANEY ON 3 JUL 1976, MVZ #151051.

**Owner/Manager:** UNKNOWN

## Arborimus pomo

Sonoma tree vole

**Element Code:** AMAFF23030

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** NORTH COAST FOG BELT FROM OREGON BORDER TO SOMONA CO. IN DOUGLAS-FIR, REDWOOD & MONTANE HARDWOOD-CONIFER FORESTS.
**Micro:** FEEDS ALMOST EXCLUSIVELY ON DOUGLAS-FIR NEEDLES. WILL OCCASIONALY TAKE NEEDLES OF GRAND FIR, HEMLOCK OR SPRUCE.

**Occurrence No.** 173 **Map Index:** 41289 **EO Index:** 41289

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1994-06-10
**Site:** 1994-06-10
**Record Last Updated:** 1999-06-23

**Quad Summary:** Tombs Creek (3812362/519B), Big Foot Mtn. (3812372/535C)
**County Summary:** Sonoma

**Lat/Long:** 38.74917° / -123.16991°
**UTM:** Zone-10 N4288956 E485235
**Radius:** 1/5 mile
**Elevation:** 1,600 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 10N
**Range:** 12W
**Section:** 03 **Qtr:** NE
**Meridian:** M

**Location:** WHEATFIELD FORK GUALALA RIVER (NORTH SLOPE LYLE RIDGE, ~1 MILE NNE OF BUCK MOUNTAIN)

**Location Detail:** CONFLICT AMONG THE T-R-S, THE UTM AND THE ARCVIEW POINT DATA. MAPPED ACCORDING TO THE T-R-S GIVEN: T10N, R12W, NW 1/4 OF THE NE 1/4 OF SECTION 3.

**General:** 1 NEST OBSERVED IN 1994 BY WOOSTER.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 187 **Map Index:** 41315 **EO Index:** 41315

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1993-07-28
**Site:** 1993-07-28
**Record Last Updated:** 1999-06-29

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.62788° / -122.98590°
**UTM:** Zone-10 N4275483 E501227
**Area:** 18.2 acres
**Elevation:** 920 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 09N
**Range:** 10W
**Section:** 17 **Qtr:** SE
**Meridian:** M

**Location:** PACHECO CREEK (~6 MILES WEST OF HIGHWAY 101 AT THE DRY CREEK ROAD CROSSING, ~4 MILES SSW OF BRADFORD MOUNTAIN)

**General:** 1 NEST OBSERVED BY SUSAN, & 1 NEST OBSERVED BY WOOSTER & SUSAN, 1993.

**Owner/Manager:** UNKNOWN

## Arctostaphylos bakeri ssp. sublaevis

The Cedars manzanita

**Element Code:** PDERI04222

**Status**
**Federal:** None
**State:** Rare

**NDDB Element Ranks**
**Global:** G2T2
**State:** S2.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CHAPARRAL, CLOSED-CONE CONIFEROUS FOREST. ENTIRE SPECIES LISTED STATE RARE.
**Micro:** IN SERPENTINE CHAPARRAL AND SARGENT CYPRESS WOODLAND; TYPICALLY IN CANYONS AND ON SLOPES. 275-600M.

**Occurrence No.** 1 **Map Index:** 32617 **EO Index:** 1084
**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1994-06-23
**Site:** 1994-06-23
**Record Last Updated:** 1996-01-03

**Quad Summary:** Fort Ross (3812352/519C), Warm Springs Dam (3812361/519A), Cazadero (3812351/519D), Tombs Creek (3812362/519B)
**County Summary:** Sonoma

**Lat/Long:** 38.62440° / -123.12144°
**UTM:** Zone-10 N4275104 E489429
**Area:**
**Elevation:** 1,200 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 09N
**Range:** 11W
**Section:** 18 **Qtr:** XX
**Meridian:** M

**Location:** THE CEDARS, NORTH OF CAZADERO.

**Location Detail:** HEADWATERS OF BIG AUSTIN CREEK AND EAST AUSTIN CREEK. MAPPED AREA INCLUDED WITHIN T09N R11W SECTIONS 6, 7, 17, 18, 19, 20, 29, 30 AND T09N R12W SECTIONS 1, 11, 12, 13, 14, 24, AND 25.

**Ecological:** SERPENTINE CHAPARRAL/CUPRESSUS SARGENTII WOODLAND/SERPENTINE BARRENS; TYPICALLY STEEP CANYONLANDS. ASSOCIATED WITH A. VISCIDA PULCHELLA, CUPRESSUS SARGENTII, CEANOTHUS JEPSONII JEPSONII, QUERCUS DURATA, HOLODISCUS, STREPTANTHUS SPP, ET AL.

**Threat:** SOME RANCH ROADS CUT THROUGH AREA; MINING OF CHROMITE AND MAGNESITE IN PAST; SOME DEVELOPMENT.

**General:** 10,000'S OF PLANTS OBSERVED IN 1988. OTHER RARE PLANTS IN THIS AREA INCLUDE CALOCHORTUS RAICHEI, STREPTANTHUS MORRISONII MORRISONII, S. M. HIRTIFLORUS, S. GLANDULOSUS HOFFMANII, ERIOGONUM TERNATUM, AND ASCLEPIAS SOLANOANA.

**Owner/Manager:** PVT, BLM

## Arctostaphylos manzanita ssp. elegans

Konocti manzanita

**Element Code:** PDERI04271

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5T2
**State:** S2.3

**Other Lists**
**CNPS List:** 1B.3

**Habitat Associations**
**General:** CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
**Micro:** VOLCANIC SOILS. 395-1400M.

**Occurrence No.** 18 **Map Index:** 24303 **EO Index:** 45540

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** XXXX-XX-XX
**Site:** XXXX-XX-XX

**Record Last Updated:** 2001-08-10

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93683º / -122.90707º
**UTM:** Zone-10 N4309770 E508054
**Radius:** 1 mile
**Elevation:** 1,500 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 13N
**Range:** 09W
**Section:** 31 **Qtr:** XX
**Meridian:** M

**Location:** HIGHLAND SPRINGS, MAYACAMAS RANGE.

**General:** NEEDS FIELDWORK.

**Owner/Manager:** UNKNOWN

## Arctostaphylos stanfordiana ssp. decumbens

Rincon Ridge manzanita

**Element Code:** PDERI041G4

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G3T1 | **CNPS List:** 1B.1 |
| **State:** None | **State:** S1.1 | |

**Habitat Associations**

**General:** CHAPARRAL.

**Micro:** HIGHLY RESTRICTED ENDEMIC TO RED RHYOLITES IN SONOMA COUNTY. 75-310M.

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**Occurrence No.** 6 **Map Index:** 07856 **EO Index:** 14032

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1986-XX-XX
**Site:** 1986-XX-XX
**Record Last Updated:** 1997-02-11

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.68460º / -122.97335º
**UTM:** Zone-10 N4281777 E502317
**Area:** 8.2 acres
**Elevation:** 1,220 ft
**Mapping Precision:** SPECIFIC
**Symbol Type:** POLYGON
**Township:** 10N
**Range:** 10W
**Section:** 28 **Qtr:** SE
**Meridian:** M

**Location:** SUMMIT OF BRADFORD MOUNTAIN, WEST OF ALEXANDER VALLEY.

**Ecological:** IN UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUILOBA, PHLOX SPECIOSA NITIDA.

**Threat:** GENERAL AREA DISTURBED BY ROADS, ORV DAMAGE, RESIDENTIAL DEVELOPMENT, AND VINEYARDS.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 7 **Map Index:** 07845 **EO Index:** 14031

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1986-XX-XX
**Site:** 1986-XX-XX
**Record Last Updated:** 1997-02-11

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.67492º / -122.97521º
**UTM:** Zone-10 N4280703 E502156
**Area:** 36.2 acres
**Elevation:** 860 ft
**Mapping Precision:** SPECIFIC
**Symbol Type:** POLYGON
**Township:** 10N
**Range:** 10W
**Section:** 33 **Qtr:** NW
**Meridian:** M

**Location:** APPROX 1 AIR MILE SSW OF BRADFORD MOUNTAIN; EAST OF PENA CREEK.

**Ecological:** IN UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUIFOLIA, PHLOX SPECIOSA NITIDA.

**Threat:** GENERAL AREA HAS LOTS OF ROADS, ORV DAMAGE, RESIDENTIAL DEVELOPMENT AND VINEYARDS.

**Owner/Manager:** UNKNOWN

---

**Occurrence No.** 8 **Map Index:** 07820 **EO Index:** 14030

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1986-XX-XX
**Site:** 1986-XX-XX
**Record Last Updated:** 1997-02-11

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.66791º / -122.98392º
**UTM:** Zone-10 N4279925 E501399
**Area:** 163.4 acres
**Elevation:** 880 ft
**Mapping Precision:** SPECIFIC
**Symbol Type:** POLYGON
**Township:** 10N
**Range:** 10E
**Section:** 32 **Qtr:** SE
**Meridian:** M

**Location:** APPROX 1.5 AIR MILES SOUTHWEST OF BRADFORD MOUNTAIN, EAST OF PENA CREEK.

**Ecological:** ON UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUIFOLIA, PHLOX SPECIOSA NITIDA.

**Threat:** GENERAL AREA HAS LOTS OF ROADS, ORV DAMAGE, RESIDENTIAL DEVELOPMENT AND VINEYARDS.

**Owner/Manager:** UNKNOWN

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## Arctostaphylos stanfordiana ssp. decumbens

Rincon Ridge manzanita

**Element Code:** PDERI041G4

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3T1
**State:** S1.1

**Other Lists**
**CNPS List:** 1B.1

**Habitat Associations**
**General:** CHAPARRAL.
**Micro:** HIGHLY RESTRICTED ENDEMIC TO RED RHYOLITES IN SONOMA COUNTY. 75-310M.

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**Occurrence No.** 9 **Map Index:** 07846 **EO Index:** 14029

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1986-XX-XX
**Site:** 1986-XX-XX
**Record Last Updated:** 1997-02-11

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.65428° / -122.97461°
**UTM:** Zone-10 N4278413 E502209
**Area:** 130.4 acres
**Elevation:** 920 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 09N
**Range:** 10W
**Section:** 04 **Qtr:** S
**Meridian:** M

**Location:** BETWEEN CHAPMAN BRANCH AND GRAPE CREEK, ABOUT 2 AIR MILES SOUTH OF BRADFORD MOUNTAIN.

**Ecological:** ON UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUIFOLIA, PHLOX SPECIOSA NITIDA.

**Threat:** ROADS, ORV DAMAGE, RESIDENTIAL DEVELOPMENT AND VINEYARDS.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 10 **Map Index:** 07905 **EO Index:** 14028

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1986-XX-XX
**Site:** 1986-XX-XX
**Record Last Updated:** 1997-02-11

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.64876° / -122.95027°
**UTM:** Zone-10 N4277801 E504327
**Area:** 74.4 acres
**Elevation:** 600 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 09N
**Range:** 10W
**Section:** 10 **Qtr:** NE
**Meridian:** M

**Location:** BETWEEN GRAPE CREEK AND CRANE CREEK, ABOUT 3 AIR MILES SOUTHEAST OF BRADFORD MOUNTAIN.

**Ecological:** UNIQUE CHAPARRAL BARREN ON RHYOLITE-LIKE DECOMPOSING ROCK. ASSOCIATED WITH CEANOTHUS CONFUSUS, FRITILLARIA RECURVA, HORKELIA TENUIFOLIA, PHLOX SPECIOSA NITIDA.

**Threat:** AREA DAMAGED BY ROADS, ORVS, RESIDENTIAL DEVELOPMENT AND VINEYARDS.

**Owner/Manager:** UNKNOWN

## Arctostaphylos stanfordiana ssp. raichei

Raiche's manzanita

**Element Code:** PDERI041G2

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3T2?
**State:** S2?

**Other Lists**
**CNPS List:** 1B.1

**Habitat Associations**
**General:** CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
**Micro:** ON PERIPHERY OF MCNAB CYPRESS GROVE ON SERPENTINE. SLOPES AND RIDGES. 450-1000M.

**Occurrence No.** 1 **Map Index:** 28500 **EO Index:** 29788

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1985-08-11
**Site:** 1985-08-11
**Record Last Updated:** 1996-11-15

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

**Lat/Long:** 38.94895º / -123.17277º
**UTM:** Zone-10 N4311126 E485029
**Radius:** 1 mile
**Elevation:** 2,000 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 12W
**Section:** 34 **Qtr:** XX
**Meridian:** M

**Location:** 3-4 MILES UP OLD HOPLAND-YORKVILLE ROAD NEAR SNOW MOUNTAIN.
**Location Detail:** MAPPED ALONG THE ROAD ABOUT 1.5 AIR MILES ENE OF SNOW MOUNTAIN SUMMIT.
**Ecological:** OCCURS ON SANDSTONE AND OVERLAPS SLIGHTLY ONTO SERPENTINE. ASSOCIATED WITH CUPRESSUS SARGENTII.
**General:** VICINTIY REPORTED IN TWO COLLECTIONS: 1985 COLLECTION BY EDWARDS ET AL. (#5212 ROH) AND UNDATED COLLECTION BY WHEELER (#2920 UNKNOWN HERBARIUM).
**Owner/Manager:** UNKNOWN

## Boschniakia hookeri

small groundcone

**Element Code:** PDORO01010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5
**State:** S1S2

**Other Lists**
**CNPS List:** 2.3

**Habitat Associations**
**General:** NORTH COAST CONIFEROUS FOREST.
**Micro:** OPEN WOODS, SHRUBBY PLACES, GENERALLY ON GAULTHERIA SHALLON. 90-885M.

**Occurrence No.** 4 **Map Index:** 35147 **EO Index:** 72

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1976-XX-XX
**Site:** 1976-XX-XX
**Record Last Updated:** 1996-04-02

**Quad Summary:** Hopland (3812381/535A), Purdys Gardens (3912311/550D)
**County Summary:** Mendocino

**Lat/Long:** 39.00231° / -123.08436°
**UTM:** Zone-10 N4317036 E492695
**Radius:** 1 mile
**Elevation:** 1,000 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 11W
**Section:** 08 **Qtr:** XX
**Meridian:** M

**Location:** HOPLAND FIELD STATION.
**Ecological:** PARASITIC ON ADENOSTOMA AND ARCTOSTAPHYLOS.
**General:** ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS 1976 COLLECTION BY LANE CITED IN "A FLORA OF THE VASCULAR PLANTS OF MENDOCINO COUNTY" BY SMITH AND WHEELER (1991).
**Owner/Manager:** UCNR

## Brodiaea californica var. leptandra

narrow-anthered California brodiaea

**Element Code:** PMLIL0C022

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G4?T2T3
**State:** S2S3.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** BROADLEAFED UPLAND FOREST, CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
**Micro:** 110-915M.

**Occurrence No.** 21 **Map Index:** 47368 **EO Index:** 47368

**Dates Last Seen**
**Element:** 1993-XX-XX
**Site:** 1993-XX-XX

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Record Last Updated:** 2002-03-25

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.64815º / -122.95051º
**UTM:** Zone-10 N4277734 E504306
**Radius:** 1 mile
**Elevation:** 530 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 09N
**Range:** 10W
**Section:** 10 **Qtr:** XX
**Meridian:** M

**Location:** WEST SIDE OF DRY CREEK VALLEY.

**Location Detail:** LOCATION INFORMATION IS VAGUE. MAPPED AS BEST GUESS BASED ON OTHER COLLECTIONS FROM DRY CREEK VALLEY BY RAICHE.

**General:** NEEDS FIELDWORK. COLLECTION FROM "CHAMISE [CHEMISE] RIDGE ROAD, WEST OF HEALDSBURG" (GUGGOLZ SN) ALSO ATTRIBUTED TO THIS LOCATION.

**Owner/Manager:** UNKNOWN

## Calochortus raichei

The Cedars fairy-lantern

**Element Code:** PMLIL0D1L0

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G1
**State:** S1.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL.
**Micro:** ON SERPENTINE. USUALLY ON SHADED SLOPES, BUT ALSO ON BARRENS AND TALUS. 200-395M.

**Occurrence No.** 8 **Map Index:** 07656 **EO Index:** 22092
**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1994-06-23
**Site:** 1994-06-23
**Record Last Updated:** 1999-11-08

**Quad Summary:** Cazadero (3812351/519D), Tombs Creek (3812362/519B), Warm Springs Dam (3812361/519A), Fort Ross (3812352/519C)
**County Summary:** Sonoma

**Lat/Long:** 38.62654° / -123.12844°
**UTM:** Zone-10 N4275342 E488819
**Area:** 454.6 acres
**Elevation:** 900 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 09N
**Range:** 12W
**Section:** 13 **Qtr:** SE
**Meridian:** M

**Location:** THE CEDARS, HEADWATERS OF AUSTIN CREEK, EAST AUSTIN CREEK, AND DANFIELD CREEK, ABOUT 5.5 MILES NORTH OF CAZADERO.

**Location Detail:** 11 COLONIES:S COLONY ALONG TRIBS TO AUSTIN AND EAST AUSTIN CR.; LARGE CENTRAL COLONY N OF LATON MINE; SMALL CENTRAL COLONY S OF LATON MINE; 4 NE COLONIES ALONG EAST AUSTIN CR. AND ASSOCIATED TRIBS; 4 NW COLONIES IN DANFIELD CREEK DRAINAGE.

**Ecological:** SERPENTINE CHAPARRAL AND CUPRESSUS SARGENTII WOODLAND. WITH ARCTOSTAPHYLOS BAKERI SSP SUBLAEVIS, A. VISCIDA PULCHELLA, QUERCUS DURATA, CEANOTHUS CUNEATUS, C. JEPSONII SSP JEPSONII, HOLODISCUS SPP, IRIS MACROSIPHON, ZIGADENUS SPP, ET AL.

**Threat:** OLD MINING ACTIVITY IN AREA, NO RECENT ACTIVITY NOTED. SOME RANCH ROADS CUT THROUGH AREA.

**General:** 1000+ PLANTS IN ENTIRE AREA IN 1988. HUNDREDS OF PLANTS AT WESTERN END OF S COLONY IN 1994; 20-50 PLANTS SEEN JUST NORTHWEST OF LATON MINE IN 1994. THE RARE ARCTOSTAPHYLOS BAKERI SSP SUBLAEVIS AND CYPRIPEDIUM CALIFORNICUM ALSO AT THIS SITE.

**Owner/Manager:** BLM, PVT

## Calycadenia micrantha

small-flowered calycadenia

**Element Code:** PDAST1P0C0

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2G3
**State:** S2S3.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, MEADOWS AND SEEPS, LOWER MONTANE CONIFEROUS FOREST.
**Micro:** ROCKY TALUS OR SCREE; SPARSELY VEGETATED AREAS. OCCASIONALLY ON ROADSIDES; SOMETIMES ON SERPENTINE. 5-1500M.

**Occurrence No.** 4 **Map Index:** 17131 **EO Index:** 63743

**Dates Last Seen**
**Element:** 1950-05-06
**Site:** 1950-05-06
**Record Last Updated:** 2006-01-11

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93143º / -122.92345º
**UTM:** Zone-10 N4309170 E506635
**Area:**
**Elevation:** 1,525 ft
**Mapping Precision:** NON-SPECIFIC
**Symbol Type:** POLYGON
**Township:** 13N
**Range:** 10W
**Section:** 36 **Qtr:** S
**Meridian:** M

**Location:** 1.0 MI WEST OF HIGHLAND SPRINGS ON BOTH SIDES OF THE ROAD; MAYACMAS MOUNTAINS.
**Location Detail:** LOCATION DESCRIPTION VAGUE, MAPPED AS BEST GUESS 1 MI WEST ALONG HIGHLAND SPRINGS ROAD FROM SOUTHERN TIP OF RESERVOIR AT HIGHLAND SPRINGS.
**Ecological:** ON SMALL GRASSY KNOLL OVER SERPENTINE.
**General:** COLLECTED AS CALYCADENIA TRUNCATA SSP. MICROCEPHALA; MAPPED BY CNDDB AS C. MICRANTHA BASED ON RANGE. NEEDS FIELDWORK TO VERIFY.
**Owner/Manager:** UNKNOWN

**Occurrence No.** 5 **Map Index:** 63649 **EO Index:** 63744

**Dates Last Seen**
**Element:** 2003-08-23
**Site:** 2003-08-23
**Record Last Updated:** 2006-01-11

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.99528º / -122.93049º
**UTM:** Zone-10 N4316255 E506019
**Radius:** 80 meters
**Elevation:** 1,640 ft
**Mapping Precision:** SPECIFIC
**Symbol Type:** POINT
**Township:** 13N
**Range:** 10W
**Section:** 12 **Qtr:** NW
**Meridian:** M

**Location:** ALONG HIGHWAY 175, ABOUT 2.5 MI WEST OF JUNCTION WITH HIGHWAY 29; WEST OF LAKEPORT.
**Location Detail:** MAPPED BASED ON LAT/LONG COORDINATES PROVIDED.
**General:** 2003 CARR COLLECTION IS THE ONLY SOURCE FOR THIS SITE. NEEDS FIELDWORK.
**Owner/Manager:** UNKNOWN

## Carex comosa

bristly sedge

**Element Code:** PMCYP032Y0

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5
**State:** S2?

**Other Lists**
**CNPS List:** 2.1

**Habitat Associations**
**General:** MARSHES AND SWAMPS.
**Micro:** LAKE MARGINS, WET PLACES; SITE BELOW SEA LEVEL IS ON A DELTA ISLAND. -5-1005M.

**Occurrence No.** 9 **Map Index:** 50097 **EO Index:** 50097

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-09-20
**Site:** 1999-09-20
**Record Last Updated:** 2003-02-04

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.99683° / -123.07038°
**UTM:** Zone-10 N4316427 E493905
**Radius:** 80 meters
**Elevation:** 982 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POINT

**Township:** 13N
**Range:** 11W
**Section:** 09 **Qtr:** SE
**Meridian:** M

**Location:** APPROXIMATELY 2.1 AIRMILES NORTHEAST OF OLD HOPLAND. NEAR TWO SMALL LAKES ON TOPO.
**Location Detail:** MAPPED IN THE NW 1/4 OF THE SE 1/4 OF SECTION 9.
**Ecological:** EDGE OF SAG POND WITH TYPHA SP., POLYGONUM PUNCTATUM & MENTHA PULEGIUM.
**Threat:** ENCROACHING MENTHA PULEGIUM. LOCATED IN "BIOLOGICAL AREA", FENCED FROM LIVESTOCK USE.
**General:** ~75 PLANTS OBSERVED IN 1999, COMPRISED OF ONE SOLID PATCH & TWO SMALL ADJACENT CLUMPS.
**Owner/Manager:** UC

## Ceanothus confusus

Rincon Ridge ceanothus

**Element Code:** PDRHA04220

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.2

**Other Lists**
**CNPS List:** 1B.1

**Habitat Associations**
**General:** CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND.
**Micro:** KNOWN FROM VOLCANIC OR SERPENTINE SOILS, DRY SHRUBBY SLOPES. 75-1065M.

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**Occurrence No.** 10 **Map Index:** 07863 **EO Index:** 18707

**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2000-06-23
**Site:** 2000-06-23
**Record Last Updated:** 2001-10-04

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.65655º / -122.97991º
**UTM:** Zone-10 N4278665 E501747
**Area:** 355.2 acres
**Elevation:** 900 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 09N
**Range:** 10W
**Section:** 04 **Qtr:** SW
**Meridian:** M

**Location:** SOUTH OF BRADFORD MOUNTAIN ALONG RIDGE NORTHEAST OF CHAPMAN CREEK, WEST OF HEALDSBURG.

**Location Detail:** MOSTLY ALONG CREST OF RIDGE FROM JUST NORTH OF THE HEAD OF DORMAN CANYON TO JUST NORTH OF THE MOUTH OF CHAPMAN CREEK. COLLECTIONS FROM "DORMAN CREEK" AND "DRY CREEK AREA" ARE ATTRIBUTED TO THIS SITE. MAPPED AS 2 LARGE AND 1 SMALL POLYGONS.

**Ecological:** WITH CHAPARRAL, CHAPARRAL BARRENS. ASSOCIATED WITH ARCTOSTAPHYLOS STANFORDIANA REPENS, BRODIAEA LEPTANDRA, FRITILLARIA RECURVA, CEANOTHUS FOLIOSUS, HORKELIA TENUIFOLIA, ETC. SOILS DERIVED FROM RHYOLITE-LIKE ROCK THAT RESEMBLES SANDSTONE.

**Threat:** ROADS, DIRTBIKE USE, RESIDENTIAL DEVELOPMENT, VINEYARD CONVERSION, LOGGING.

**General:** 1000+ PLANTS SEEN IN BRADFORD MTN AREA IN 1984-1986 (OCCURRENCES #10, 23, 24). POSSIBLE TAXONOMIC PROBLEMS (NOBS, 1963). FIELD RESEARCH IN 1978-1979 FAILED TO LOCATE PURE SPECIMENS. SEVERAL PLANTS SEEN IN 2000 IN THE E 1/2 OF SECTION 32.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 19 **Map Index:** 42109 **EO Index:** 42109

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1985-11-28
**Site:** 1985-11-28
**Record Last Updated:** 2000-01-06

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Sonoma

**Lat/Long:** 38.79217º / -123.06243º
**UTM:** Zone-10 N4293716 E494578
**Area:** 13.4 acres
**Elevation:** 1,300 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 11N
**Range:** 11W
**Section:** 23 **Qtr:** NW
**Meridian:** M

**Location:** NORTHWEST SLOPE OF RED MOUNTAIN, WEST OF CLOVERDALE.

**Location Detail:** MAPPED ALONG KNOLL ABOUT 0.3 MILE NW OF SUMMIT. SITE IS WITHIN THE NW 1/4 NW 1/4 SECTION 23 AND THE NE 1/4 NE 1/4 SECTION 22.

**Ecological:** DEPAUPERATE CHAPARRAL ON RHYOLITE-LIKE ROCK WITH CEANOTHUS JEPSONII VAR. ALBIFLORUS, ADENOSTOMA FASCICULATUM, HETEROMELES ARBUTIFOLIA, QUERCUS DURATA, IRIS MACROSIPHON, HYPERICUM CONCINNUM, ETC.

**Threat:** FIRE ROADS; DEVELOPMENT ENCROACHING INTO HILLS FROM CLOVERDALE.

**General:** ABOUT 50 PLANTS OBSERVED IN 1985.

**Owner/Manager:** UNKNOWN

## Ceanothus confusus

Rincon Ridge ceanothus

**Element Code:** PDRHA04220

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G2 | **CNPS List:** 1B.1 |
| **State:** None | **State:** S2.2 | |

**Habitat Associations**

**General:** CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND.

**Micro:** KNOWN FROM VOLCANIC OR SERPENTINE SOILS, DRY SHRUBBY SLOPES. 75-1065M.

**Occurrence No.** 23 **Map Index:** 42106 **EO Index:** 42106

**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1986-XX-XX
**Site:** 1986-XX-XX
**Record Last Updated:** 2000-01-06

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.64826º / -122.94698º
**UTM:** Zone-10 N4277746 E504613
**Area:** 126.1 acres **Mapping Precision**SPECIFIC
**Elevation:** 700 ft **Symbol Type:**POLYGON

**Township:** 09N
**Range:** 10W
**Section:** 10 **Qtr:** NE
**Meridian:** M

**Location:** SOUTH OF BRADFORD MOUNTAIN ALONG RIDGE NORTH OF CRANE CREEK, ABOUT 0.6-1.6 MI WEST OF DRY CREEK, WEST OF HEALDSBURG.

**Location Detail:** MOSTLY ALONG CREST OF RIDGE WITHIN THE N 1/2 NE 1/4 SECTION 10 AND THE N 1/2 NW 1/4 SECTION 11.

**Ecological:** WITH CHAPARRAL AND CHAPARRAL BARRENS. ASSOCIATED WITH ARCTOSTAPHYLOS STANFORDIANA REPENS, BRODIAEA LEPTANDRA, FRITILLARIA RECURVA, CEANOTHUS FOLIOSUS, HORKELIA TENUIFOLIA, ETC. SOILS DERIVED FROM RHYOLITE-LIKE ROCK THAT RESEMBLES SANDSTONE.

**Threat:** ROADS, DIRTBIKE USE, RESIDENTIAL DEVELOPMENT, VINEYARD CONVERSION.

**General:** 1000+ PLANTS OBSERVED IN THE BRADFORD MOUNTAIN AREA IN 1984-1986 (OCCURENCES #10, 23, 24).

**Owner/Manager:** UNKNOWN

**Occurrence No.** 24 **Map Index:** 42107 **EO Index:** 42107

**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1986-XX-XX
**Site:** 1986-XX-XX
**Record Last Updated:** 2000-01-06

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.68339º / -122.97338º
**UTM:** Zone-10 N4281643 E502315
**Area:** 29.1 acres **Mapping Precision**SPECIFIC
**Elevation:** 1,100 ft **Symbol Type:**POLYGON

**Township:** 10N
**Range:** 10W
**Section:** 28 **Qtr:** SE
**Meridian:** M

**Location:** BRADFORD MOUNTAIN, WEST OF DRY CREEK, WEST OF HEALDSBURG.

**Location Detail:** ALONG SUMMIT AND SOUTHERN RIDGE OF BRADFORD MOUNTAIN. MAPPED MOSTLY WITHIN THE W 1/2 SE 1/4 SECTION 28.

**Ecological:** WITH CHAPARRAL AND CHAPARRAL BARRENS. ASSOCIATED WITH ARCTOSTAPHYLOS STANFORDIANA REPENS, BRODIAEA LEPTANDRA, FRITILLARIA RECURVA, CEANOTHUS FOLIOSUS, HORKELIA TENUIFOLIA, ETC. SOILS DERIVED FROM RHYOLITE-LIKE ROCK THAT RESEMBLES SANDSTONE.

**Threat:** ROADS, DIRTBIKE USE, RESIDENTIAL DEVELOPMENT, VINEYARD CONVERSION.

**General:** 1000+ PLANTS OBSERVED IN THE BRADFORD MOUNTAIN AREA IN 1984-1986 (OCCURENCES #10, 23, 24).

**Owner/Manager:** UNKNOWN

## Ceanothus confusus

Rincon Ridge ceanothus

**Element Code:** PDRHA04220

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.2

**Other Lists**
**CNPS List:** 1B.1

**Habitat Associations**
**General:** CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND.
**Micro:** KNOWN FROM VOLCANIC OR SERPENTINE SOILS, DRY SHRUBBY SLOPES. 75-1065M.

**Occurrence No.** 28 **Map Index:** 42115 **EO Index:** 42115

**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1987-04-06
**Site:** 1987-04-06
**Record Last Updated:** 2000-01-06

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

**Lat/Long:** 38.96742º / -123.14810º
**UTM:** Zone-10 N4313171 E487169
**Area:** 12.7 acres
**Elevation:** 800 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 12W
**Section:** 23 **Qtr:** SE
**Meridian:** M

**Location:** DUNCAN CREEK, ALONG YORKVILLE ROAD ABOUT 0.5 MILE SOUTHWEST OF FELIZ CREEK ROAD, NORTHEAST OF YORKVILLE.

**Location Detail:** MAPPED ALONG E-FACING SLOPES WEST OF ROAD WITHIN THE W 1/4 SE 1/4 SECTION 23.

**Ecological:** IN CHAPARRAL AND OPEN QUERCUS AGRIFOLIA WOODLAND ON WHITE TUFF-LIKE SUBSTRATE. ASSOCIATED WITH ARCTOSTAPHYLOS MANZANITA, ADENOSTOMA FASCICULATUM, QUERCUS DURATA, UMBELLULARIA CALIFORNICA, HETEROMELES ARBUTIFOLIA, AND VARIOUS HERBS.

**Threat:** CURRENT GRAZING PRACTICE IS DAMAGING TO THIS TAXON.

**General:** 50-100 PLANTS OBSERVED IN 1987.

**Owner/Manager:** UNKNOWN

## Corynorhinus townsendii

Townsend's big-eared bat

**Element Code:** AMACC08010

**Status**

**Federal:** None
**State:** None

**NDDB Element Ranks**

**Global:** G4
**State:** S2S3

**Other Lists**

**CDFG Status:** SC

**Habitat Associations**

**General:** THROUGHOUT CALIFORNIA IN A WIDE VARIETY OF HABITATS. MOST COMMON IN MESIC SITES.

**Micro:** ROOSTS IN THE OPEN, HANGING FROM WALLS & CEILINGS. ROOSTING SITES LIMITING. EXTREMELY SENSITIVE TO HUMAN DISTURBANCE.

**Occurrence No.** 136 **Map Index:** 37280 **EO Index:** 32280

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Decreasing

**Dates Last Seen**

**Element:** 1987-06-18
**Site:** 1987-06-18

**Record Last Updated:** 1997-10-21

**Quad Summary:** Hopland (3812381/535A), Purdys Gardens (3912311/550D)

**County Summary:** Mendocino

**Lat/Long:** 39.00237° / -123.08328°
**UTM:** Zone-10 N4317043 E492788
**Area:**
**Elevation:** 820 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 11W
**Section:** 08 **Qtr:** XX
**Meridian:** M

**Location:** HOPLAND FIELD STATION, 1.8 MILES E OF HIGHWAY 101 AND 2.7 MILES NE OF HOPLAND.

**Ecological:** 2 INDIVIDUALS OBSERVED, 1 YOUNG AND 1 FEMALE.

**Threat:** HUMAN ACTIVITY.

**General:** THE REPORT SUGGESTS THAT THERE IS A MARKED POPULATION DECLINE IN THE PAST 40 YEARS FOR THIS SPECIES. MAPPED TO COORDINATES AND WRITEN INFORMATION.

**Owner/Manager:** PVT

## Cryptantha clevelandii var. dissita

serpentine cryptantha

**Element Code:** PDBOR0A0H2

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5T1
**State:** S1.1

**Other Lists**
**CNPS List:** 1B.1

**Habitat Associations**
**General:** CHAPARRAL.
**Micro:** SERPENTINE OUTCROPS. 330-730M.

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**Occurrence No.** 3 **Map Index:** 24302 **EO Index:** 29068

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1943-05-10
**Site:** 1943-05-10
**Record Last Updated:** 1996-05-24

**Quad Summary:** Highland Springs (3812288/534B), Lakeport (3912218/549C)
**County Summary:** Lake, Mendocino

**Lat/Long:** 38.98746º / -122.97222º
**UTM:** Zone-10 N4315385 E502405
**Radius:** 1 mile
**Elevation:** 1,800 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 10W
**Section:** 09 **Qtr:** SE
**Meridian:** M

**Location:** 5 MILES WEST OF LAKEPORT ON ROAD TO HOPLAND.

**Location Detail:** MAPPED ALONG HIGHWAY 175, 5 MILES FROM JUNCTION WITH HIGHWAY 29. 1938 COLLECTION BY BAKER FROM "WEST OF LAKEPORT...NEAR FOOT OF GRADE" IS ALSO MAPPED AT THIS SITE.

**Ecological:** SERPENTINE.

**General:** TYPE LOCALITY. TWO COLLECTIONS ATTRIBUTED TO THIS SITE; HOWELL #18008 (CAS) IN 1943 AND BAKER #8956 (DU) IN 1938.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 9 **Map Index:** 61240 **EO Index:** 61276

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-06-01
**Site:** 1999-06-01
**Record Last Updated:** 2005-05-06

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Mendocino

**Lat/Long:** 38.86956º / -123.06604º
**UTM:** Zone-10 N4302304 E494270
**Area:** 4.4 acres
**Elevation:** 1,050 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 12N
**Range:** 11W
**Section:** 22 **Qtr:** SE
**Meridian:** M

**Location:** WEST OF RUSSIAN RIVER, ABOUT 2.0 MILES NORTHWEST OF REDWOOD MOUNTAIN AND 0.5 MILES EAST OF PEAK 1582.

**Location Detail:** ALONG JEEP ROAD ASCENDING RIDGE AT LAT-LONG 38 52' 10" N, 123 03' 55" W/IN THE SE 1/4 OF THE SE 1/4 OF SECTION 22.

**Ecological:** SERPENTINE BARRENS AND CHAPARRAL WITH SPARSE QUERCUS DURATA THICKETS, AND PERENNIAL GRASSLANDS WITH NASSELLA.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 10 **Map Index:** 61243 **EO Index:** 61279

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-06-01
**Site:** 1999-06-01
**Record Last Updated:** 2005-05-06

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Mendocino

**Lat/Long:** 38.86767º / -123.05390º
**UTM:** Zone-10 N4302094 E495323
**Radius:** 80 meters
**Elevation:** 450 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 12N
**Range:** 11W
**Section:** 23 **Qtr:** SW
**Meridian:** M

**Location:** ABOUT 1.5 MILES NNW OF REDWOOD MOUNTAIN AND 0.7 MILES WNW OF CONFLUENCE OF EDWARDS CREEK AND RUSSIAN RIVER.

**Location Detail:** MAPPED AT LAT-LONG PROVIDED (38 52' 04" N, 123 03' 10" W) IN THE SE 1/4 OF THE SW 1/4 OF SECTION 23.

**Ecological:** SERPENTINE BARRENS AND CHAPARRAL WITH SPARSE QUERCUS DURATA THICKETS, AND PERENNIAL GRASSLANDS WITH NASSELLA. COMMON ON DISTURBED FILL SLOPES.

**Threat:** MINING PROSPECTS ON SERPENTINE HILLSOPES ON EDGE OF LARGE VINEYARD.

**Owner/Manager:** UNKNOWN

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## Didymodon norrisii

Norris' beard moss

**Element Code:** NBMUS2C0H0

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2G3
**State:** S2.2

**Other Lists**
**CNPS List:** 2.2

**Habitat Associations**
**General:** CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
**Micro:** MOSS FROM INTERMITTENTLY MESIC SITES; ON ROCKS. 600-1700M.

**Occurrence No.** 17 **Map Index:** 65394 **EO Index:** 65473
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2002-03-25
**Site:** 2002-03-25
**Record Last Updated:** 2006-07-26

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.99552º / -122.94271º
**UTM:** Zone-10 N4316282 E504960
**Radius:** 1/10 mile
**Elevation:** 1,460 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 10W
**Section:** 11 **Qtr:** NW
**Meridian:** M

**Location:** ROUGHLY 4 AIR MILES SSW OF LAKEPORT. ON THE N SIDE OF HWY 175, 1.8 ROAD MILES WEST OF THE INTERSECTION WITH GEORGE RD.
**Location Detail:** IN THE NE 1/4 OF THE NW 1/4 OF SECTION 11. LOCATION BASED ON COORDINATES PROVIDED IN COLLECTION INFORMATION.
**Ecological:** ON BARE SOIL IN RAIN GULLY.
**General:** ONLY SOURCES OF INFORMATION FOR THIS OCCURRENCE ARE THREE 2002 COLLECTIONS BY ALLEN.
**Owner/Manager:** UNKNOWN

## Entosthodon kochii

Koch's cord moss

**Element Code:** NBMUS2P050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G1
**State:** S1.3

**Other Lists**
**CNPS List:** 1B.3

**Habitat Associations**
**General:** CISMONTANE WOODLAND.
**Micro:** MOSS GROWING ON SOIL. 500-1000M.

**Occurrence No.** 4 **Map Index:** 35147 **EO Index:** 72342

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** XXXX-XX-XX
**Site:** XXXX-XX-XX

**Record Last Updated:** 2008-06-05

**Quad Summary:** Hopland (3812381/535A), Purdys Gardens (3912311/550D)
**County Summary:** Mendocino

**Lat/Long:** 39.00231° / -123.08436°
**UTM:** Zone-10 N4317036 E492695
**Radius:** 1 mile
**Elevation:** 1,000 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 13N
**Range:** 11W
**Section:** 08 **Qtr:** XX
**Meridian:** M

**Location:** UC HOPLAND FIELD STATION.

**General:** ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS UNDATED COLLECTION BY KELLMAN. NEEDS FIELDWORK.

**Owner/Manager:** UC-HOPLAND FIELD STATION

## Harmonia guggolziorum

Guggolz's harmonia

**Element Code:** PDAST650M0

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G1
**State:** S1.1

**Other Lists**
**CNPS List:** 1B.1

**Habitat Associations**
**General:** CHAPARRAL.
**Micro:** OPEN AREAS ON SERPENTINE. 160-195M.

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**Occurrence No.** 1 **Map Index:** 55681 **EO Index:** 55681

**Dates Last Seen**
**Element:** 2000-04-30
**Site:** 2000-04-30
**Record Last Updated:** 2007-12-19

*** SENSITIVE ***
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

*** SENSITIVE ***
**Lat/Long:**
**UTM:**
**Radius:**
**Elevation:**
**Mapping Precision:**
**Symbol Type:**
**Township:**
**Range:**
**Section:**
**Meridian:**
**Qtr:**

**Location:** *SENSITIVE* Location information suppressed.
**Location Detail:** Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.
**Ecological:** ON SERPENTINE (SEMI-) BARRENS, AT EDGES OF SERPENTINE CHAPARRAL.
**Threat:** ROAD MAINTENANCE AND WIDENING, VINEYARDS, HOUSING CONSTRUCTION.
**Owner/Manager:**

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**Occurrence No.** 2 **Map Index:** 55682 **EO Index:** 55682

**Dates Last Seen**
**Element:** 2001-05-08
**Site:** 2001-05-08
**Record Last Updated:** 2007-12-19

*** SENSITIVE ***
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

*** SENSITIVE ***
**Lat/Long:**
**UTM:**
**Radius:**
**Elevation:**
**Mapping Precision:**
**Symbol Type:**
**Township:**
**Range:**
**Section:**
**Meridian:**
**Qtr:**

**Location:** *SENSITIVE* Location information suppressed.
**Location Detail:** Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.
**Ecological:** ABOVE THE ROADCUT ON SERPENTINE (SEMI-) BARREN HILLSIDE, AT EDGES OF SERPENTINE CHAPARRAL.
**Threat:** ROAD CONSTRUCTION, VINEYARDS, HOUSING DEVELOPMENT.
**Owner/Manager:**

## Hemizonia congesta ssp. congesta

seaside tarplant

**Element Code:** PDAST4R065

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5T2T3
**State:** S2S3

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** GRASSY VALLEYS AND HILLS, OFTEN IN FALLOW FIELDS. 25-200M.

**Occurrence No.** 32 **Map Index:** 73001 **EO Index:** 73920

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1976-09-XX
**Site:** 1976-09-XX
**Record Last Updated:** 2008-11-25

**Quad Summary:** Warm Springs Dam (3812361/519A)
**County Summary:** Sonoma

**Lat/Long:** 38.71527° / -123.06666°
**UTM:** Zone-10 N4285183 E494204
**Area:**
**Elevation:**

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 10N
**Range:** 11W
**Section:** 15 **Qtr:** XX
**Meridian:** M

**Location:** 3.1 AIR MILES WEST OF WARM SPRINGS DAM.
**Location Detail:** MAPPED BY CNDDB ACCORDING TO T-R-S INFORMATION PROVIDED BY GUGGOLZ: T10N, R11W, SE 1/4 OF THE NW 1/4 OF SECTION 15.
**Ecological:** PLANT FOUND ON ROADSIDE.
**General:** ONLY SOURCE OF INFORMATION FOR THIS OCCURRRENCE IS A 1976 COLLECTION BY GUGGOLZ.
**Owner/Manager:** UNKNOWN

## Hesperolinon adenophyllum

glandular western flax

**Element Code:** PDLIN01010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.3

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** SERPENTINE SOILS; GENERALLY FOUND IN SEPENTINE CHAPARRAL. 425-1315M.

**Occurrence No.** 17 **Map Index:** 07933 **EO Index:** 18593
**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-06-18
**Site:** 1999-06-18
**Record Last Updated:** 2000-04-13

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.94942º / -122.96118º
**UTM:** Zone-10 N4311164 E503363
**Area:** 3.8 acres
**Elevation:** 1,920 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 10W
**Section:** 27 **Qtr:** NW
**Meridian:** M

**Location:** HIGHLAND SPRINGS ROAD ABOUT 3.5 - 4.5 MILES WEST OF HIGHLAND SPRINGS, MAYACMAS MOUNTAINS.

**Location Detail:** 2 COLONIES. WEST COLONY ON NORTH SIDE OF ROAD ON BARE ROAD CUT, JUST WEST OF CREEK CROSSING. MAPPED WITHIN THE NW 1/4 NW 1/4 SECTION 27. EAST COLONY ON BOTH SIDES OF THE ROAD, MAPPED WITHIN THE SE 1/4 NW 1/4 OF SECTION 27.

**Ecological:** ASSOCIATED WITH CALYCADENA MULTIGLANDULOSA, CEANOTHUS CUNEATUS, AND QUERCUS DURATA. LESS THAN 20% VEGETATION COVER. SERPENTINE ROADCUTS.

**Threat:** ROAD MAINTENANCE, GRADING,SUSCEPTIBLE TO EROSION. PLANTS COULD BE DESTROYED BY HERBICIDE MISUSE.

**General:** 1995:30-40 PLANTS AT E COLONY. 1999:3 PLANTS AT E COLONY AND 1 PLANT AT W COLONY. 1931 COLLECTION BY HILDEBRAND FROM 3 MI W OF HIGHLAND SPRINGS ON TOLL ROAD ATTRIBUTED TO THIS SITE. THE RARE CALYSTEGIA COLLINA SSP. OXYPHYLLA OCCURS NEARBY.

**Owner/Manager:** UNKNOWN

**Occurrence No.** 24 **Map Index:** 42758 **EO Index:** 42758
**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-06-18
**Site:** 1999-06-18
**Record Last Updated:** 2005-05-04

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.94348º / -122.91173º
**UTM:** Zone-10 N4310508 E507649
**Area:** 46.1 acres
**Elevation:** 1,460 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 09W
**Section:** 30 **Qtr:** SW
**Meridian:** M

**Location:** HIGHLAND SPRINGS ROAD, ALONG WEST SIDE OF HIGHLAND SPRINGS RESERVOIR, EAST OF THE MAYACMAS MOUNTAINS.

**Location Detail:** PLANTS OCCUR ON BOTH SIDES OF ROAD FROM ABOUT 0.5 - 1.2 MILES SOUTH OF HIGHLAND SPRINGS CUTOFF (EAST HIGHLAND SPRINGS ROAD). PLANTS ON BASE OF SLOPE NEAR ROAD AND ON TOP OF SLOPE APPROXIMATELY 6 FEET FROM ROAD EDGE.

**Ecological:** OPENINGS IN CHAMISE CHAPARRAL ON EAST FACING SLOPES. ASSOCIATED WITH AIRA CARYOPHYLLA, LOTUS HUMISTRATUS, BROMUS HORDEACEUS, VULPIA SPP., ERIOPHYLLUM LANATUM, AVENA BARBATA, TRITELEIA LAXA, MADIA EXIGUA, M. GRACILIS, ETC.

**Threat:** POSSIBLE THREATS INCLUDE ROAD MAINTENANCE, HERBICIDES. BLM PORTION OF THIS SITE UNDER CONSIDERATION FOR LAND

**General:** 1500-2000 PLANTS OBSERVED IN 1995. 100 PLANTS OBSERVED ON BLM CLEAR LAKE RESOURCE AREA PARCEL 117-L IN 1997. MORE THAN 5000 PLANTS OBSERVED IN 1999. THE RARE CALYSTEGIA COLLINA SSP. OXYPHYLLA OCCURS NEARBY.

**Owner/Manager:** PVT, BLM

## Hesperolinon adenophyllum

glandular western flax

**Element Code:** PDLIN01010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.3

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** SERPENTINE SOILS; GENERALLY FOUND IN SEPENTINE CHAPARRAL. 425-1315M.

**Occurrence No.** 25 **Map Index:** 42759 **EO Index:** 42759
**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1997-05-07
**Site:** 1997-05-07
**Record Last Updated:** 2000-04-13

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93169º / -122.94197º
**UTM:** Zone-10 N4309198 E505029
**Radius:** 80 meters
**Elevation:** 2,360 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 10W
**Section:** 35 **Qtr:** SW
**Meridian:** M

**Location:** HILLSLOPE ABOVE HIGHLAND CREEK, ABOUT 1.3 MILES NORTHEAST OF HIGH VALLEY RANCH, WEST OF HIGHLAND SPRINGS RESERVOIR.

**Location Detail:** ON RIDGELINE ADJACENT OT FIRE ROAD ABOUT 2-3 YEARS OLD IN 1997. MAPPED JUST SOUTH OF THE CENTER OF SECTION 35. BLM EXCHANGE PARCEL 147-L.

**Ecological:** ROCKY RIDGE ON RAW SERPENTINE AND REDDISH, WEATHERED SOILS, GROWING ON MARGIN OF DOZER ROAD, IN CHAPARRAL WITH PINUS ATTENUATA, CEANOTHUS JEPSONII VAR. ALBIFLORUS, AND CUPRESSUS SARGENTII.

**Threat:** PARCEL UNDER CONSIDERATION FOR SALE TO PRIVATE OWNER (LAND EXCHANGE).

**General:** 1000 PLANTS OBSERVED IN 1997.

**Owner/Manager:** BLM

**Occurrence No.** 26 **Map Index:** 42760 **EO Index:** 42760
**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1998-06-24
**Site:** 1998-06-24
**Record Last Updated:** 2005-06-28

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Mendocino, Lake

**Lat/Long:** 38.93098º / -122.96208º
**UTM:** Zone-10 N4309118 E503286
**Area:** 10.4 acres
**Elevation:** 2,640 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 10W
**Section:** 34 **Qtr:** SW
**Meridian:** M

**Location:** NORTH SLOPE OF HIGH VALLEY, SLOPES ON EAST SIDE OF ADOBE CREEK ROAD, ABOUT 3 MILES WSW OF HIGHLAND SPRINGS RESERVOIR.

**Location Detail:** EXTENDING EASTWARD FROM ADOBE CREEK ROAD IN A RECENT 2-3 YEAR OLD (IN 1997) BURN AREA. MAPPED WITHIN THE NE 1/4 OF THE SW 1/4 OF SECTION 34. BLM EXCHANGE PARCEL 146-L.

**Ecological:** ROCKY RIDGE ON RAW SERPENTINE AND REDDISH, WEATHERED SOILS. GROWING IN MATRIX OF SERPENTINE CHAPARRAL OF PINUS SABINIANA, CEANOTHUS JEPSONII ALBIFLORUS, CUPRESSUS SARGENTII. PLANTS COLONIZING LOOSE SOIL FROM RECENT DISTURBANCE ALONG ROAD.

**Threat:** PARCEL UNDER CONSIDERATION FOR SALE TO PRIVATE OWNER (LAND EXCHANGE).

**General:** 5,000 PLANTS OBSERVED IN 1997, AND UNKNOWN NUMBER IN 1998.

**Owner/Manager:** BLM

## Hesperolinon adenophyllum

glandular western flax

**Element Code:** PDLIN01010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.3

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** SERPENTINE SOILS; GENERALLY FOUND IN SEPENTINE CHAPARRAL. 425-1315M.

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**Occurrence No.** 27 **Map Index:** 42763 **EO Index:** 42763

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** XXXX-XX-XX
**Site:** XXXX-XX-XX
**Record Last Updated:** 2000-04-13

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake, Mendocino

**Lat/Long:** 38.88096º / -122.88849º
**UTM:** Zone-10 N4303572 E509672
**Radius:** 1/5 mile
**Elevation:** 2,500 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 12N
**Range:** 09W
**Section:** 17 **Qtr:** XX
**Meridian:** M

**Location:** EASTERN END OF PINE MOUNTAIN ROAD, AT BOUNDARY OF MENDOCINO AND LAKE COUNTIES.

**General:** ONLY SOURCE OF INFORMATION FOR THIS SITE ARE COLLECTIONS BY RAICHE (40,210 CAS) AND KNIGHT (5436 CAS) CITED IN A FLORA OF THE VASCULAR PLANTS OF MENDOCINO COUNTY.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 41 **Map Index:** 61836 **EO Index:** 61872

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-06-03
**Site:** 1999-06-03
**Record Last Updated:** 2005-07-01

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.92288º / -122.90104º
**UTM:** Zone-10 N4308223 E508578
**Area:** 16.1 acres
**Elevation:** 1,800 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 12N
**Range:** 09W
**Section:** 06 **Qtr:** NE
**Meridian:** M

**Location:** ABOUT 5 MILES SOUTHWEST OF KELSEYVILLE AND 1.0 AIRMI SOUTH OF HIGHLAND SPRINGS.

**Location Detail:** ALONG ROADCUT ABOUT 1.1 ROAD MILES UPHILL FROM GATE AT HIGHLAND SPRINGS ROAD. MAPPED IN THE NW 1/4 OF THE NE 1/4 OF SECTION 6.

**Ecological:** ROADCUT ON SANDSTONE IN CHAPARRAL. NORTH ASPECT. ASSOCIATED WITH ADENOSTOMA FASCICULATUM, QUERCUS BERBERIDIFOLIA, AND HETEROMELES ARBUTIFOLIA.

**General:** UNKNOWN NUMBER OF PLANTS SEEN IN 1999.

**Owner/Manager:** UNKNOWN

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## Horkelia bolanderi

Bolander's horkelia

**Element Code:** PDROS0W010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G1
**State:** S1.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** LOWER MONTANE CONIFEROUS FOREST, CHAPARRAL, MEADOWS, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** GRASSY MARGINS OF VERNAL POOLS AND MEADOWS. 450-850M.

**Occurrence No.** 6 **Map Index:** 17131 **EO Index:** 9842

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1950-05-20
**Site:** 1989-05-28
**Record Last Updated:** 1992-02-03

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93143º / -122.92345º
**UTM:** Zone-10 N4309170 E506635
**Area:**
**Elevation:** 1,525 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 10W
**Section:** 36 **Qtr:** S
**Meridian:** M

**Location:** 1.2 MILES SOUTHWEST OF HIGHLAND SPRINGS.

**Location Detail:** LATEST SURVEY DIDN'T KNOW WHERE TO START MEASURING FROM. BETTER DIRECTIONS NEEDED FROM SWEENEY.

**Ecological:** SWEENEY'S ORIGINAL HERBERIUM LABEL SAYS PLANT COLLECTED ON 1 YEAR BURN IN CHAPARRAL ON SHALLOW ROCKY SOIL, SOUTH-FACING SLOPE. THIS IS ATYPICAL

**General:** MORE FIELD SURVEYS NEEDED.

**Owner/Manager:** UNKNOWN

## Horkelia tenuiloba

thin-lobed horkelia

**Element Code:** PDROS0W0E0

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G2 | **CNPS List:** 1B.2 |
| **State:** None | **State:** S2.2 | |

**Habitat Associations**

**General:** COASTAL SCRUB, CHAPARRAL.

**Micro:** SANDY SOILS; MESIC OPENINGS. 45-500M.

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**Occurrence No.** 8 **Map Index:** 28819 **EO Index:** 30380

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1992-01-26
**Site:** 1992-01-26
**Record Last Updated:** 1997-02-11

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.67560º / -122.97666º
**UTM:** Zone-10 N4280778 E502030
**Area:** 9.4 acres
**Elevation:** 1,040 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 10N
**Range:** 10W
**Section:** 33 **Qtr:** NW
**Meridian:** M

**Location:** 0.5 MILE SSW OF BRADFORD MOUNTAIN, WEST OF ANDERSON VALLEY.

**Location Detail:** MAPPED ABOUT 1.7 AIR MILES WEST OF DRY CREEK ROAD AT MOUNTAIN VIEW RANCH ROAD AND 1.2 MILES SOUTHWEST OF THE SW ARM OF MERLO LAKE.

**Ecological:** GROWING IN OPEN SPACES BETWEEN ARCTOSTAPHYLOS WITH CEANOTHUS CONFUSUS. OTHER ASSOCIATES INCLUDE DENDROMECON RIGIDA, ADENOSTOMA FASCICULATUM, AND TOXICODENDRON DIVERSILOBUM. ARCTOSTAPHYLOS STANFORDIANA VAR. REPENS OCCURS NEARBY.

**Threat:** PART OF PROPERTY TO BE DEVELOPED FOR HOMESITE AND SMALL VINEYARD.

**General:** 200+ PLANTS OBSERVED IN 1992. SOME PROTECTION OF THIS SITE TO BE PROVIDED BY A CONSERVATION AGREEMENT FOR THE A. STANFORDIANA REPENS.

**Owner/Manager:** PVT

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**Occurrence No.** 9 **Map Index:** 28820 **EO Index:** 30379

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1991-05-04
**Site:** 1991-05-04
**Record Last Updated:** 2008-09-15

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.68265º / -122.97229º
**UTM:** Zone-10 N4281561 E502410
**Area:** 20.9 acres
**Elevation:** 1,060 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 10N
**Range:** 10W
**Section:** 28 **Qtr:** SE
**Meridian:** M

**Location:** TOP OF BRADFORD MOUNTAIN, WEST OF ANDERSON VALLEY.

**Location Detail:** FROM SUMMIT SOUTH ALONG FIREBREAK FOR ABOUT 0.25 MILE.

**Ecological:** ON FIREBREAK AND IN CLEAR AREAS IN THE BRUSH ON BOTH SIDES OF THE BREAK. YELLOW CLAY SOIL. ASSOCIATED WITH CEANOTHUS CONFUSUS, ADENOSTOMA FASCICULATUM, AND ERIODICTYON CALIFORNICUM. HORKELIA FOUND ON SLIGHT SLOPES.

**Threat:** MAINTENANCE OF FIRE BREAK SETS PLANTS BACK A SHORT TIME, BUT MAY BE BENEFICIAL OVER TIME.

**General:** 100+ PLANTS OBESERVED IN 1991.

**Owner/Manager:** PVT

## Lasiurus blossevillii

western red bat

**Element Code:** AMACC05060

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5
**State:** S3?

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** ROOSTS PRIMARILY IN TREES, 2-40 FT ABOVE GROUND, FROM SEA LEVEL UP THROUGH MIXED CONIFER FORESTS.
**Micro:** PREFERS HABITAT EDGES & MOSAICS WITH TREES THAT ARE PROTECTED FROM ABOVE & OPEN BELOW WITH OPEN AREAS FOR FORAGING.

**Occurrence No.** 96 **Map Index:** 71708 **EO Index:** 72607

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1954-09-08
**Site:** 1954-09-08
**Record Last Updated:** 2008-07-15

**Quad Summary:** Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.78952º / -122.99124º
**UTM:** Zone-10 N4293420 E500760
**Radius:** 1/5 mile
**Elevation:** 300 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 11N
**Range:** 10W
**Section:** 20 **Qtr:** NE
**Meridian:** M

**Location:** ALEXANDER VALLEY, BLACK WINERY ON RIVER ROAD, 1.8 MILES SE OF THE CLOVERDALE POST OFFICE.

**Location Detail:** MAPPED TO DESCRIBED LOCATION OF "BLACK WINERY, 2 MILES SOUTHEAST OF CLOVERDALE, SONOMA COUNTY."

**Ecological:** IN CANOPY OF FIG TREE.

**General:** A FEMALE RED BAT WAS CAPTURED WHILE HANGING IN AN OVERHANG PRODUCED BY THE OVERLAPPING CANOPIES OF 2 FIG TREES ON 8 SEP 1954.

**Owner/Manager:** PVT

## Lasiurus cinereus

hoary bat

**Element Code:** AMACC05030

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G5 | **CDFG Status:** |
| **State:** None | **State:** S4? | |

**Habitat Associations**

**General:** PREFERS OPEN HABITATS OR HABITAT MOSAICS, WITH ACCESS TO TREES FOR COVER & OPEN AREAS OR HABITAT EDGES FOR FEEDING.

**Micro:** ROOSTS IN DENSE FOLIAGE OF MEDIUM TO LARGE TREES. FEEDS PRIMARILY ON MOTHS. REQUIRES WATER.

**Occurrence No.** 67 **Map Index:** 68512 **EO Index:** 68827

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1958-05-19
**Site:** 1958-05-19

**Record Last Updated:** 2007-03-16

**Quad Summary:** Yorkville (3812382/535B)

**County Summary:** Mendocino

**Lat/Long:** 38.97302º / -123.19060º
**UTM:** Zone-10 N4313800 E483488
**Radius:** 1 mile
**Elevation:**

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 13N
**Range:** 12W
**Section:** 21 **Qtr:** XX
**Meridian:** M

**Location:** 4 MILES WEST OF HOPLAND.

**Location Detail:** MAPPED ACCORDING TO LAT/LONG COORDINATES PROVIDED BY MANIS, WITH UNCERTAINTY OF 6564.5142M. COORDINATES DO NOT MATCH WITH LOCALITY GIVEN, "4 MILES E OF HOPLAND;" RATHER THEY POINT TO 4 MILES W OF HOPLAND.

**General:** 7 MALE AND 1 FEMALE SPECIMEN COLLECTED (MVZ #122493-122532) COLLECTED BY ALAN C. ZIEGLER & CARL B. KOFORD ON 10, 12, 19-20 APR AND 19 MAY 1958.

**Owner/Manager:** UNKNOWN

Lavinia exilicauda chi

Clear Lake hitch

**Element Code:** AFCJB19011

**Status**

**Federal:** None
**State:** None

**NDDB Element Ranks**

**Global:** G5T2
**State:** S2

**Other Lists**

**CDFG Status:** SC

**Habitat Associations**

**General:** FOUND ONLY IN CLEAR LAKE, LAKE CO, AND ASSOCIATED PONDS. SPAWNS IN STREAMS FLOWING INTO CLEAR LAKE.

**Micro:** ADULTS FOUND IN THE LIMNETIC ZONE. JUVENILES FOUND IN THE NEARSHORE SHALLOW-WATER HABITAT HIDING IN THE VEGETATION.

**Occurrence No.** 2 **Map Index:** 63527 **EO Index:** 63619

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**

**Element:** 1963-04-12
**Site:** 1963-04-12

**Record Last Updated:** 2005-12-28

**Quad Summary:** Highland Springs (3812288/534B)

**County Summary:** Lake

**Lat/Long:** 38.95744° / -122.89042°
**UTM:** Zone-10 N4312060 E509494
**Area:**
**Elevation:** 1,413 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 09W
**Section:** 20 **Qtr:** SW
**Meridian:** M

**Location:** ADOBE CREEK AT BELL HILL ROAD IN BIG VALLEY

**Ecological:** TRIBUTARY CREEK TO CLEAR LAKE.

**General:** COLLECTED 12 APR 1963 BY J.D. HOPKIRD & C.C. SWIFT (CAS #23261) PARATYPE.

**Owner/Manager:** UNKNOWN

## Layia septentrionalis

Colusa layia

**Element Code:** PDAST5N0F0

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** SCATTERED COLONIES IN FIELDS AND GRASSY SLOPES IN SANDY OR SERPENTINE SOIL. 145-1095M.

---

**Occurrence No.** 4 **Map Index:** 24302 **EO Index:** 29069

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1943-05-10
**Site:** 1943-05-10
**Record Last Updated:** 1996-01-25

**Quad Summary:** Highland Springs (3812288/534B), Lakeport (3912218/549C)
**County Summary:** Lake, Mendocino

**Lat/Long:** 38.98746º / -122.97222º
**UTM:** Zone-10 N4315385 E502405
**Radius:** 1 mile
**Elevation:** 1,800 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 10W
**Section:** 09 **Qtr:** SE
**Meridian:** M

**Location:** 5 MILES WEST OF LAKEPORT ON ROAD TO HOPLAND. MAPPED 5 ROAD MILES FROM JUNCTION OF HWYS 29 & 175.
**General:** ONLY INFO IS COLLECTION BY HOWELL (#18005).
**Owner/Manager:** UNKNOWN

---

**Occurrence No.** 12 **Map Index:** 24313 **EO Index:** 7031

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1978-05-05
**Site:** 1978-05-05
**Record Last Updated:** 1993-10-11

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.90462º / -123.08916º
**UTM:** Zone-10 N4306196 E492269
**Area:**
**Elevation:** 600 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON
**Township:** 12N
**Range:** 11W
**Section:** 09 **Qtr:** NE
**Meridian:** M

**Location:** 4.5 KM (2.8 MI) N OF HWY 128 ALONG MOUNTAIN HOUSE ROAD (RT 111).
**General:** ONLY INFO IS COLLECTION BY WHEELER & WHEELER (#297).
**Owner/Manager:** UNKNOWN

---

**Occurrence No.** 14 **Map Index:** 24303 **EO Index:** 7029

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1947-04-09
**Site:** 1947-04-09
**Record Last Updated:** 2008-09-26

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93683º / -122.90707º
**UTM:** Zone-10 N4309770 E508054
**Radius:** 1 mile
**Elevation:** 1,500 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 09W
**Section:** 31 **Qtr:** XX
**Meridian:** M

**Location:** HIGHLAND SPRINGS, MAYACMAS RANGE.
**Ecological:** FOOTHILLS.
**General:** 1928 AND 1947 COLLECTIONS FROM "HIGHLAND SPRINGS" ATTRIBUTED TO THIS OCCURRENCE. NEEDS FIELDWORK.
**Owner/Manager:** UNKNOWN

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## Layia septentrionalis

Colusa layia

**Element Code:** PDAST5N0F0

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** SCATTERED COLONIES IN FIELDS AND GRASSY SLOPES IN SANDY OR SERPENTINE SOIL. 145-1095M.

---

**Occurrence No.** 28 **Map Index:** 37544 **EO Index:** 32546

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1995-05-05
**Site:** 1995-05-05
**Record Last Updated:** 2005-06-29

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.93503° / -123.04058°
**UTM:** Zone-10 N4309568 E496482
**Radius:** 80 meters
**Elevation:** 1,060 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 11W
**Section:** 35 **Qtr:** SW
**Meridian:** M

**Location:** ABOUT 5 MILES SE OF HOPLAND. ALONG JEEP TRAIL 1.7 MILES NE OF SQUAW ROCK SLIDE HISTORICAL MARKER.

**Location Detail:** IN THE SE 1/4 OF THE SW 1/4 OF SECTION 35.

**Ecological:** OAK WOODLAND/NON-NATIVE GRASSLAND WITH AVENA BARBATA, LAGOPHYLLA RAMOSISSIMA, TRIFOLIUM CILIOLATUM, T. MICROCEPHALUM, AND ALBOPURPUREUM.

**General:** 200 PLANTS IN 1995.

**Owner/Manager:** PVT

---

**Occurrence No.** 29 **Map Index:** 37545 **EO Index:** 32547

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1995-04-26
**Site:** 1995-04-26
**Record Last Updated:** 1997-11-06

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.94804° / -123.02773°
**UTM:** Zone-10 N4311011 E497596
**Area:** 4.5 acres
**Elevation:** 1,200 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 11W
**Section:** 36 **Qtr:** NW
**Meridian:** M

**Location:** ABOUT 6 MI ESE OF HOPLAND, ALONG YOUNCE ROAD.

**Location Detail:** THREE LITTLE POPULATIONS MAPPED. TWO IN NW1/4 OF NW1/4 OF SECTION 36. ONE IN NE 1/4 OF NE 1/4 OF SECTION 35.

**Ecological:** EAST AND WEST-FACING SLOPES OF LOOSE ROCK ABOVE ROADCUT. WITH AVENA BARBATA, BROMUS SP., ERIOGONUM NUDUM, MELICA IMPERFECTA, MONARDELLA SP., TRIFOLIUM MICROCEPHALUM, TUNICA PROLIFERA, MONTIA EXIGUA, THYSANOCARPUS SP., AND LINANTHUS SP.

**General:** MORE THAN 250 PLANTS IN 1995.

**Owner/Manager:** PVT?

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**Occurrence No.** 30 **Map Index:** 37748 **EO Index:** 32755

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1949-05-11
**Site:** 1949-05-11
**Record Last Updated:** 1997-12-22

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Sonoma

**Lat/Long:** 38.83684° / -123.02127°
**UTM:** Zone-10 N4298671 E498153
**Radius:** 1 mile
**Elevation:** 600 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 11N
**Range:** 10W
**Section:** 06 **Qtr:** XX
**Meridian:** M

**Location:** 2 MILES NORTH OF CLOVERDALE.

**Location Detail:** MAPPED IN VICINITY OF PRESTON ALONG THE RUSSIAN RIVER.

**General:** ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1949 COLLECTION BY BEANE.

**Owner/Manager:** UNKNOWN

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## Lupinus sericatus

Cobb Mountain lupine

**Element Code:** PDFAB2B3J0

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G2
**State:** S2.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
**Micro:** IN STANDS OF KNOBCONE PINE-OAK WOODLAND, ON OPEN WOODED SLOPES IN GRAVELLY SOILS; SOMETIMES ON SERPENTINE. 180-1500M.

**Occurrence No.** 22 **Map Index:** 35501 **EO Index:** 30919
**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1986-04-23
**Site:** 1986-04-23
**Record Last Updated:** 1997-02-27

**Quad Summary:** Big Foot Mtn. (3812372/535C)
**County Summary:** Sonoma

**Lat/Long:** 38.76589º / -123.17649º
**UTM:** Zone-10 N4290812 E484667
**Area:** 17.5 acres
**Elevation:** 1,950 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 11N
**Range:** 12W
**Section:** 34 **Qtr:** NE
**Meridian:** M

**Location:** KELLY ROAD JUST WEST OF ROCKPILE ROAD, ABOUT 1.3 MILES SOUTH OF WHITE MOUNTAIN, WEST OF LAKE SONOMA.

**Location Detail:** ABOUT 0.2 MILE WEST OF ROCKPILE ROAD ROADSIDE CLIFF-FACE.

**Ecological:** OPEN SSW-FACING ROCK CLIFFS AND LEDGES. AREA DOMINANTLY GRASSLAND WITH MIXED EVERGREEN WOODLAND IN AREAS, CHAPARRAL OCCURING NEARBY. ASSOCIATED ON THE CLIFFS WITH ERIOPHYLLUM LANATUM AND GRASSES.

**Threat:** ROAD WIDENING IS POTENTIAL THREAT.

**General:** 50-100 PLANTS REPORTED IN 1986. RAICHE NOTES THAT A SOLITARY PLANT OBSERVED SEVERAL MILES TO THE EAST ALONG ROCKPILE ROAD IS NOW EXTIRPATED. THIS SITE NOT YET MAPPED BY CNDDB (INSUFFICIENT SITE DESCRIPTION).

**Owner/Manager:** DOD-COE

## Monardella villosa ssp. globosa

robust monardella

**Element Code:** PDLAM180P7

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G5T2 | **CNPS List:** 1B.2 |
| **State:** None | **State:** S2.2 | |

**Habitat Associations**

**General:** BROADLEAVED UPLAND FOREST, CHAPARRAL, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.

**Micro:** OPENINGS. 30-300M.

**Occurrence No.** 6 **Map Index:** 32595 **EO Index:** 1075

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1897-06-XX
**Site:** 1897-06-XX
**Record Last Updated:** 2007-04-05

**Quad Summary:** Healdsburg (3812257/518D), Geyserville (3812268/518B), Jimtown (3812267/518A), Guerneville (3812258/518C)

**County Summary:** Sonoma

**Lat/Long:** 38.61273° / -122.86698°
**UTM:** Zone-10 N4273810 E511580
**Radius:** 1 mile
**Elevation:** 100 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 09N
**Range:** 09W
**Section:** 21 **Qtr:** XX
**Meridian:** M

**Location:** HEALDSBURG.

**General:** ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN 1897 COLLECTION BY KING.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 11 **Map Index:** 46404 **EO Index:** 46404

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2000-06-23
**Site:** 2000-06-23
**Record Last Updated:** 2001-11-06

**Quad Summary:** Geyserville (3812268/518B)

**County Summary:** Sonoma

**Lat/Long:** 38.67147° / -122.98863°
**UTM:** Zone-10 N4280320 E500988
**Area:**
**Elevation:**

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 10N
**Range:** 10W
**Section:** 32 **Qtr:** E
**Meridian:** M

**Location:** EAST OF PENA CREEK ABOUT 0.1- 1 MILE DOWNSTREAM FROM CONFLUENCE WITH CHAPMAN BRANCH, SOUTHWEST OF GEYSERVILLE.

**Location Detail:** EASTERN HALF OF SECTION 32.

**Ecological:** IN SERPENTINE CHAPARRAL. RARE ASSOCIATES INCLUDE ARCTOSTAPHYLOS STANFORDIANA SPP. DECUMBENS, CEANOTHUS CONFUSUS, AND CORDYLANTHUS TENUIS SSP. BRUNNEUS.

**Threat:** SURROUNDING LAND USE INCLUDES TIMBER HARVEST, RURAL RESIDENTIAL, VINEYARDS, RESERVOIR.

**General:** UNKNOWN NUMBER OF PLANTS OBSERVED IN 2000.

**Owner/Manager:** PVT

## Myotis yumanensis

Yuma myotis

**Element Code:** AMACC01020

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G5 | **CDFG Status:** |
| **State:** None | **State:** S4? | |

**Habitat Associations**

**General:** OPTIMAL HABITATS ARE OPEN FORESTS AND WOODLANDS WITH SOURCES OF WATER OVER WHICH TO FEED.

**Micro:** DISTRIBUTION IS CLOSELY TIED TO BODIES OF WATER. MATERNITY COLONIES IN CAVES, MINES, BUILDINGS OR CREVICES.

**Occurrence No.** 7 **Map Index:** 43689 **EO Index:** 43691

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-07-08
**Site:** 1999-07-08

**Record Last Updated:** 2000-08-31

**Quad Summary:** Tombs Creek (3812362/519B)

**County Summary:** Sonoma

**Lat/Long:** 38.66220º / -123.23451º
**UTM:** Zone-10 N4279318 E479596
**Radius:** 80 meters
**Elevation:** 620 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POINT

**Township:** 09N
**Range:** 12W
**Section:** 06 **Qtr:** NW
**Meridian:** M

**Location:** BRIDGE ON STEWART'S POINT SKAGGS SPRING ROAD AT HOUSE CREEK, 0.3 MILE NORTH OF DOE RIDGE.

**Location Detail:** MAPPED TO SITE DESCRIPTION GIVEN COORDINATES ARE 0.05 MILE WEST (LAT:38 39' 44"; LONG:123 14' 03").

**Ecological:** RIPARIAN AT BRIDGE, CHAPARRAL AND NON-NATIVE GRASSLAND, RURAL.

**Threat:** BRIDGE SEISMIC RETROFIT SCHEDULED FOR DAY WORK ONLY. WORK WILL TEMPORARILY IMPACT MATERNITY DAY ROOST

**General:** 1999: NUMBER OF M. YUMANENSIS UNKNOWN. ALSO PALLID BAT NIGHT ROOST AND OTHER UNIDENTIFIED BAT SPECIES USING THE BRIDGE.

**Owner/Manager:** SON COUNTY

## Oncorhynchus mykiss irideus

steelhead - central California coast ESU

**Element Code:** AFCHA0209G

**Status**
**Federal:** Threatened
**State:** None

**NDDB Element Ranks**
**Global:** G5T2Q
**State:** S2

**Other Lists**
**CDFG Status:**

**Habitat Associations**
**General:** FROM RUSSIAN RIVER, SOUTH TO SOQUEL CR & TO, BUT NOT INCLUDING, PAJARO RIVER. ALSO SAN FRANCISCO & SAN PABLO BAY BASINS.
**Micro:**

**Occurrence No.** 25 **Map Index:** 43107 **EO Index:** 43107

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1998-08-25
**Site:** 1998-08-25
**Record Last Updated:** 2000-06-20

**Quad Summary:** The Geysers (3812277/534D), Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.83911° / -122.84597°
**UTM:** Zone-10 N4298934 E513367
**Area:** 309.3 acres
**Elevation:** 1,500 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 12N
**Range:** 09W
**Section:** 34 **Qtr:** XX
**Meridian:** M

**Location:** SQUAW CREEK, TRIB TO BIG SULFUR CREEK, TRIB TO RUSSIAN RIVER, 4 MILES NW OF "THE GEYSERS" AND GEYSERS RESORT.

**Location Detail:** SQUAW CREEK SAMPLE STATIONS: 1, 3 (ON ALDER CREEK 0.3 MI UPSTREAM OF SQUAW), 4, 7, & 10. NO SITES 2 & 5; SITES, 6 ON WILDHORSE CREEK & 8 ON COLDWATER CANYON HAVE NO DATA.

**Ecological:** SITE 1: WIDE CHANNEL, LITTLE-NO SHADING, POOLS & BACKWATERS; SANDY/GRAVEL/BOULDERS; 4, NARROW FLOODPLAIN, COBBLE & BEDROCK, AGGRADATION AREA; 7 & 10, DENSE RIPARIAN, ABUNDANT SHADE, (7 PRIMAILY SANDY, SEVERAL POOLS), (10 COBBLE & GRAVEL).

**Threat:** NATURAL AND HUMAN CAUSE EROSION/ SEDIMENTATION; WATER WITHDRAWAL. SURROUNDING LAND USE IN GEOTHERMAL ENERGY PRODUCTION.

**General:** BARRIERS UP & DOWNSTREAM OF SITE 3, DOWNSTREAM WATERFALL CAN BE PASSED DURING HIGH FLOWS. 477 OBSERVED, 207 ADULTS (1+ YEARS), 270 JUVENILES (0-1 YEAR)

**Owner/Manager:** PVT-CALPINE CORP, SMUD

## Rana boylii

foothill yellow-legged frog

**Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

---

**Occurrence No.** 113 **Map Index:** 32342 **EO Index:** 2544

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1956-04-XX
**Site:** 1956-04-XX
**Record Last Updated:** 1995-07-26

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.91374º / -123.03916º
**UTM:** Zone-10 N4307205 E496604
**Area:**
**Elevation:** 750 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 12N
**Range:** 11W
**Section:** 01 **Qtr:** XX
**Meridian:** M

**Location:** PIETA CREEK; TRIBUTARY TO RUSSIAN RIVER; SOUTHEAST OF HOPLAND.
**General:** MODERATELY ABUNDANT NUMBERS OF FROGS OBSERVED MARCH-APRIL 1956.
**Owner/Manager:** UNKNOWN

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**Occurrence No.** 114 **Map Index:** 32343 **EO Index:** 2576

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1956-04-XX
**Site:** 1956-04-XX
**Record Last Updated:** 1995-06-27

**Quad Summary:** Hopland (3812381/535A), Highland Springs (3812288/534B)
**County Summary:** Mendocino, Lake

**Lat/Long:** 38.99134º / -122.99060º
**UTM:** Zone-10 N4315815 E500814
**Area:**
**Elevation:** 2,400 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 10W
**Section:** 08 **Qtr:** XX
**Meridian:** M

**Location:** MCDOWELL CREEK; LAKE/MENDOCINO COUNTY LINES; WEST OF BIG VALLEY.
**Ecological:** RIVER.
**General:** MODERATELY ABUNDANT NUMBERS OBSERVED.
**Owner/Manager:** UNKNOWN

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**Occurrence No.** 156 **Map Index:** 36014 **EO Index:** 31012

**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1997-06-09
**Site:** 1997-06-09
**Record Last Updated:** 1997-07-07

**Quad Summary:** Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.79716º / -122.91352º
**UTM:** Zone-10 N4294271 E507509
**Area:**
**Elevation:** 720 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 11N
**Range:** 09W
**Section:** 18 **Qtr:** XX
**Meridian:** M

**Location:** LITTLE SULPHUR CREEK, APPROXIMATELY 1.5 MILES UPSTREAM FROM ITS CONFLUENCE WITH BIG SULPHUR CREEK.
**Location Detail:** LARVAE ABUNDANT INTHE SHALLOW, QUIET WATER ALONG THE SHORE.
**Ecological:** HABITAT CONSISTS OF A STREAM WITH A VERY WIDE, SHALLOW CHANNEL; SOME ROCKY COVER ALONG THE SHORE CREATES SMALL POOLS WHERE ADULT FROGS ARE PRESENT (NO OVER-HANGING VEGETATION). SURROUNDING AREA IS OAK WOODLAND. STEELHEAD ABUNDAND IN CREEK.
**Threat:** THREATENED BY PROPOSED VINEYARD DEVELOPMENT/WATER DIVERSION.
**General:** 2 ADULT FROGS AND MANY TADPOLES OBSERVED ON 9 JUNE 1997.
**Owner/Manager:** PVT

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## Rana boylii

foothill yellow-legged frog

**Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

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**Occurrence No.** 157 **Map Index:** 36015 **EO Index:** 31013

**Dates Last Seen**
**Element:** 1997-06-09
**Site:** 1997-06-09
**Record Last Updated:** 1997-07-07

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.80236º / -122.92234º
**UTM:** Zone-10 N4294847 E506743
**Area:**
**Elevation:** 720 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 11N
**Range:** 10W
**Section:** 13 **Qtr:** XX
**Meridian:** M

**Location:** UNNAMED TRIBUTARY TO LITTLE SULPHUR CREEK, NE OF ALEXANDER VALLEY.

**Ecological:** HABITAT CONSISTS OF A HIGH-GRADIENT, FIRST AND SECOND ORDER STREAM, DEEPLY INCISED IN PLACES WITH BEDROCK, COBBLE, AND GRAVEL BOTTOM; SURROUNDING VEGETATION IS GRAZED OAK WOODLAND. STEELHEAD ABUNDANT IN LOWER REACH; NONE IN UPPER REACH.

**Threat:** THREATENED BY VINEYARD DEVELOPMENT, AS WELL AS A PROPOSED DAM/RESERVOIR/WATER DIVERSION.

**General:** 8 ADULT FROGS AND THOUSANDS OF TADPOLES OBSERVED ON 9 JUNE 1997.

**Owner/Manager:** PVT

---

**Occurrence No.** 158 **Map Index:** 36016 **EO Index:** 31014

**Dates Last Seen**
**Element:** 1997-06-09
**Site:** 1997-06-09
**Record Last Updated:** 1997-07-07

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.77729º / -122.94351º
**UTM:** Zone-10 N4292064 E504906
**Area:**
**Elevation:** 920 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 11N
**Range:** 10W
**Section:** 26 **Qtr:** XX
**Meridian:** M

**Location:** CROCKER CREEK, APPROXIMATELY 2.5 MILES UPSTREAM FROM ITS CONFLUENCE WITH RUSSIAN RIVER, NE OF ASTI.

**Ecological:** HABITAT CONSISTS OF A VERY HIGH-GRADIENT, CASCADING STREAM WITH A BOULDER/COBBLE BOTTOM; SURROUNDING AREA CONSISTS OF GRAZED OAK/MAPLE/BAY WOODLAND.

**Threat:** THREATENED BY PROPOSED VINEYARD DEVELOPMENT AND DAM/RESERVOIR/WATER DIVERSION PROJECT.

**General:** 5 ADULT FROGS AND THOUSANDS OF TADPOLES OBSERVED ON 9 JUN 1997.

**Owner/Manager:** PVT

---

**Occurrence No.** 163 **Map Index:** 38444 **EO Index:** 33451

**Dates Last Seen**
**Element:** 1997-07-11
**Site:** 1997-07-11
**Record Last Updated:** 1998-03-24

**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.93838º / -122.94187º
**UTM:** Zone-10 N4309940 E505037
**Area:** 28.5 acres
**Elevation:** 1,760 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 10W
**Section:** 35 **Qtr:** NW
**Meridian:** M

**Location:** HIGHLAND CREEK, ON THE NORTH SIDE OF HIGHLAND SPRINGS ROAD, ABOUT 2 MILES UPSTREAM FROM HIGHLAND RESERVOIR.

**Ecological:** HABITAT CONSISTS A PERENNIAL STREAM WITH RIPARIAN DOMINATED BY SALIX LASIANDRA AND ABUNDANT EMERGENT CAREX NUDATA.

**General:** 4 ADULTS CAPTURED ON 11 JULY 1997 ALONG THE CREEK BANKS.

**Owner/Manager:** BLM-CLEAR LAKE RA

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## Rana boylii

foothill yellow-legged frog

**Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

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**Occurrence No.** 174 **Map Index:** 41689 **EO Index:** 41689

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-05-21
**Site:** 1999-05-21
**Record Last Updated:** 1999-09-27

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Mendocino

**Lat/Long:** 38.86188° / -123.05580°
**UTM:** Zone-10 N4301451 E495158
**Radius:** 80 meters
**Elevation:** 500 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 12N
**Range:** 11W
**Section:** 26 **Qtr:** NW
**Meridian:** M

**Location:** UNNAMED TRIBUTARY ON THE SOUTH SIDE OF EDWARDS CREEK, 1 MILE UPSTREAM FROM THE RUSSIAN RIVER, NNW OF CLOVERDALE.
**Location Detail:** JUVENILE FROGS OBSERVED IN THE ALLUVIAL FLAT AT THE CONFLUENCE WITH EDWARDS CREEK.
**Ecological:** HABITAT CONSISTS OF A SEASONAL DRAINAGE TO EDWARDS CREEK THAT FLOWS FROM SOUTH TO NORTH.
**Threat:** THREATENED BY A PROPOSED VINEYARD EAST OF THE SEASONAL DRAINAGE.
**General:** MANY JUVENILES WERE OBSERVED ON 21 MAY 1999.
**Owner/Manager:** PVT

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**Occurrence No.** 262 **Map Index:** 43064 **EO Index:** 43064

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1998-08-25
**Site:** 1998-08-25
**Record Last Updated:** 2000-06-08

**Quad Summary:** Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.82477° / -122.87735°
**UTM:** Zone-10 N4297339 E510646
**Radius:** 80 meters
**Elevation:** 800 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 11N
**Range:** 09W
**Section:** 04 **Qtr:** SW
**Meridian:** M

**Location:** SQUAW CREEK, AT THE BIG SULPHUR CREEK CONFLUENCE, 8 MILES EAST OF CLOVERDALE
**Ecological:** HABITAT CONSISTS OF A RELATIVELY WIDE CREEK CHANNEL, WITH LITTLE TO NO RIPARIAN SHADING; POOLS AND BACKWATERS PRESENT. SUBSTRATE SANDY/GRAVEL/BOULDERS. SURROUNDING LAND USE: GEOTHERMAL POWER PRODUCTION. ONCORHYNCHUS MYKISS PRESENT.
**Threat:** POSSIBLY THREATENED BY BULLFORGS.
**General:** 20 ADULTS OBSERVED ON 25 AUG 1998.
**Owner/Manager:** PVT-CALPINE CORP

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**Occurrence No.** 280 **Map Index:** 43835 **EO Index:** 43835

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-XX-XX
**Site:** 1999-XX-XX
**Record Last Updated:** 2000-09-21

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.87863° / -123.00287°
**UTM:** Zone-10 N4303308 E499751
**Radius:** 80 meters
**Elevation:** 2,440 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 12N
**Range:** 10W
**Section:** 20 **Qtr:** NW
**Meridian:** M

**Location:** SALT SPRINGS CREEK, 6 MILES NNE OF CLOVERDALE.
**General:** 1 INDIVIDUAL OBSERVED DURING MAY-JUN 1999.
**Owner/Manager:** PVT

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## Rana boylii

foothill yellow-legged frog

**Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

**Occurrence No.** 281 **Map Index:** 43836 **EO Index:** 43836
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-XX-XX
**Site:** 1999-XX-XX
**Record Last Updated:** 2000-09-21

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

**Lat/Long:** 38.88615º / -123.14849º
**UTM:** Zone-10 N4304153 E487121
**Radius:** 80 meters
**Elevation:** 2,625 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 12N
**Range:** 12W
**Section:** 13 **Qtr:** SW
**Meridian:** M

**Location:** NORTH SIDE OF DRY CREEK AND HIGHWAY 128, 4 MILES ESE OF YORKVILLE.
**Location Detail:** LOCATED EAST OF AT&T POLE 5310+00.
**General:** 1 INDIVIDUAL OBSERVED DURING MAY-JUN 1999.
**Owner/Manager:** UNKNOWN

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**Occurrence No.** 282 **Map Index:** 43837 **EO Index:** 43837
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-XX-XX
**Site:** 1999-XX-XX
**Record Last Updated:** 2000-09-21

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

**Lat/Long:** 38.89160º / -123.18412º
**UTM:** Zone-10 N4304763 E484032
**Area:** 14.4 acres
**Elevation:** 2,525 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 12N
**Range:** 12W
**Section:** 15 **Qtr:** N
**Meridian:** M

**Location:** ALONG DRY CREEK AND HIGHWAY 128, 2 MILES ESE OF YORKVILLE
**Location Detail:** LOCATED AT AT&T POLE 5401+83 & WEST OF AT&T POLE 5410+00.
**General:** 2 INDIVIDUALS OBSERVED DURING MAY-JUN 1999.
**Owner/Manager:** UNKNOWN

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**Occurrence No.** 283 **Map Index:** 43838 **EO Index:** 43838
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-XX-XX
**Site:** 1999-XX-XX
**Record Last Updated:** 2000-09-21

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

**Lat/Long:** 38.89269º / -123.20530º
**UTM:** Zone-10 N4304888 E482195
**Radius:** 80 meters
**Elevation:** 2,600 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 12N
**Range:** 12W
**Section:** 16 **Qtr:** NW
**Meridian:** M

**Location:** ALONG DRY CREEK AND HIGHWAY 128, JUST WEST OF THE ELKHORN CREEK CONFLUENCE, 1 MILE ESE OF YORKVILLE.
**Location Detail:** 200 FEET EAST OF AT7T POLE 187-005.
**General:** 1 INDIVIDUAL OBSERVED DURING MAY-JUN 1999.
**Owner/Manager:** PVT

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## Rana boylii

foothill yellow-legged frog — **Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

**Occurrence No.** 290 **Map Index:** 44336 **EO Index:** 44336
**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-XX-XX
**Site:** 1999-XX-XX
**Record Last Updated:** 2000-11-16

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Mendocino

**Lat/Long:** 38.90267° / -122.98863°
**UTM:** Zone-10 N4305976 E500985
**Radius:** 80 meters **Mapping Precision**SPECIFIC
**Elevation:** 1,560 ft **Symbol Type:**POINT

**Township:** 12N
**Range:** 10W
**Section:** 08 **Qtr:** XX
**Meridian:** M

**Location:** PIETA CREEK, NORTH OF CLOVERDALE PEAK, IN THE MAYACAMAS MOUNTAINS
**Ecological:** HABITAT CONSISTS OF RIPARIAN.
**General:** 1 FYLF OF UNKNOWN AGE OBSERVED DURING SURVEYS MADE DURING MAY-JUN 1999.
**Owner/Manager:** UNKNOWN

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**Occurrence No.** 291 **Map Index:** 44380 **EO Index:** 44380
**Occ Rank:** Fair
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-XX-XX
**Site:** 1999-XX-XX
**Record Last Updated:** 2000-11-27

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Mendocino

**Lat/Long:** 38.90821° / -122.98656°
**UTM:** Zone-10 N4306591 E501165
**Radius:** 80 meters **Mapping Precision**SPECIFIC
**Elevation:** 2,200 ft **Symbol Type:**POINT

**Township:** 12N
**Range:** 10W
**Section:** 08 **Qtr:** NE
**Meridian:** M

**Location:** BETWEEN JAKES CREEK AND PIETA CREEK, NORTH OF CLOVERDALE PEAK, IN THE MAYACAMAS MOUNTAINS
**Location Detail:** LOCATED APPROXIMATELY 100 FEET EAST OF POLE 4523+65.
**General:** 1 FYLF OF UNKNOWN AGE OBSERVED DURING SURVEYS MADE DURING MAY-JUN 1999.
**Owner/Manager:** PVT

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**Occurrence No.** 292 **Map Index:** 44381 **EO Index:** 44381
**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1999-XX-XX
**Site:** 1999-XX-XX
**Record Last Updated:** 2000-11-27

**Quad Summary:** Highland Springs (3812288/534B)
**County Summary:** Lake

**Lat/Long:** 38.91800° / -122.90087°
**UTM:** Zone-10 N4307681 E508593
**Radius:** 80 meters **Mapping Precision**SPECIFIC
**Elevation:** 2,000 ft **Symbol Type:**POINT

**Township:** 12N
**Range:** 09W
**Section:** 06 **Qtr:** SE
**Meridian:** M

**Location:** 1.4 MILES SOUTH OF HIGHLAND SPRINGS, IN THE MAYACAMAS MOUNTAINS
**Location Detail:** LOCATED APPROXIMATELY 450 FEET SOUTH OF POLE 4090.
**General:** 1 FYLF OF UNKNOWN AGE OBSERVED DURING SURVEYS MADE DURING MAY-JUN 1999.
**Owner/Manager:** PVT

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## Rana boylii

foothill yellow-legged frog

**Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

**Occurrence No.** 299 **Map Index:** 45349 **EO Index:** 45349
**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2000-08-04
**Site:** 2000-08-04
**Record Last Updated:** 2001-05-15

**Quad Summary:** Geyserville (3812268/518B), Jimtown (3812267/518A)
**County Summary:** Sonoma

**Lat/Long:** 38.72579º / -122.87429º
**UTM:** Zone-10 N4286355 E510927
**Area:** 62.5 acres
**Elevation:** 330 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 10N
**Range:** 09W
**Section:** 08 **Qtr:** XX
**Meridian:** M

**Location:** MILLER CREEK AND AN UNNNAMED TRIBUTARY TO MILLER CREEK, 1 MILE NORTH OF HIGHWAY 128, EAST OF GEYSERVILLE

**Location Detail:** ADULTS, SUBADULTS, AND TADPOLES WERE FOUND IN BOTH STREAMS, BUT WERE MUCH MORE ABUNDANT IN THE SMALLER STREAM (SPRING FED, BETTER SHADE, COOLER WATER, PERENNIAL FLOW).

**Ecological:** HABITAT CONSISTS OF A SECOND ORDER STREAM (MILLER CREEK) AND A THIRD ORDER TRIBUTARY STREAM. TRIBUTARY STREAM HAS MORE SHADE AND ALSO CONTAINS JUVENILE STEELHEAD. SITE IS SURROUNDED BY VINEYARDS.

**General:** ~15 ADULTS, ~300 SUBADULTS, AND MANY TADPOLES OBSERVED ON 4 AUG 2000.

**Owner/Manager:** PVT-HAMBRECHT VINEYARDS

**Occurrence No.** 342 **Map Index:** 47967 **EO Index:** 47967
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2002-05-14
**Site:** 2002-05-14
**Record Last Updated:** 2002-05-21

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

**Lat/Long:** 38.99481º / -123.12879º
**UTM:** Zone-10 N4316208 E488846
**Radius:** 80 meters
**Elevation:** 520 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 12W
**Section:** 12 **Qtr:** XX
**Meridian:** M

**Location:** UNNAMED STREAM, 1.6 MILES NNW OF HOPLAND

**Location Detail:** FROGS OBSERVED IN A SMALL, SUNNY POOL AT THE CONFLUENCE OF THE TWO FORKS OF THE CREEK, ABOUT 75 FEET UPSTREAM OF RESERVOIR INLET. DOWNSTREAM, CREEK FLOWS INTO A STRAIGHT DITCH THROUGH A VINEYARD, THEN INTO AN UNNAMED STREAM.

**Ecological:** HABITAT CONSISTS OF A SEASONAL STREAM WITH PERENNIAL POOLS, FEEDING INTO A RESERVOIR (BUILT BEFORE 1990); STREAM HAS SMALL PATCHES OPEN TO SUN. OVERSTORY CONSISTS PRIMARILY OF BAY LAUREL. STREAM FLOW ~0.2 CFS.

**Threat:** THREATENED BY PRESENCE OF BULLFROGS (2 SUB-ADULTS FOUND ABOUT 50 FEET UPSTREAM AND RESERVOIR LOADED WITH BULLFROGS).

**General:** 2 ADULT FYLF (ONE MEASURED - 34MM SVL, THE OTHER SLIGHTLY LARGER) OBSERVED ON 14 MAY 2002.

**Owner/Manager:** PVT-SARACINA VINEYARDS

## Rana boylii

foothill yellow-legged frog

**Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

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**Occurrence No.** 349 **Map Index:** 48991 **EO Index:** 48991

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2002-09-11
**Site:** 2002-09-11
**Record Last Updated:** 2002-10-10

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Sonoma

**Lat/Long:** 38.79593º / -123.05424º
**UTM:** Zone-10 N4294132 E495290
**Radius:** 80 meters
**Elevation:** 800 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 11N
**Range:** 11W
**Section:** 14 **Qtr:** XX
**Meridian:** M

**Location:** SKUNK CREEK, 0.5 MILE NORTH OF RED MOUNTAIN, 2 MILES WEST OF CLOVERDALE
**Location Detail:** FROGS FOUND IN A 5' X 5' PLUNGE POOL AT THE CULVERT OUTLET.
**Ecological:** HABITAT CONSISTS OF A HEADWATER DRAINAGE RUNNING THROUGH MIXED CONIFEROUS FOREST, DOMINATED BY DOUGLAS FIR AND SOME REDWOODS. LARGE STANDS OF CHAIN FERN (WOODWARDIA FIMBRIATA) FOUND IN SKUNK CREEK.
**Threat:** THREATENED BY PROBABILITY OF CULVERT REPLACEMENT.
**General:** 5 ADULTS OBSERVED ON 11 SEP 2002.
**Owner/Manager:** SON COUNTY, PVT

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**Occurrence No.** 357 **Map Index:** 49525 **EO Index:** 49525

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2002-11-05
**Site:** 2002-11-05
**Record Last Updated:** 2002-12-02

**Quad Summary:** Cloverdale (3812371/535D)
**County Summary:** Sonoma

**Lat/Long:** 38.79823º / -123.10721º
**UTM:** Zone-10 N4294391 E490690
**Radius:** 80 meters
**Elevation:** 1,150 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 11N
**Range:** 11W
**Section:** 17 **Qtr:** SE
**Meridian:** M

**Location:** UNNAMED TRIBUTARY TO CHERRY CREEK, 0.5 MILE EAST OF RED MOUNTAIN
**Ecological:** HABITAT CONSISTS OF 6 INCH DEEP POOLS IN A STREAM CONTAINING A GRAVEL ROCK BED AND CLEAR, COLD WATER.
**Threat:** THREATENED BY PROPOSED ON-STREAM RESERVOIRS UPSTREAM.
**General:** 20+ INDIVIDUALS OBSERVED ON 5 NOV 2002.
**Owner/Manager:** PVT

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**Occurrence No.** 365 **Map Index:** 43689 **EO Index:** 50173

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2002-08-XX
**Site:** 2002-08-XX
**Record Last Updated:** 2003-02-13

**Quad Summary:** Tombs Creek (3812362/519B)
**County Summary:** Sonoma

**Lat/Long:** 38.66220º / -123.23451º
**UTM:** Zone-10 N4279318 E479596
**Radius:** 80 meters
**Elevation:** 620 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 09N
**Range:** 12W
**Section:** 06 **Qtr:** NW
**Meridian:** M

**Location:** HOUSE CREEK, IN THE VICINITY OF THE BRIDGE ON STEWART'S POINT SKAGGS SPRING ROAD, 0.3 MILE NORTH OF DOE RIDGE
**Ecological:** HABITAT CONSISTS OF A MID-CHANNEL POOL ON HOUSE CREEK WITHIN WHITE ALDER RIPARIAN FOREST; MIXED CONIFEROUS FOREST NEARBY.
**Threat:** THREATENED BY USE OF THE CREEKBED AS A VEHICLE ROADWAY.
**General:** 10 JUVENILES OBSERVED DURING A SINGLE DAY IN AUG 2002.
**Owner/Manager:** SON COUNTY

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## Rana boylii

foothill yellow-legged frog

**Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

**Occurrence No.** 391 **Map Index:** 53462 **EO Index:** 53462

**Dates Last Seen**
**Element:** 2003-11-17
**Site:** 2003-11-17

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Record Last Updated:** 2003-12-03

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

**Lat/Long:** 38.89546° / -123.19687°
**UTM:** Zone-10 N4305194 E482927
**Radius:** 1/10 mile
**Elevation:** 840 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 12N
**Range:** 12W
**Section:** 16 **Qtr:** XX
**Meridian:** M

**Location:** DRY CREEK, 0.4 MILE EAST OF THE ELKHORN CREEK CONFLUENCE, 1 MILE EAST OF YORKVILLE

**Location Detail:** AVAILABLE HABITAT EXTENDS UPSTREAM AND DOWNSTREAM.

**Ecological:** HABITAT CONSISTS OF A CLEAR-WATER STREAM WITH A ROCKY SUBSTRATE/DEEP POOLS; OVERSTORY OF RIPARIAN AND CALIFORNIA BAY/OAK WOODLAND, DOMINATED BY WILLOW, BIG LEAF MAPLE, CALIFORNIA BAY, COAST LIVE OAK, VALLEY OAK, BUCKEYE, AND RED ALDER.

**Threat:** THREATENED BY FUTURE BRIDGE CONSTRUCTION.

**General:** 3 ADULTS OBSERVED ON 17 NOV 2003.

**Owner/Manager:** CALTRANS

**Occurrence No.** 447 **Map Index:** 67883 **EO Index:** 68031

**Dates Last Seen**
**Element:** 2006-08-15
**Site:** 2006-08-15

**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Record Last Updated:** 2007-01-23

**Quad Summary:** Geyserville (3812268/518B)
**County Summary:** Sonoma

**Lat/Long:** 38.71247° / -122.89564°
**UTM:** Zone-10 N4284875 E509072
**Radius:** 80 meters
**Elevation:** 195 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POINT

**Township:** 10N
**Range:** 09W
**Section:** 18 **Qtr:** XX
**Meridian:** M

**Location:** RUSSIAN RIVER, ON THE SE SIDE OF THE HIGHWAY 128 BRIDGE, JUST NE OF GEYSERVILLE.

**Ecological:** HABITAT CONSISTS OF RIVERINE WITH A GRAVEL/COBBLE SUBSTRATE ON THE RIGHT BANK OF THE RIVER. PSEUDACRIS REGILLA, BUFO BOREAS, AND RANA CATESBIANA TADPOLES ALSO PRESENT.

**Threat:** BRIDGE CONSTRUCTION/MAINTENANCE, HUMAN RECREATION, ALTERATION OF PLUG CR (LEFT BANK TRIBUTARY) & PRESENCE OF BULLFROGS.

**General:** 11 JUVENILE FROGS OBSERVED ON 15 AUG 2006.

**Owner/Manager:** UNKNOWN

## Rana boylii

foothill yellow-legged frog — **Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

**Occurrence No.** 592 **Map Index:** 74279 **EO Index:** 75327
**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2008-08-06
**Site:** 2008-08-06
**Record Last Updated:** 2009-04-02

**Quad Summary:** Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.82348° / -122.88354°
**UTM:** Zone-10 N4297195 E510109
**Radius:** 80 meters
**Elevation:** 860 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 11N
**Range:** 09W
**Section:** 05 **Qtr:** SE
**Meridian:** M

**Location:** BIG SULPHUR CREEK AT GEYSER RD; ABOUT 0.3 MI WEST OF BIG SULPHUR CREEK AT SQUAW CREEK, ABOUT 7.25 MI EAST OF CLOVERDALE.

**Location Detail:** MAPPED TO PROVIDED COORDINATES - LOCATED UNDERNEATH GEYSER ROAD BRIDGE.

**Ecological:** PERENNIAL CREEK WITH DEVELOPED RIPARIAN ZONE. COBBLE AND GRAVEL SUBSTRATE. IMMEDIATE/SURROUNDING LAND IS UNDEVELOPED.

**General:** 4 ADULTS & 5 TADPOLES OBSERVED ON 6 AUG 2008 DURING AN EVENING SPOTLIGHT SURVEY.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 593 **Map Index:** 74280 **EO Index:** 75328
**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2008-04-30
**Site:** 2008-04-30
**Record Last Updated:** 2009-04-02

**Quad Summary:** Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.76484° / -122.96912°
**UTM:** Zone-10 N4290681 E502682
**Radius:** 80 meters
**Elevation:** 260 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 11N
**Range:** 10W
**Section:** 34 **Qtr:** NW
**Meridian:** M

**Location:** RUSSIAN RIVER, ASTI; 0.3 MI SOUTH OF RUSSIAN RIVER AT CROCKER CK AND ~1.4 MI ESE OF CLOVERDALE MUNICIPAL AIRPORT.

**Location Detail:** MAPPED TO PROVIDED MAP & COORDINATES. LOCATED 100 METERS UPSTREAM FROM SCHOOL ROAD BRIDGE.

**Ecological:** RUSSIAN RIVER HABITAT WITH PATCHY MATURE WILLOW RIPARIAN; LARGE BROAD GRAVEL BARS WITH GRAVEL TO LARGE COBBLE SUBSTRATE. IMMEDIATE/SURROUNDING LAND USE: RURAL, VINEYARD.

**General:** 4 EGG MASSES FOUND ALONG SHORELINE IN SLOWER MOVING WATER ATTACHED TO COBBLE ON 30 APR 2008. MASSES ONLY A FEW DAYS OLD BUT DIFFICULT TO DETECT DUE TO SEDIMENT COVERING. 1 WESTERN TOAD STRAND ALSO FOUND.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 594 **Map Index:** 74281 **EO Index:** 75330
**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2008-04-30
**Site:** 2008-04-30
**Record Last Updated:** 2009-04-02

**Quad Summary:** Asti (3812278/534C)
**County Summary:** Sonoma

**Lat/Long:** 38.77285° / -122.96423°
**UTM:** Zone-10 N4291571 E503107
**Area:** 24.0 acres
**Elevation:** 350 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 11N
**Range:** 10W
**Section:** 27 **Qtr:** NW
**Meridian:** M

**Location:** CROCKER CREEK, CLOVERDALE; ~0.5 MI NE OF CROCKER CREEK AT RUSSIAN RIVER, ~1.3 MI EAST OF CLOVERDALE MUNICIPAL AIRPORT.

**Location Detail:** MAPPED TO PROVIDED MAP & COORDINATES ALONG CROCKER CREEK. MASSES FOUND IN SLOWER MOVING RIFFLES & POOLS ATTACHED TO COBBLE & BOULDERS. CURRENT/SURROUNDING LAND USE: RURAL, CAMPGROUND. VISIBLE DISTURBANCES: EROSION DUE TO HISTORIC DAM.

**Ecological:** MODERATE GRADIENT CREEK WITH STEP POOLS & RIFFLES; PATCHY WILLOW & ALDER RIPARIAN; GRAVEL TO COBBLE SUBSTRATE. SITE IS OLD FOOTPRINT OF RESERVOIR; DAM REMOVED & AREA RESTORED BY SONOMA COUNTY WATER AGENCY IN 2002. STEELHEAD ALSO OBSERVED.

**General:** 10 EGG MASSES FOUND (1 HATCHING MASS) & 11 ADULTS ON 8 APR 2008; 35 EGG MASSES (6 OLDER & 29 DEPOSITED WITHIN 1 WEEK) FOUND ON 30 APR 2008. THIS SITE, PREVIOUSLY A RESERVOIR FOR NEARLY A CENTURY, HAS BEEN COLONIZED QUICKLY BY FROGS.

## Rana boylii

foothill yellow-legged frog

**Element Code:** AAABH01050

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G3
**State:** S2S3

**Other Lists**
**CDFG Status:** SC

**Habitat Associations**
**General:** PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
**Micro:** NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 783 **Map Index:** 75061 **EO Index:** 76058

**Dates Last Seen**
**Element:** 1974-03-11
**Site:** 1974-03-11

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Record Last Updated:** 2009-06-19

**Quad Summary:** Warm Springs Dam (3812361/519A)
**County Summary:** Sonoma

**Lat/Long:** 38.69345º / -123.02673º
**UTM:** Zone-10 N4282759 E497674
**Radius:** 1/10 mile
**Elevation:** 590 ft

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT

**Township:** 10N
**Range:** 11W
**Section:** 24 **Qtr:** SE
**Meridian:** M

**Location:** IN VICINITY OF SKAGGS SPRINGS & LAKE SONOMA; ABOUT 2 MI SW OF SKAGGS SPRINGS RD & DRY CREEK RD JCT, LAKE SONOMA RA.

**Location Detail:** MVZ STATED LOCALITIES: "SKAGGS SPRINGS, SKAGGS SPRINGS RD, 3.0 MI W JCT DRY CREEK RD; SONOMA COUNTY." & "SKAGGS SPRINGS; SONOMA COUNTY."

**Ecological:** SKAGGS SPRINGS AND SKAGG SPRINGS RD ARE NOW UNDER LAKE SONOMA.

**General:** 1 COLLECTED 23 JAN 1970 (MVZ 125366). 1 COLLECTED ON 20 FEB 1971 (MVZ 99445). 2 COLLECTED ON 11 MAR 1974 (MVZ 148942, 148943).

**Owner/Manager:** USACE-LAKE SONOMA RA

## Streptanthus morrisonii

Morrison's jewel-flower

**Element Code:** PDBRA2G0S0

| Status | NDDB Element Ranks | Other Lists |
|---|---|---|
| **Federal:** None | **Global:** G2 | **CNPS List:** |
| **State:** None | **State:** S2 | |

**Habitat Associations**

**General:** CHAPARRAL, CISMONTANE WOODLAND, CLOSED-CONE CONIFEROUS FOREST.

**Micro:** THE COMPLEX HAS BEEN MAPPED AS THE SPECIES, THOUGH AT LEAST 4 SSP. HAVE BEEN RECOGNIZED. ON SERPENTINE. 210-910M.

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**Occurrence No.** 24 **Map Index:** 34511 **EO Index:** 290

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1987-XX-XX
**Site:** 1987-XX-XX
**Record Last Updated:** 1996-04-02

**Quad Summary:** Tombs Creek (3812362/519B), Warm Springs Dam (3812361/519A), Fort Ross (3812352/519C), Cazadero (3812351/519D)

**County Summary:** Sonoma

**Lat/Long:** 38.62121° / -123.11986°
**UTM:** Zone-10 N4274750 E489566
**Area:** 1,334.1 acres
**Elevation:** 1,200 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 09N
**Range:** 11W
**Section:** 20 **Qtr:** XX
**Meridian:** M

**Location:** THE CEDARS.

**Location Detail:** LARGE POPULATION MAPPED WITHIN PORTIONS OF T09N R11W SECTIONS 17, 18, 19, 20, 29, 30 AND T09N R12W SECTIONS 13 AND 24.

**Ecological:** VIRTUALLY ANY OPEN SERPENTINE ROCK OUTCROP, LEDGE, SLOPE, TALUS, OR BARREN WITHIN THE BOUNDED AREA. ASSOCIATED WITH ERIOGONUM TERNATUM, E. VIMINEUM, ALLIUM FALCIFOLIUM, STREPTANTHUS BARBINGER, S. GLANDULOSUS, ANTIRRHINUM, ETC.

**General:** THOUSANDS OF PLANTS OBSERVED IN 1982-1987 BY RAICHE. THIS SITE INCLUDES THE TYPE LOCATION OF STREPTANTHUS MORRISONII SSP. MORRISONII AT LAYTON MINE.

**Owner/Manager:** BLM, PVT

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**Occurrence No.** 25 **Map Index:** 34512 **EO Index:** 285

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1988-05-02
**Site:** 1988-05-02
**Record Last Updated:** 1996-04-02

**Quad Summary:** Tombs Creek (3812362/519B)

**County Summary:** Sonoma

**Lat/Long:** 38.63704° / -123.13111°
**UTM:** Zone-10 N4276508 E488589
**Area:** 9.2 acres
**Elevation:** 2,050 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 09N
**Range:** 12W
**Section:** 12 **Qtr:** NE
**Meridian:** M

**Location:** NORTHWEST PORTION OF THE CEDARS, ABOUT 1.2 MILES ESE OF THE SUMMIT OF FERN MOUNTAIN.

**Location Detail:** THREE COLONIES ALONG RIDGE BETWEEN HEADWATERS OF DANFIELD CREEK DRAINAGE AND AUSTIN CREEK DRAINAGE. MAPPED WITHIN THE SE 1/4 OF THE NE 1/4 OF SECTION 12.

**Ecological:** OPEN, USUALLY NE-FACING SERPENTINE BARRENS, TALUS, AND LEDGES WITHIN CHAPARRAL. ASSOCIATED WITH ERIOGONUM TERNATUM, E. VIMINEUM, ALLIUM FALCIFOLIUM, STREPTANTHUS BARBINGER, ERYSIMUM CAPITATUM, AND ANTIRRHINUM VEXILLO-CALYCULATUM.

**General:** ABOUT 200 PLANTS OBSERVED BETWEEN OCCURRENCE #25 AND 26 IN 1988. THIS POPULATION IS NOTED BY RAICHE AS BEING QUITE DIFFERENT FROM STREPTANTHUS MORRISONII SSP. HIRTIFLOUS AND SSP. MORRISONII WHICH OCCUR NEARBY.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 26 **Map Index:** 34513 **EO Index:** 286

**Occ Rank:** Excellent
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1988-05-02
**Site:** 1988-05-02
**Record Last Updated:** 1996-04-02

**Quad Summary:** Tombs Creek (3812362/519B)

**County Summary:** Sonoma

**Lat/Long:** 38.63510° / -123.14104°
**UTM:** Zone-10 N4276294 E487724
**Area:** 14.7 acres
**Elevation:** 1,600 ft

**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON

**Township:** 09N
**Range:** 12W
**Section:** 12 **Qtr:** W
**Meridian:** M

**Location:** NORTHWEST PORTION OF THE CEDARS, ABOUT 0.7 MILES SOUTHEAST OF THE SUMMIT OF FERN MOUNTAIN. IN DANFIELD CREEK DRAINAGE.

**Ecological:** OPEN, USUALLY NE-FACING SERPENTINE BARRENS, TALUS, AND LEDGES WITHIN CHAPARRAL. ASSOCIATED WITH ERIOGONUM TERNATUM, E. VIMINEUM, ALLIUM FALCIFOLIUM, STREPTANTHUS BARBINGER, ERYSIMUM CAPITATUM, AND ANTIRRHINUM VEXILLO-CALYCULATUM.

**General:** ABOUT 200 PLANTS OBSERVED BETWEEN OCCURRENCES #25 AND 26 IN 1988. THIS POPULATION IS NOTED BY RAICHE AS BEING QUITE DIFFERENT FROM STREPTANTHUS MORRISONII SSP. HIRTIFLORUS AND SSP. MORRISONII WHICH OCCUR NEARBY.

**Owner/Manager:** UNKNOWN

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## Tracyina rostrata

beaked tracyina

**Element Code:** PDAST9D010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G1G2
**State:** S1S2.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** OPEN GRASSY MEADOWS WITHIN OAK WOODLAND AND GRASSLAND HABITATS. 150-500M.

**Occurrence No.** 7 **Map Index:** 07635 **EO Index:** 16846

**Occ Rank:** Poor
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1998-06-22
**Site:** 1998-06-22
**Record Last Updated:** 2001-05-02

**Quad Summary:** Big Foot Mtn. (3812372/535C)
**County Summary:** Sonoma

**Lat/Long:** 38.79701° / -123.16484°
**UTM:** Zone-10 N4294263 E485685
**Radius:** 80 meters
**Elevation:** 600 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 11N
**Range:** 12W
**Section:** 14 **Qtr:** SW
**Meridian:** M

**Location:** CONFLUENCE OF GALLOWAY AND DRY CREEKS, 1.1 AIRMILES NE OF WHITE MOUNTAIN SUMMIT, APPROX 8 AIRMILES WEST OF CLOVERDALE.

**Location Detail:** ON GRASSY SLOPE ABOVE CONFLUENCE OF CREEKS. PLANTS FOUND ON CENTRAL SLOPE TO THE NORTH OF INTERMITTENT TRIBUTARY THAT FLOWS INTO GALLOWAY CREEK AND NW OF TRIBUTARY ON SHORT GRASSLAND. MAPPED WITHIN THE SE 1/4 SW 1/4 OF SECTION 14.

**Ecological:** SE SLOPE IN MIXED NATIVE AND INTRODUCED GRASSLAND. ASSOCIATES INCLUDE BRIZA MINOR, AIRA CARYOPHYLLEA, CYNOSURUS ECHINATUS, LOLIUM MULTIFLORUM, MADIA EXIGUA, ANAGALIS ARVENSIS, DAUCUS PUSILLUS, FILAGO GALLICA, MICROPUS CALIFORNICUS, ET AL.

**Threat:** GRAZING; MANY SHEEP OR DEER TRAILS ON LOWER HILLSIDE. NON-NATIVE GRASSES AND FORBES ARE OUT-COMPETING THE NATIVES.

**General:** ABOUT 20 PLANTS OBSERVED IN 1998.

**Owner/Manager:** UNKNOWN

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**Occurrence No.** 13 **Map Index:** 45300 **EO Index:** 45300

**Occ Rank:** Poor
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1998-06-05
**Site:** 1998-06-05
**Record Last Updated:** 2001-05-02

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.99486° / -123.06783°
**UTM:** Zone-10 N4316208 E494125
**Area:** 4.8 acres
**Elevation:** 950 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POLYGON
**Township:** 13N
**Range:** 11W
**Section:** 09 **Qtr:** SE
**Meridian:** M

**Location:** LITTLE BUCKS PASTURE, HOPLAND RESEARCH AND EXTENSION CENTER, ABOUT 2 AIRMILES NORTHEAST OF OLD HOPLAND.

**Location Detail:** BETWEEN AIRSTRIP AND UNIVERSITY ROAD. MAPPED WITHIN THE SE 1/4 OF THE SE 1/4 OF SECTION 9.

**Ecological:** GENTLY SLOPED NE FACING ANNUAL GRASSLAND WITH A FEW SCATTERED BLUE OAKS AND MADRONE. DOMINATED BY AEGILOPS TRIUNCIALIS, TAENIATHERUM CAPUT-MEDUSAE, AND LOLIUM MULTIFLORUM WITH OVER 70 OTHER SPECIES OF GRASSES AND FORBS.

**Threat:** INVASIVE GRASSES OUT-COMPETING NATIVES, HALF OF PASTURE RECENTLY BURNED FOR CONTROL. GRAZED BY SHEEP PERIODICALLY.

**General:** ABOUT 50 PLANTS OBSERVED IN 1997, IN UNBURNED SIDE OF PASTURE. 96 PLANTS OBSERVED IN 1998. PLANTS ARE PERSISTING IN SPITE OF GRAZING PRESSURE AND ESTABLISHMENT OF EXOTIC GRASSES.

**Owner/Manager:** UCNR

## Tracyina rostrata

beaked tracyina

**Element Code:** PDAST9D010

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G1G2
**State:** S1S2.2

**Other Lists**
**CNPS List:** 1B.2

**Habitat Associations**
**General:** CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.
**Micro:** OPEN GRASSY MEADOWS WITHIN OAK WOODLAND AND GRASSLAND HABITATS. 150-500M.

**Occurrence No.** 15 **Map Index:** 61444 **EO Index:** 61480
**Occ Rank:** Good
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 2003-06-03
**Site:** 2003-06-03
**Record Last Updated:** 2005-05-27

**Quad Summary:** Hopland (3812381/535A)
**County Summary:** Mendocino

**Lat/Long:** 38.98810º / -123.07807º
**UTM:** Zone-10 N4315458 E493238
**Radius:** 80 meters
**Elevation:** 990 ft
**Mapping Precision**SPECIFIC
**Symbol Type:**POINT
**Township:** 13N
**Range:** 11W
**Section:** 16 **Qtr:** NW
**Meridian:** M

**Location:** ABOUT 1.5 AIRMI ENE OF OLD HOPLAND AND 0.9 AIRMI SOUTH OF UC HOPLAND FIELD STATION.

**Location Detail:** MAPPED JUST SOUTH OF ROAD IN THE SE 1/4 OF THE NW 1/4 OF SECTION 16.

**Ecological:** GENTLY-SLOPED NORTH-FACING GRASSLAND DOMINATED BY EXOTIC ANNUAL GRASSES. SOILS THIN OF FINELY FRACTURED SANDSTONE. ASSOCIATED WITH CYNOSURUS ECHINATUS, HYPOCHAERIS GLBRA, MADIA GRACILIS, AND ACHYRACHAENA MOLLIS.

**Threat:** INVASIVE ANNUAL GRASSES.

**General:** 250 PLANTS SEEN IN 2003.

**Owner/Manager:** UC-HOPLAND FIELD STATION

## Usnea longissima

long-beard lichen

**Element Code:** NLLEC5P420

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G4
**State:** S4.2

**Other Lists**
**CNPS List:**

**Habitat Associations**
**General:** NORTH COAST CONIFEROUS FOREST, BROADLEAFED UPLAND FOREST.
**Micro:** GROWS IN THE "REDWOOD ZONE" ON A VARIETY OF TREES INCL BIG LEAF MAPLE, OAKS, ASH, DOUG-FIR, AND BAY. 0-2000' IN CALIF.

**Occurrence No.** 10 **Map Index:** 45328 **EO Index:** 45328
**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** XXXX-XX-XX
**Site:** XXXX-XX-XX
**Record Last Updated:** 2001-05-14

**Quad Summary:** Yorkville (3812382/535B)
**County Summary:** Mendocino

**Lat/Long:** 38.89896º / -123.21805º
**UTM:** Zone-10 N4305587 E481092
**Radius:** 1 mile
**Elevation:** 960 ft
**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POINT
**Township:** 12N
**Range:** 12W
**Section:** 08 **Qtr:** XX
**Meridian:** M

**Location:** YORKVILLE, GALBRAITH PRESERVE.
**Location Detail:** MAPPED AS BEST GUESS TO INCLUDE YORKVILLE BY CNDDB.
**General:** NEEDS FIELDWORK; COULD NOT LOCATE GALBRAITH PRESERVE. OBSERVED BY DOUG GLAVICH, HSU.
**Owner/Manager:** UNKNOWN

## Viburnum ellipticum

oval-leaved viburnum

**Element Code:** PDCPR07080

**Status**
**Federal:** None
**State:** None

**NDDB Element Ranks**
**Global:** G5
**State:** S2.3

**Other Lists**
**CNPS List:** 2.3

**Habitat Associations**
**General:** CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
**Micro:** 215-1400M.

**Occurrence No.** 10 **Map Index:** 49962 **EO Index:** 49962

**Occ Rank:** Unknown
**Origin:** Natural/Native occurrence
**Presence:** Presumed Extant
**Trend:** Unknown

**Dates Last Seen**
**Element:** 1953-05-27
**Site:** 1953-05-27
**Record Last Updated:** 2008-12-31

**Quad Summary:** Hopland (3812381/535A), Purdys Gardens (3912311/550D)
**County Summary:** Mendocino

**Lat/Long:** 38.99656° / -123.09805°
**UTM:** Zone-10 N4316399 E491509
**Area:**
**Elevation:**

**Mapping Precision**NON-SPECIFIC
**Symbol Type:**POLYGON

**Township:** 13N
**Range:** 11W
**Section:** 08 **Qtr:** SW
**Meridian:** M

**Location:** HOPLAND FIELD STATION.

**Location Detail:** MAPPED BY CNDDB IN THE SW 1/4 OF SEC 8 ACCORDING TO A COMMUNICATION WITH HEISE IN 1999.

**Ecological:** SHADY CANYON, NORTH EXPOSURE.

**General:** A COUPLE OF PLANTS SEEN AT AN UNKNOWN DATE. A 1953 LONGHURST COLLECTION FROM "HOPLAND FIELD STATION, FOSTER PASTURE W OF HEADQUARTERS" ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.

**Owner/Manager:** UC-HOPLAND FIELD STATION

**United States Department of the Interior**
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

September 22, 2009

Document Number: 090922110714

Jamie Galos
ESA
2600 Capitol Avenue
S. 200
Sacramento, CA 95816

Subject: Species List for Cloverdale Rancheria of Pomo Indians Fee to Trust and Resort Casino Project

Dear: Mr. Galos

We are sending this official species list in response to your September 22, 2009 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be December 21, 2009.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

# U.S. Fish & Wildlife Service

# Sacramento Fish & Wildlife Office

## Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 090922110714

Database Last Updated: January 29, 2009

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## Quad Lists

### Listed Species

#### Invertebrates

*Syncaris pacifica*
California freshwater shrimp (E)

#### Fish

*Eucyclogobius newberryi*
tidewater goby (E)

*Hypomesus transpacificus*
delta smelt (T)

*Oncorhynchus kisutch*
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

*Oncorhynchus mykiss*
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Northern California steelhead (X) (NMFS)
Northern California steelhead (T) (NMFS)

*Oncorhynchus tshawytscha*
California coastal chinook salmon (T) (NMFS)
Critical habitat, California coastal chinook salmon (X) (NMFS)

#### Amphibians

*Rana aurora draytonii*
California red-legged frog (T)

#### Birds

*Brachyramphus marmoratus*
marbled murrelet (T)

*Strix occidentalis caurina*
northern spotted owl (T)

### Quads Containing Listed, Proposed or Candidate Species:

HIGHLAND SPRINGS (534B)

ASTI (534C)

HOPLAND (535A)

Yorkville (535B)

BIG FOOT MTN. (535C)

CLOVERDALE (535D)

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## County Lists

No county species lists requested.

## Key:

(E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
*Critical Habitat* - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

# Important Information About Your Species List

## How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

## Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

## Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

## Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or

injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

## Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

## Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

## Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

## Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

## Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you

will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

## Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be December 21, 2009.

# Appendix F

## Cultural Resources Technical Report (Bound Under Separate Cover)

ESA

# Appendix G
## Transportation Analysis

ESA

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.287 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 11.6 |
| Optimal Cycle: | 16 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 0 | 1 | 0 | 1 0 | 0 | 0 | 1! 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 47 | 317 | 71 | 34 | 212 | 15 | 16 | 35 | 69 | 109 | 36 | 38 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 52 | 349 | 78 | 37 | 233 | 17 | 18 | 39 | 76 | 120 | 40 | 42 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| PHF Volume: | 53 | 355 | 79 | 38 | 237 | 17 | 18 | 39 | 77 | 122 | 40 | 43 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 53 | 355 | 79 | 38 | 237 | 17 | 18 | 39 | 77 | 122 | 40 | 43 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 53 | 355 | 79 | 38 | 237 | 17 | 18 | 39 | 77 | 122 | 40 | 43 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.84 | 0.84 | 0.85 | 0.83 | 0.83 | 0.83 | 0.89 | 0.89 | 0.89 | 0.76 | 0.76 | 0.76 |
| Lanes: | 0.26 | 1.74 | 1.00 | 0.26 | 1.63 | 0.11 | 0.13 | 0.29 | 0.58 | 0.59 | 0.20 | 0.21 |
| Final Sat.: | 412 | 2779 | 1615 | 410 | 2554 | 181 | 224 | 491 | 968 | 856 | 283 | 298 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.13 | 0.13 | 0.05 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.08 | 0.14 | 0.14 | 0.14 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Volume/Cap: | 0.29 | 0.29 | 0.11 | 0.21 | 0.21 | 0.21 | 0.16 | 0.16 | 0.16 | 0.29 | 0.29 | 0.29 |
| Delay/Veh: | 12.4 | 12.4 | 11.4 | 11.9 | 11.9 | 11.9 | 9.7 | 9.7 | 9.7 | 10.5 | 10.5 | 10.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 12.4 | 12.4 | 11.4 | 11.9 | 11.9 | 11.9 | 9.7 | 9.7 | 9.7 | 10.5 | 10.5 | 10.5 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.251 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 11.2 |
| Optimal Cycle: | 15 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 0 | 1 | 0 | 1 0 | 0 | 0 | 1! 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.80 | 0.80 | 0.85 | 0.84 | 0.84 | 0.84 | 0.89 | 0.89 | 0.89 | 0.78 | 0.78 | 0.78 |
| Lanes: | 0.36 | 1.64 | 1.00 | 0.22 | 1.68 | 0.10 | 0.15 | 0.32 | 0.53 | 0.56 | 0.22 | 0.22 |
| Final Sat.: | 550 | 2501 | 1615 | 359 | 2682 | 157 | 252 | 546 | 895 | 824 | 333 | 325 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.12 | 0.12 | 0.06 | 0.11 | 0.11 | 0.11 | 0.07 | 0.07 | 0.07 | 0.12 | 0.12 | 0.12 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| Volume/Cap: | 0.25 | 0.25 | 0.13 | 0.23 | 0.23 | 0.23 | 0.15 | 0.15 | 0.15 | 0.25 | 0.25 | 0.25 |
| Delay/Veh: | 11.5 | 11.5 | 10.8 | 11.4 | 11.4 | 11.4 | 10.3 | 10.3 | 10.3 | 11.0 | 11.0 | 11.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 11.5 | 11.5 | 10.8 | 11.4 | 11.4 | 11.4 | 10.3 | 10.3 | 10.3 | 11.0 | 11.0 | 11.0 |
| LOS by Move: | B | B | B | B | B | B | B | B | B | B | B | B |
| HCM2kAvgQ: | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: C[ 19.3]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 1.00 | 1.00 | 1.00 | 0.75 | 0.75 | 0.75 |
| PHF Volume: | 0 | 525 | 107 | 52 | 447 | 0 | 0 | 0 | 0 | 81 | 0 | 45 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 525 | 107 | 52 | 447 | 0 | 0 | 0 | 0 | 81 | 0 | 45 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 632 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 905 | xxxx | 316 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 961 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 280 | xxxx | 686 |
| Move Cap.: | xxxx | xxxx | xxxxx | 961 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 268 | xxxx | 686 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.30 | xxxx | 0.07 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.2 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 24.2 | xxxx | 10.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 19.3 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: C[ 16.0]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 510 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 767 | xxxx | 255 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1065 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 343 | xxxx | 750 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1065 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 333 | xxxx | 750 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.04 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.23 | xxxx | 0.05 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.9 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 19.1 | xxxx | 10.1 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 16.0 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.309 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 13.3 |
| Optimal Cycle: | 20 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 7 | 382 | 52 | 97 | 370 | 2 | 1 | 12 | 15 | 104 | 21 | 178 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 8 | 420 | 57 | 107 | 407 | 2 | 1 | 13 | 17 | 114 | 23 | 196 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| PHF Volume: | 8 | 435 | 59 | 110 | 421 | 2 | 1 | 14 | 17 | 118 | 24 | 202 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 8 | 435 | 59 | 110 | 421 | 2 | 1 | 14 | 17 | 118 | 24 | 202 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 8 | 435 | 59 | 110 | 421 | 2 | 1 | 14 | 17 | 118 | 24 | 202 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.93 | 0.93 | 0.95 | 0.95 | 0.95 | 0.93 | 0.93 | 0.93 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.76 | 0.24 | 1.00 | 1.99 | 0.01 | 0.04 | 0.43 | 0.53 | 1.66 | 0.34 | 1.00 |
| Final Sat.: | 1805 | 3120 | 425 | 1805 | 3587 | 19 | 63 | 754 | 943 | 3035 | 613 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.14 | 0.14 | 0.06 | 0.12 | 0.12 | 0.02 | 0.02 | 0.02 | 0.04 | 0.04 | 0.13 |
| Crit Moves: | | **** | | **** | | | **** | | | | | **** |
| Green/Cycle: | 0.02 | 0.45 | 0.45 | 0.20 | 0.62 | 0.62 | 0.06 | 0.06 | 0.06 | 0.21 | 0.21 | 0.41 |
| Volume/Cap: | 0.19 | 0.31 | 0.31 | 0.31 | 0.19 | 0.19 | 0.31 | 0.31 | 0.31 | 0.19 | 0.19 | 0.31 |
| Delay/Veh: | 35.7 | 12.4 | 12.4 | 24.5 | 5.6 | 5.6 | 33.3 | 33.3 | 33.3 | 23.0 | 23.0 | 14.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 35.7 | 12.4 | 12.4 | 24.5 | 5.6 | 5.6 | 33.3 | 33.3 | 33.3 | 23.0 | 23.0 | 14.4 |
| LOS by Move: | D | B | B | C | A | A | C | C | C | C | C | B |
| HCM2kAvgQ: | 0 | 4 | 4 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.429 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 19.0 |
| Optimal Cycle: | 24 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: >> Count Date: 23 Aug 2008 << 12:00 - 1:00 pm | | | | | | | | | | | | |
| Base Vol: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| PHF Volume: | 77 | 7 | 100 | 0 | 9 | 10 | 6 | 288 | 57 | 90 | 260 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 77 | 7 | 100 | 0 | 9 | 10 | 6 | 288 | 57 | 90 | 260 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 77 | 7 | 100 | 0 | 9 | 10 | 6 | 288 | 57 | 90 | 260 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.82 | 0.82 | 1.00 | 0.87 | 0.87 | 0.98 | 0.98 | 0.98 | 0.99 | 0.99 | 1.00 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.02 | 0.82 | 0.16 | 1.00 | 1.00 | 1.00 |
| Final Sat.: | 1805 | 1552 | 1552 | 1900 | 1662 | 1662 | 30 | 1527 | 299 | 1875 | 1875 | 1900 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.04 | 0.00 | 0.06 | 0.00 | 0.01 | 0.01 | 0.19 | 0.19 | 0.19 | 0.05 | 0.14 | 0.00 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.13 | 0.15 | 0.15 | 0.00 | 0.02 | 0.02 | 0.44 | 0.44 | 0.44 | 0.32 | 0.32 | 0.00 |
| Volume/Cap: | 0.33 | 0.03 | 0.43 | 0.00 | 0.29 | 0.33 | 0.43 | 0.43 | 0.43 | 0.15 | 0.43 | 0.00 |
| Delay/Veh: | 28.4 | 25.4 | 28.2 | 0.0 | 36.3 | 37.1 | 13.9 | 13.9 | 13.9 | 16.8 | 18.9 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 28.4 | 25.4 | 28.2 | 0.0 | 36.3 | 37.1 | 13.9 | 13.9 | 13.9 | 16.8 | 18.9 | 0.0 |
| LOS by Move: | C | C | C | A | D | D | B | B | B | B | B | A |
| HCM2kAvgQ: | 2 | 0 | 3 | 0 | 1 | 1 | 5 | 5 | 5 | 1 | 5 | 0 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: A[ 9.8]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | 0 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | 0 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | | 0.94 | 0.94 | 0.94 | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 4 | 0 | 26 | 0 | 46 | 103 | | 27 | 368 | 0 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 4 | 0 | 26 | 0 | 46 | 103 | | 27 | 368 | 0 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 444 | 570 | 184 | xxxx | xxxx | xxxxx | | 149 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 547 | 434 | 833 | xxxx | xxxx | xxxxx | | 1444 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 540 | 426 | 833 | xxxx | xxxx | xxxxx | | 1444 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.01 | 0.00 | 0.03 | xxxx | xxxx | xxxx | | 0.02 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 11.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 7.5 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | B | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 833 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.1 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.5 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 9.8 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | A | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.0 Worst Case Level Of Service: A[ 9.0]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: >> Count Date: 6 Sep 2008 << 1:00 - 2:00 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | 0 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | 0 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | | 0.92 | 0.92 | 0.92 | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 3 | 0 | 25 | 0 | 46 | 128 | | 21 | 192 | 0 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 3 | 0 | 25 | 0 | 46 | 128 | | 21 | 192 | 0 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 256 | 407 | 96 | xxxx | xxxx | xxxxx | | 173 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 716 | 537 | 948 | xxxx | xxxx | xxxxx | | 1416 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 708 | 529 | 948 | xxxx | xxxx | xxxxx | | 1416 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | 0.00 | 0.03 | xxxx | xxxx | xxxx | | 0.01 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.0 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 10.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 7.6 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | B | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 948 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.1 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 8.9 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 9.0 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | A | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.5 Worst Case Level Of Service: B[ 10.6]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 272 | | 0 | 55 | | 0 | 0 | | 0 | 23 | 15 | | 0 | 0 | | 57 | 6 | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | | 0 | 55 | | 0 | 0 | | 0 | 23 | 15 | | 0 | 0 | | 57 | 6 | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| PHF Volume: | 290 | | 0 | 59 | | 0 | 0 | | 0 | 24 | 16 | | 0 | 0 | | 61 | 6 | | | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | | | |
| FinalVolume: | 290 | | 0 | 59 | | 0 | 0 | | 0 | 24 | 16 | | 0 | 0 | | 61 | 6 | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 95 | 132 | | 8 | xxxx | xxxx | xxxxx | | | 67 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| Potent Cap.: | 900 | 762 | | 1078 | xxxx | xxxx | xxxxx | | | 1547 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| Move Cap.: | 889 | 750 | | 1078 | xxxx | xxxx | xxxxx | | | 1547 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| Volume/Cap: | 0.33 | 0.00 | | 0.05 | xxxx | xxxx | xxxx | | | 0.02 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.2 | xxxx | xxxx | xxxxx | | | 0.0 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| Control Del: | xxxxx | xxxx | | 8.5 | xxxxx | xxxx | xxxxx | | | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| LOS by Move: | * | * | | A | * | * | * | | | A | * | * | * | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | |
| Shared Cap.: | 889 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| SharedQueue: | 1.4 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | 11.0 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | B | * | | * | * | * | | * | * | | * | * | | * | * | | | | | |
| ApproachDel: | 10.6 | | | | xxxxxx | | | | | xxxxxx | | | | xxxxxx | | | | | | |
| ApproachLOS: | B | | | | * | | | | | * | | | | * | | | | | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 6.6 Worst Case Level Of Service: A[ 9.8]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: >> Count Date: 6 Sep 2008 << 1:00 - 2:00 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 144 | | 0 | 27 | | 0 | 0 | | 0 | 26 | 20 | | 0 | 0 | | 58 | 8 | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | | 0 | 27 | | 0 | 0 | | 0 | 26 | 20 | | 0 | 0 | | 58 | 8 | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 158 | | 0 | 30 | | 0 | 0 | | 0 | 29 | 22 | | 0 | 0 | | 64 | 9 | | | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | | | |
| FinalVolume: | 158 | | 0 | 30 | | 0 | 0 | | 0 | 29 | 22 | | 0 | 0 | | 64 | 9 | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 111 | 151 | | 11 | xxxx | xxxx | xxxxx | | | 72 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| Potent Cap.: | 880 | 744 | | 1074 | xxxx | xxxx | xxxxx | | | 1540 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| Move Cap.: | 868 | 730 | | 1074 | xxxx | xxxx | xxxxx | | | 1540 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| Volume/Cap: | 0.18 | 0.00 | | 0.03 | xxxx | xxxx | xxxx | | | 0.02 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.1 | xxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| Control Del: | xxxxx | xxxx | | 8.4 | xxxxx | xxxx | xxxxx | | | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| LOS by Move: | * | * | | A | * | * | * | | | A | * | * | * | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | |
| Shared Cap.: | 868 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | |
| SharedQueue: | 0.7 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | 10.1 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | B | * | | * | * | * | | * | * | | * | * | | * | * | | | | | |
| ApproachDel: | 9.8 | | | | xxxxxx | | | | | xxxxxx | | | | xxxxxx | | | | | | |
| ApproachLOS: | A | | | | * | | | | | * | | | | * | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 5.0 Worst Case Level Of Service: A[ 9.8]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.88 | 0.88 | 0.88 | 0.78 | 0.78 | 0.78 | 0.72 | 0.72 | 0.72 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 37 | 51 | 0 | 0 | 35 | 33 | 96 | 0 | 8 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 37 | 51 | 0 | 0 | 35 | 33 | 96 | 0 | 8 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 68 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 159 | xxxx | 35 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1546 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 837 | xxxx | 1044 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1546 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 821 | xxxx | 1044 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.02 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.12 | xxxx | 0.01 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | 0.0 | xxxx | xxxx | xxxxx |
| Control Del: | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 10.0 | xxxx | 8.5 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | A | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 9.8 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | A | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 3.4 Worst Case Level Of Service: A[ 9.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: >> Count Date: 30 Aug 2008 << 12:30 - 1:30 pm | | | | | | | | | | | | |
| Base Vol: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| PHF Volume: | 13 | 32 | 0 | 0 | 30 | 32 | 37 | 0 | 12 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 13 | 32 | 0 | 0 | 30 | 32 | 37 | 0 | 12 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 62 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 88 | xxxx | 30 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1553 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 918 | xxxx | 1050 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1553 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 912 | xxxx | 1050 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.01 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.04 | xxxx | 0.01 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.1 | xxxx | 0.0 | xxxx | xxxx | xxxxx |
| Control Del: | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.1 | xxxx | 8.5 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | A | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 9.0 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | A | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[ 0.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| PHF Volume: | 0 | 74 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 74 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 114 | 114 | 74 |
| Potent Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 887 | 780 | 993 |
| Move Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 887 | 780 | 993 |
| Volume/Cap: | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[ 0.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 77 | 77 | 40 |
| Potent Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 931 | 817 | 1037 |
| Move Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 931 | 817 | 1037 |
| Volume/Cap: | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: A[ 9.2]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 0 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| PHF Volume: | 0 | 71 | 17 | 2 | 38 | 0 | 0 | 0 | 0 | 29 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 71 | 17 | 2 | 38 | 0 | 0 | 0 | 0 | 29 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 88 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 122 | 122 | 80 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1520 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 879 | 773 | 986 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1520 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 878 | 771 | 986 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.03 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 887 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.1 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 9.2 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | A | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 9.2 | | |
| ApproachLOS: | * | | | * | | | * | | | A | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: A[ 8.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 0 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 0 | 0 | 1 |
| Volume Module: | >> Count Date: 30 Aug 2008 << 12:00 - 1:00 pm | | | | | | | | | | | |
| Base Vol: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| PHF Volume: | 0 | 43 | 2 | 1 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 43 | 2 | 1 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 45 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 44 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1576 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1032 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1576 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1032 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 8.5 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | A |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 8.5 | | |
| ApproachLOS: | * | | | * | | | * | | | A | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.3 Worst Case Level Of Service: B[ 12.1]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 177 | | 343 | | 0 | 0 | | 135 | | 47 | 33 | | 0 | | 71 | 0 | | 0 | | 0 |
| Growth Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Initial Bse: | 177 | | 343 | | 0 | 0 | | 135 | | 47 | 33 | | 0 | | 71 | 0 | | 0 | | 0 |
| User Adj: | 1.10 | 1.10 | | 1.10 | 1.10 | 1.10 | 1.10 | | 1.10 | 1.10 | 1.10 | 1.10 | | 1.10 | 1.10 | 1.10 | 1.10 | | 1.10 | 1.10 |
| PHF Adj: | 0.94 | 0.94 | | 0.94 | 0.94 | 0.94 | 0.94 | | 0.94 | 0.94 | 0.94 | 0.94 | | 0.94 | 0.94 | 0.94 | 0.94 | | 0.94 | 0.94 |
| PHF Volume: | 207 | | 401 | | 0 | 0 | | 158 | | 55 | 39 | | 0 | | 83 | 0 | | 0 | | 0 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 207 | | 401 | | 0 | 0 | | 158 | | 55 | 39 | | 0 | | 83 | 0 | | 0 | | 0 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 6.4 | 6.5 | | 6.2 | xxxxx | xxxx | xxxxx | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 213 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | 972 | 972 | | 158 | xxxx | xxxx | xxxxx | | | |
| Potent Cap.: | 1370 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | 283 | 255 | | 893 | xxxx | xxxx | xxxxx | | | |
| Move Cap.: | 1370 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | 250 | 216 | | 893 | xxxx | xxxx | xxxxx | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | 322 | 287 | xxxxx | 248 | 270 | xxxxx | | | | |
| Volume/Cap: | 0.15 | xxxx | xxxx | xxxx | xxxx | xxxx | | | | | 0.12 | 0.00 | 0.09 | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | | | 0.3 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | | | 9.4 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | * | * | * | * | * | * | | | A | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 322 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 17.7 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | * | C | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 12.1 | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | * | | | B | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.5 Worst Case Level Of Service: B[ 11.1]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 124 | | 239 | | 0 | 0 | | 239 | | 40 | 40 | | 0 | | 124 | 0 | | 0 | | 0 |
| Growth Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Initial Bse: | 124 | | 239 | | 0 | 0 | | 239 | | 40 | 40 | | 0 | | 124 | 0 | | 0 | | 0 |
| User Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| PHF Volume: | 124 | | 239 | | 0 | 0 | | 239 | | 40 | 40 | | 0 | | 124 | 0 | | 0 | | 0 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 124 | | 239 | | 0 | 0 | | 239 | | 40 | 40 | | 0 | | 124 | 0 | | 0 | | 0 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 6.4 | 6.5 | | 6.2 | xxxxx | xxxx | xxxxx | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 279 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | 726 | 726 | | 239 | xxxx | xxxx | xxxxx | | | |
| Potent Cap.: | 1295 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | 394 | 354 | | 805 | xxxx | xxxx | xxxxx | | | |
| Move Cap.: | 1295 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | 366 | 320 | | 805 | xxxx | xxxx | xxxxx | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | 458 | 405 | xxxxx | 330 | 379 | xxxxx | | | | |
| Volume/Cap: | 0.10 | xxxx | xxxx | xxxx | xxxx | xxxx | | | | | 0.09 | 0.00 | 0.15 | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | | | 0.5 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | | | 10.3 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | * | * | * | * | * | * | | | B | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 458 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 13.6 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | * | B | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 11.1 | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | * | | | B | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 9.7 Worst Case Level Of Service: B[ 13.4]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.10 1.10 | | 1.10 | 1.10 1.10 | | 1.10 | 1.10 1.10 | | 1.10 | 1.10 1.10 | | 1.10 |
| Initial Bse: | 0 | 87 | 13 | 213 | 58 | 0 | 0 | 0 | 0 | 29 | 0 | 497 |
| User Adj: | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 |
| PHF Adj: | 0.93 0.93 | | 0.93 | 0.93 0.93 | | 0.93 | 0.93 0.93 | | 0.93 | 0.93 0.93 | | 0.93 |
| PHF Volume: | 0 | 93 | 14 | 229 | 63 | 0 | 0 | 0 | 0 | 31 | 0 | 535 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 93 | 14 | 229 | 63 | 0 | 0 | 0 | 0 | 31 | 0 | 535 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx xxxx xxxxx | | | 4.1 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | 6.4 xxxx | | 6.2 |
| FollowUpTim: | xxxxx xxxx xxxxx | | | 2.2 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | 3.5 xxxx | | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx xxxx xxxxx | | | 108 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 622 xxxx | | 101 |
| Potent Cap.: | xxxx xxxx xxxxx | | | 1496 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 454 xxxx | | 960 |
| Move Cap.: | xxxx xxxx xxxxx | | | 1496 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 400 xxxx | | 960 |
| Volume/Cap: | xxxx xxxx | xxxx | | 0.15 xxxx | xxxx | | xxxx xxxx | xxxx | | 0.08 xxxx | | 0.56 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx xxxx xxxxx | | | 0.5 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 0.2 xxxx | | 3.5 |
| Control Del: | xxxxx xxxx xxxxx | | | 7.8 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | 14.7 xxxx | | 13.3 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | B | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | |
| SharedQueue: | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | |
| Shrd ConDel: | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 13.4 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: B[ 10.6]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1 | 0 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Volume Module: | >> Count Date: 8 Sep 2007 << 11:30 - 12:30 pm | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| User Adj: | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 | 1.00 1.00 | | 1.00 |
| PHF Adj: | 0.90 0.90 | | 0.90 | 0.90 0.90 | | 0.90 | 0.90 0.90 | | 0.90 | 0.90 0.90 | | 0.90 |
| PHF Volume: | 0 | 47 | 0 | 311 | 72 | 0 | 0 | 0 | 0 | 2 | 0 | 383 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 47 | 0 | 311 | 72 | 0 | 0 | 0 | 0 | 2 | 0 | 383 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx xxxx xxxxx | | | 4.1 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | 6.4 xxxx | | 6.2 |
| FollowUpTim: | xxxxx xxxx xxxxx | | | 2.2 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | 3.5 xxxx | | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx xxxx xxxxx | | | 47 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 740 xxxx | | 47 |
| Potent Cap.: | xxxx xxxx xxxxx | | | 1574 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 387 xxxx | | 1028 |
| Move Cap.: | xxxx xxxx xxxxx | | | 1574 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 328 xxxx | | 1028 |
| Volume/Cap: | xxxx xxxx | xxxx | | 0.20 xxxx | xxxx | | xxxx xxxx | xxxx | | 0.01 xxxx | | 0.37 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx xxxx xxxxx | | | 0.7 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 0.0 xxxx | | 1.7 |
| Control Del: | xxxxx xxxx xxxxx | | | 7.8 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | 16.0 xxxx | | 10.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | |
| SharedQueue: | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | |
| Shrd ConDel: | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 10.6 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[ 12.3]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 0 | 0 | 0 | 6 | 0 | 54 | 0 | 110 | 117 | 18 | 472 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| PHF Volume: | 0 | 0 | 0 | 6 | 0 | 58 | 0 | 118 | 125 | 19 | 507 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 6 | 0 | 58 | 0 | 118 | 125 | 19 | 507 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 726 | 789 | 507 | xxxx | xxxx | xxxxx | 244 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 394 | 325 | 569 | xxxx | xxxx | xxxxx | 1334 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 390 | 321 | 569 | xxxx | xxxx | xxxxx | 1334 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.02 | 0.00 | 0.10 | xxxx | xxxx | xxxx | 0.01 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 12.0 | xxxxx | xxxx | xxxxx | 7.7 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 390 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 14.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | B | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 12.3 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | B | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[ 10.6]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Volume Module: >> Count Date: 8 Sep 2007 << 12:30 - 1:30 pm | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 138 | 224 | 1 | 333 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 138 | 224 | 1 | 333 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 586 | 698 | 333 | xxxx | xxxx | xxxxx | 362 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 476 | 367 | 713 | xxxx | xxxx | xxxxx | 1207 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 476 | 367 | 713 | xxxx | xxxx | xxxxx | 1207 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | 0.00 | 0.09 | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.6 | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 10.6 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | B | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 13.7 Worst Case Level Of Service: C[ 19.0]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 1 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.10 1.10 | 1.10 | | 1.10 1.10 | 1.10 | | 1.10 1.10 | 1.10 | | 1.10 1.10 | 1.10 | |
| Initial Bse: | 408 | 0 | 20 | 0 | 0 | 0 | 69 | 46 | 0 | 0 | 81 | 6 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 0.93 0.93 | 0.93 | | 0.93 0.93 | 0.93 | | 0.93 0.93 | 0.93 | | 0.93 0.93 | 0.93 | |
| PHF Volume: | 439 | 0 | 21 | 0 | 0 | 0 | 75 | 50 | 0 | 0 | 88 | 6 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 439 | 0 | 21 | 0 | 0 | 0 | 75 | 50 | 0 | 0 | 88 | 6 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 6.5 | 6.2 | | xxxxx xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 4.0 | 3.3 | | xxxxx xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 289 292 | 50 | | xxxx xxxx | xxxxx | | 93 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 706 622 | 1024 | | xxxx xxxx | xxxxx | | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 679 591 | 1024 | | xxxx xxxx | xxxxx | | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.65 0.00 | 0.02 | | xxxx xxxx | xxxx | | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx xxxx | 0.1 | | xxxx xxxx | xxxxx | | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx xxxx | 8.6 | | xxxxx xxxx | xxxxx | | 7.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * * | A | | * * | * | | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 679 xxxx | xxxxx | | xxxx xxxx | xxxxx | | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 4.7 xxxx | xxxxx | | xxxxx xxxx | xxxxx | | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 19.5 xxxx | xxxxx | | xxxxx xxxx | xxxxx | | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | C * | * | | * * | * | | * | * | * | * | * | * |
| ApproachDel: | 19.0 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | C | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 9.3 Worst Case Level Of Service: B[ 13.2]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 1 0 |
| Volume Module: | >> Count Date: 8 Sep 2007 << 12:15 - 1:15 pm | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 0.94 0.94 | 0.94 | | 0.94 0.94 | 0.94 | | 0.94 0.94 | 0.94 | | 0.94 0.94 | 0.94 | |
| PHF Volume: | 263 | 6 | 12 | 0 | 0 | 0 | 82 | 44 | 0 | 0 | 61 | 1 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 263 | 6 | 12 | 0 | 0 | 0 | 82 | 44 | 0 | 0 | 61 | 1 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 6.5 | 6.2 | | xxxxx xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 4.0 | 3.3 | | xxxxx xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 268 269 | 44 | | xxxx xxxx | xxxxx | | 62 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 726 641 | 1032 | | xxxx xxxx | xxxxx | | 1554 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 696 607 | 1032 | | xxxx xxxx | xxxxx | | 1554 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.38 0.01 | 0.01 | | xxxx xxxx | xxxx | | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx xxxx | 0.0 | | xxxx xxxx | xxxxx | | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx xxxx | 8.5 | | xxxxx xxxx | xxxxx | | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * * | A | | * * | * | | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 694 xxxx | xxxxx | | xxxx xxxx | xxxxx | | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 1.8 xxxx | xxxxx | | xxxxx xxxx | xxxxx | | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 13.4 xxxx | xxxxx | | xxxxx xxxx | xxxxx | | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | B * | * | | * * | * | | * | * | * | * | * | * |
| ApproachDel: | 13.2 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | B | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[ 9.5]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 | 0 | 0 0 | 0 | 0 1 | 0 | 0 0 | 1! 0 | 0 | 0 | 0 0 | 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| User Adj: | 1.00 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | |
| PHF Adj: | 0.93 0.93 | 0.93 | 0.93 0.93 | 0.93 | 0.93 | 0.93 0.93 | 0.93 | 0.93 | 0.93 0.93 | 0.93 | 0.93 | |
| PHF Volume: | 34 | 35 | 0 | 0 | 16 | 51 | 53 | 0 | 12 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 34 | 35 | 0 | 0 | 16 | 51 | 53 | 0 | 12 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | |
| FollowUpTim: | 2.2 xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 67 xxxx | xxxxx | xxxx | xxxx | xxxxx | 146 | 146 | 41 | xxxx | xxxx | xxxxx | |
| Potent Cap.: | 1548 xxxx | xxxxx | xxxx | xxxx | xxxxx | 851 | 749 | 1035 | xxxx | xxxx | xxxxx | |
| Move Cap.: | 1548 xxxx | xxxxx | xxxx | xxxx | xxxxx | 837 | 732 | 1035 | xxxx | xxxx | xxxxx | |
| Volume/Cap: | 0.02 xxxx | xxxx | xxxx | xxxx | xxxx | 0.06 | 0.00 | 0.01 | xxxx | xxxx | xxxx | |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.1 xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | |
| Control Del: | 7.4 xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| LOS by Move: | A | * | * | * | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 867 | xxxxx | xxxx | xxxx | xxxxx | |
| SharedQueue: | 0.1 xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.2 | xxxxx | xxxxx | xxxx | xxxxx | |
| Shrd ConDel: | 7.4 xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 9.5 | xxxxx | xxxxx | xxxx | xxxxx | |
| Shared LOS: | A | * | * | * | * | * | A | * | * | * | * | * |
| ApproachDel: | xxxxxx | | xxxxxx | | | 9.5 | | | xxxxxx | | | |
| ApproachLOS: | * | | * | | | A | | | * | | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: A[ 9.3]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 | 0 | 0 0 | 0 | 0 1 | 0 | 0 0 | 1! 0 | 0 | 0 | 0 0 | 0 0 |
| Volume Module: | >> Count Date: 8 Sep 2007 << 11:30 - 12:30 pm | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| User Adj: | 1.00 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | 1.00 | |
| PHF Adj: | 0.85 0.85 | 0.85 | 0.85 0.85 | 0.85 | 0.85 | 0.85 0.85 | 0.85 | 0.85 | 0.85 0.85 | 0.85 | 0.85 | |
| PHF Volume: | 31 | 22 | 0 | 0 | 21 | 49 | 44 | 0 | 13 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 31 | 22 | 0 | 0 | 21 | 49 | 44 | 0 | 13 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | |
| FollowUpTim: | 2.2 xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 71 xxxx | xxxxx | xxxx | xxxx | xxxxx | 129 | 129 | 46 | xxxx | xxxx | xxxxx | |
| Potent Cap.: | 1543 xxxx | xxxxx | xxxx | xxxx | xxxxx | 870 | 765 | 1029 | xxxx | xxxx | xxxxx | |
| Move Cap.: | 1543 xxxx | xxxxx | xxxx | xxxx | xxxxx | 856 | 749 | 1029 | xxxx | xxxx | xxxxx | |
| Volume/Cap: | 0.02 xxxx | xxxx | xxxx | xxxx | xxxx | 0.05 | 0.00 | 0.01 | xxxx | xxxx | xxxx | |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.1 xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | |
| Control Del: | 7.4 xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| LOS by Move: | A | * | * | * | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 891 | xxxxx | xxxx | xxxx | xxxxx | |
| SharedQueue: | 0.1 xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.2 | xxxxx | xxxxx | xxxx | xxxxx | |
| Shrd ConDel: | 7.4 xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 9.3 | xxxxx | xxxxx | xxxx | xxxxx | |
| Shared LOS: | A | * | * | * | * | * | A | * | * | * | * | * |
| ApproachDel: | xxxxxx | | xxxxxx | | | 9.3 | | | xxxxxx | | | |
| ApproachLOS: | * | | * | | | A | | | * | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.342 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.0 |
| Optimal Cycle: | 17 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 1 | 0 1 | 0 | 1 0 | 1 0 | 0 | 0 1! | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.81 | 0.81 | 0.85 | 0.82 | 0.82 | 0.82 | 0.88 | 0.88 | 0.88 | 0.73 | 0.73 | 0.73 |
| Lanes: | 0.33 | 1.67 | 1.00 | 0.28 | 1.61 | 0.11 | 0.11 | 0.27 | 0.62 | 0.61 | 0.18 | 0.21 |
| Final Sat.: | 511 | 2554 | 1615 | 429 | 2503 | 166 | 190 | 454 | 1034 | 847 | 254 | 294 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.06 | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | 0.09 | 0.17 | 0.17 | 0.17 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 |
| Volume/Cap: | 0.34 | 0.34 | 0.14 | 0.24 | 0.24 | 0.24 | 0.19 | 0.19 | 0.19 | 0.34 | 0.34 | 0.34 |
| Delay/Veh: | 13.3 | 13.3 | 12.0 | 12.5 | 12.5 | 12.5 | 9.5 | 9.5 | 9.5 | 10.6 | 10.6 | 10.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 13.3 | 13.3 | 12.0 | 12.5 | 12.5 | 12.5 | 9.5 | 9.5 | 9.5 | 10.6 | 10.6 | 10.6 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 4 | 4 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.311 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 11.7 |
| Optimal Cycle: | 16 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 1 | 0 1 | 0 | 1 0 | 1 0 | 0 | 0 1! | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.77 | 0.77 | 0.85 | 0.83 | 0.83 | 0.83 | 0.89 | 0.89 | 0.89 | 0.75 | 0.75 | 0.75 |
| Lanes: | 0.43 | 1.57 | 1.00 | 0.24 | 1.67 | 0.09 | 0.12 | 0.29 | 0.59 | 0.58 | 0.20 | 0.22 |
| Final Sat.: | 627 | 2294 | 1615 | 382 | 2614 | 141 | 206 | 493 | 986 | 827 | 289 | 315 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.14 | 0.14 | 0.07 | 0.12 | 0.12 | 0.12 | 0.09 | 0.09 | 0.09 | 0.15 | 0.15 | 0.15 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 |
| Volume/Cap: | 0.31 | 0.31 | 0.17 | 0.27 | 0.27 | 0.27 | 0.18 | 0.18 | 0.18 | 0.31 | 0.31 | 0.31 |
| Delay/Veh: | 12.4 | 12.4 | 11.5 | 12.1 | 12.1 | 12.1 | 10.0 | 10.0 | 10.0 | 11.0 | 11.0 | 11.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 12.4 | 12.4 | 11.5 | 12.1 | 12.1 | 12.1 | 10.0 | 10.0 | 10.0 | 11.0 | 11.0 | 11.0 |
| LOS by Move: | B | B | B | B | B | B | B | B | B | B | B | B |
| HCM2kAvgQ: | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: C[ 20.1]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 542 | 113 | 46 | 472 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 542 | 113 | 46 | 472 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 542 | 113 | 46 | 472 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 542 | 113 | 46 | 472 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 655 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 927 | xxxx | 328 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 942 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 271 | xxxx | 674 |
| Move Cap.: | xxxx | xxxx | xxxxx | 942 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 261 | xxxx | 674 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.29 | xxxx | 0.05 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.2 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 24.4 | xxxx | 10.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 20.1 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: B[ 14.1]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 371 | 71 | 28 | 367 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 371 | 71 | 28 | 367 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 371 | 71 | 28 | 367 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 371 | 71 | 28 | 367 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 442 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 646 | xxxx | 221 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1129 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 409 | xxxx | 789 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1129 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 401 | xxxx | 789 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.17 | xxxx | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.6 | xxxx | 0.1 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 15.8 | xxxx | 9.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | A |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 14.1 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.378 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 14.6 |
| Optimal Cycle: | 22 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.92 | 0.92 | 0.95 | 0.95 | 0.95 | 0.92 | 0.92 | 0.92 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.56 | 0.44 | 1.00 | 1.97 | 0.03 | 0.11 | 0.32 | 0.57 | 1.77 | 0.23 | 1.00 |
| Final Sat.: | 1805 | 2714 | 776 | 1805 | 3555 | 48 | 198 | 555 | 990 | 3225 | 416 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.01 | 0.17 | 0.17 | 0.08 | 0.13 | 0.13 | 0.03 | 0.03 | 0.03 | 0.06 | 0.06 | 0.15 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.04 | 0.45 | 0.45 | 0.22 | 0.63 | 0.63 | 0.07 | 0.07 | 0.07 | 0.17 | 0.17 | 0.39 |
| Volume/Cap: | 0.20 | 0.38 | 0.38 | 0.38 | 0.20 | 0.20 | 0.38 | 0.38 | 0.38 | 0.35 | 0.35 | 0.38 |
| Delay/Veh: | 33.7 | 12.8 | 12.8 | 23.7 | 5.4 | 5.4 | 33.3 | 33.3 | 33.3 | 25.9 | 25.9 | 15.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.7 | 12.8 | 12.8 | 23.7 | 5.4 | 5.4 | 33.3 | 33.3 | 33.3 | 25.9 | 25.9 | 15.5 |
| LOS by Move: | C | B | B | C | A | A | C | C | C | C | C | B |
| HCM2kAvgQ: | 1 | 5 | 5 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 4 |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.346 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 21.4 |
| Optimal Cycle: | 21 | Level Of Service: | C |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.85 | 0.85 | 0.95 | 0.92 | 0.92 | 0.97 | 0.97 | 0.97 | 0.98 | 0.98 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.63 | 0.37 | 0.03 | 0.78 | 0.19 | 1.00 | 1.00 | 1.00 |
| Final Sat.: | 1805 | 1606 | 1606 | 1805 | 2859 | 650 | 66 | 1438 | 345 | 1856 | 1856 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.03 | 0.08 | 0.02 | 0.02 | 0.02 | 0.12 | 0.12 | 0.12 | 0.07 | 0.09 | 0.03 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.21 | 0.24 | 0.24 | 0.07 | 0.11 | 0.11 | 0.35 | 0.35 | 0.35 | 0.25 | 0.25 | 0.32 |
| Volume/Cap: | 0.14 | 0.13 | 0.35 | 0.35 | 0.14 | 0.14 | 0.35 | 0.35 | 0.35 | 0.30 | 0.35 | 0.09 |
| Delay/Veh: | 22.8 | 20.7 | 22.2 | 32.5 | 28.4 | 28.4 | 17.1 | 17.1 | 17.1 | 21.6 | 22.0 | 16.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 22.8 | 20.7 | 22.2 | 32.5 | 28.4 | 28.4 | 17.1 | 17.1 | 17.1 | 21.6 | 22.0 | 16.8 |
| LOS by Move: | C | C | C | C | C | C | B | B | B | C | C | B |
| HCM2kAvgQ: | 1 | 1 | 3 | 1 | 1 | 1 | 4 | 4 | 4 | 3 | 3 | 1 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[ 10.4]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 582 | 809 | 228 | xxxx | xxxx | xxxxx | 262 | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 449 | 317 | 781 | xxxx | xxxx | xxxxx | 1314 | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 437 | 306 | 781 | xxxx | xxxx | xxxxx | 1314 | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.02 | 0.00 | 0.05 | xxxx | xxxx | xxxx | 0.04 | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 13.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 7.8 | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | * | * | * | B | * | * | * | * | * | A | * | * | | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 781 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.9 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | 10.4 | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: A[ 9.3]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 326 | 529 | 115 | xxxx | xxxx | xxxxx | 231 | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 648 | 458 | 922 | xxxx | xxxx | xxxxx | 1349 | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 636 | 446 | 922 | xxxx | xxxx | xxxxx | 1349 | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.01 | 0.00 | 0.04 | xxxx | xxxx | xxxx | 0.03 | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 10.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 7.7 | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | * | * | * | B | * | * | * | * | * | A | * | * | | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 922 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.1 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.0 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | 9.3 | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | * | | | A | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 9.1 Worst Case Level Of Service: B[ 12.2]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 361 | | 0 | 79 | | 0 | 0 | | 0 | | 38 | 31 | | 0 | | 0 | 99 | | 16 | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 361 | | 0 | 79 | | 0 | 0 | | 0 | | 38 | 31 | | 0 | | 0 | 99 | | 16 | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 361 | | 0 | 79 | | 0 | 0 | | 0 | | 38 | 31 | | 0 | | 0 | 99 | | 16 | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| FinalVolume: | 361 | | 0 | 79 | | 0 | 0 | | 0 | | 38 | 31 | | 0 | | 0 | 99 | | 16 | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 157 | 222 | | 16 | xxxx | xxxx | xxxxx | | 115 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 825 | 680 | | 1067 | xxxx | xxxx | xxxxx | | 1487 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 809 | 663 | | 1067 | xxxx | xxxx | xxxxx | | 1487 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.45 | 0.00 | | 0.07 | xxxx | xxxx | xxxx | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.2 | xxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 8.6 | xxxxx | xxxx | xxxxx | | 7.5 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | | |
| Shared Cap.: | 809 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | 2.3 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shrd ConDel: | 13.0 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shared LOS: | B | * | | * | * | * | | * | * | | * | * | | * | * | | | | | |
| ApproachDel: | 12.2 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 6.6 Worst Case Level Of Service: B[ 10.2]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 187 | | 0 | 42 | | 0 | 0 | | 0 | | 33 | 30 | | 0 | | 0 | 82 | | 16 | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 187 | | 0 | 42 | | 0 | 0 | | 0 | | 33 | 30 | | 0 | | 0 | 82 | | 16 | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 187 | | 0 | 42 | | 0 | 0 | | 0 | | 33 | 30 | | 0 | | 0 | 82 | | 16 | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| FinalVolume: | 187 | | 0 | 42 | | 0 | 0 | | 0 | | 33 | 30 | | 0 | | 0 | 82 | | 16 | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 137 | 194 | | 15 | xxxx | xxxx | xxxxx | | 98 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 848 | 705 | | 1067 | xxxx | xxxx | xxxxx | | 1508 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 834 | 689 | | 1067 | xxxx | xxxx | xxxxx | | 1508 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.22 | 0.00 | | 0.04 | xxxx | xxxx | xxxx | | 0.02 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.1 | xxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 8.5 | xxxxx | xxxx | xxxxx | | 7.4 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | | |
| Shared Cap.: | 834 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | 0.9 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shrd ConDel: | 10.6 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shared LOS: | B | * | | * | * | * | | * | * | | * | * | | * | * | | | | | |
| ApproachDel: | 10.2 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 4.8 Worst Case Level Of Service: B[ 10.3]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 93 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 266 | xxxx | 52 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 727 | xxxx | 1021 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 702 | xxxx | 1021 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.13 | xxxx | 0.03 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | 0.1 | xxxx | xxxx | xxxxx |
| Control Del: | 7.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 10.9 | xxxx | 8.6 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | B | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 10.3 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: A[ 9.3]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 77 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 183 | xxxx | 43 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 811 | xxxx | 1033 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 793 | xxxx | 1033 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.03 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.05 | xxxx | 0.03 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.2 | xxxx | 0.1 | xxxx | xxxx | xxxxx |
| Control Del: | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.8 | xxxx | 8.6 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | A | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 9.3 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | A | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[ 0.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 191 | 191 | 119 |
| Potent Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 803 | 708 | 938 |
| Move Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 803 | 708 | 938 |
| Volume/Cap: | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[ 0.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 137 | 137 | 77 |
| Potent Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 861 | 758 | 990 |
| Move Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 861 | 758 | 990 |
| Volume/Cap: | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: A[ 9.7]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Volume: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx xxxx xxxxx | | | 4.1 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx xxxx xxxxx | | | 2.2 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx xxxx xxxxx | | | 122 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 210 | 210 | 114 |
| Potent Cap.: | xxxx xxxx xxxxx | | | 1478 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 783 | 691 | 944 |
| Move Cap.: | xxxx xxxx xxxxx | | | 1478 xxxx xxxxx | | | xxxx xxxx xxxxx | | | 781 | 688 | 944 |
| Volume/Cap: | xxxx xxxx | xxxx | | 0.00 xxxx | xxxx | | xxxx xxxx | xxxx | | 0.03 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx xxxx xxxxx | | | 0.0 xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | |
| Control Del: | xxxxx xxxx xxxxx | | | 7.4 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx xxxxx | | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx | 795 | xxxxx |
| SharedQueue: | xxxxx xxxx xxxxx | | | 0.0 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx | 0.1 | xxxxx |
| Shrd ConDel: | xxxxx xxxx xxxxx | | | 7.4 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx | 9.7 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | A | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 9.7 | | |
| ApproachLOS: | * | | | * | | | * | | | A | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.3 Worst Case Level Of Service: A[ 8.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Volume: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx xxxx xxxxx | | | 4.1 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx xxxx xxxxx | | | 2.2 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx xxxx xxxxx | | | 66 xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx | xxxx | 66 |
| Potent Cap.: | xxxx xxxx xxxxx | | | 1549 xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx | xxxx | 1004 |
| Move Cap.: | xxxx xxxx xxxxx | | | 1549 xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx | xxxx | 1004 |
| Volume/Cap: | xxxx xxxx | xxxx | | 0.00 xxxx | xxxx | | xxxx xxxx | xxxx | | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx xxxx xxxxx | | | 0.0 xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx | | 0.0 |
| Control Del: | xxxxx xxxx xxxxx | | | 7.3 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx | | 8.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | A |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx xxxxx | | | xxxx xxxx | | xxxxx |
| SharedQueue: | xxxxx xxxx xxxxx | | | 0.0 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx | | xxxxx |
| Shrd ConDel: | xxxxx xxxx xxxxx | | | 7.3 xxxx xxxxx | | | xxxxx xxxx xxxxx | | | xxxxx xxxx | | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 8.6 | | |
| ApproachLOS: | * | | | * | | | * | | | A | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.1 Worst Case Level Of Service: B[ 12.3]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Volume Module: | | | | | | | | | | | | | | | | |
| Base Vol: | 199 | 444 | | 0 0 | 214 | | 50 | | 36 | | 0 | 91 | 0 | | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 199 | 444 | | 0 0 | 214 | | 50 | | 36 | | 0 | 91 | 0 | | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 199 | 444 | | 0 0 | 214 | | 50 | | 36 | | 0 | 91 | 0 | | 0 | 0 |
| Reduct Vol: | 0 | 0 | | 0 0 | 0 | | 0 | | 0 | | 0 | 0 | 0 | | 0 | 0 |
| FinalVolume: | 199 | 444 | | 0 0 | 214 | | 50 | | 36 | | 0 | 91 | 0 | | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | 6.4 | 6.5 | | 6.2 | xxxxx | xxxx | xxxxx | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 264 | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 1056 | 1056 | | 214 | xxxx | xxxx | xxxxx | |
| Potent Cap.: | 1312 | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 252 | 227 | | 831 | xxxx | xxxx | xxxxx | |
| Move Cap.: | 1312 | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 222 | 193 | | 831 | xxxx | xxxx | xxxxx | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 306 | 273 | xxxxx | 228 | 255 | xxxxx | | |
| Volume/Cap: | 0.15 | xxxx | xxxx | xxxx xxxx | xxxx | | | | 0.12 | 0.00 | 0.11 | xxxx | xxxx | xxxx | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.5 | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | xxxx | xxxx | | 0.4 | xxxx | xxxx | xxxxx | |
| Control Del: | 8.2 | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | xxxxx | xxxx | | 9.9 | xxxxx | xxxx | xxxxx | |
| LOS by Move: | A | * | * | * * | * | | | | * | * | | A | * | * | * | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 306 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | 0.4 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | 18.3 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | |
| Shared LOS: | * | * | * | * * | * | | | | C | * | * | | * | * | * | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | | 12.3 | | | | xxxxxx | | | |
| ApproachLOS: | * | | | * | | | | | B | | | | * | | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.4 Worst Case Level Of Service: B[ 12.3]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Volume Module: | | | | | | | | | | | | | | | | |
| Base Vol: | 146 | 340 | | 0 0 | 318 | | 43 | | 43 | | 0 | 144 | 0 | | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 146 | 340 | | 0 0 | 318 | | 43 | | 43 | | 0 | 144 | 0 | | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 146 | 340 | | 0 0 | 318 | | 43 | | 43 | | 0 | 144 | 0 | | 0 | 0 |
| Reduct Vol: | 0 | 0 | | 0 0 | 0 | | 0 | | 0 | | 0 | 0 | 0 | | 0 | 0 |
| FinalVolume: | 146 | 340 | | 0 0 | 318 | | 43 | | 43 | | 0 | 144 | 0 | | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | 6.4 | 6.5 | | 6.2 | xxxxx | xxxx | xxxxx | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 361 | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 950 | 950 | | 318 | xxxx | xxxx | xxxxx | |
| Potent Cap.: | 1209 | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 291 | 262 | | 727 | xxxx | xxxx | xxxxx | |
| Move Cap.: | 1209 | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 264 | 230 | | 727 | xxxx | xxxx | xxxxx | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 372 | 330 | xxxxx | 243 | 303 | xxxxx | | |
| Volume/Cap: | 0.12 | xxxx | xxxx | xxxx xxxx | xxxx | | | | 0.12 | 0.00 | 0.20 | xxxx | xxxx | xxxx | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | xxxx | xxxx | | 0.7 | xxxx | xxxx | xxxxx | |
| Control Del: | 8.4 | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | xxxxx | xxxx | | 11.2 | xxxxx | xxxx | xxxxx | |
| LOS by Move: | A | * | * | * * | * | | | | * | * | | B | * | * | * | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx xxxx | xxxxx | | | | 372 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | 0.4 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx xxxx | xxxxx | | | | 15.9 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | |
| Shared LOS: | * | * | * | * * | * | | | | C | * | * | | * | * | * | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | | 12.3 | | | | xxxxxx | | | |
| ApproachLOS: | * | | | * | | | | | B | | | | * | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 10.8 Worst Case Level Of Service: C[ 16.1]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 178 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 792 | xxxx | 144 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 361 | xxxx | 909 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 304 | xxxx | 909 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.20 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.22 | xxxx | 0.64 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.8 | xxxx | 4.7 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 20.1 | xxxx | 15.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | C |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 16.1 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.7 Worst Case Level Of Service: B[ 11.1]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 110 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 686 | xxxx | 82 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 416 | xxxx | 983 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 358 | xxxx | 983 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.18 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.11 | xxxx | 0.34 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | 1.5 |
| Control Del: | xxxxx | xxxx | xxxxx | 7.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 16.3 | xxxx | 10.5 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.1 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: C[ 17.3]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 1 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1056 | 1160 | 579 | xxxx | xxxx | xxxxx | 355 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 252 | 197 | 519 | xxxx | xxxx | xxxxx | 1215 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 234 | 179 | 519 | xxxx | xxxx | xxxxx | 1215 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.19 | 0.00 | 0.13 | xxxx | xxxx | xxxx | 0.09 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 13.0 | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 234 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 23.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | C | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 17.3 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: B[ 12.8]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 1 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 759 | 875 | 324 | xxxx | xxxx | xxxxx | 357 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 377 | 290 | 722 | xxxx | xxxx | xxxxx | 1213 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 354 | 267 | 722 | xxxx | xxxx | xxxxx | 1213 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.11 | 0.00 | 0.08 | xxxx | xxxx | xxxx | 0.08 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.4 | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 354 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 16.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | C | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 12.8 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | B | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 30.2 Worst Case Level Of Service: F[ 51.9]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 503 | 527 | 107 | xxxx | xxxx | xxxxx | 252 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 532 | 459 | 953 | xxxx | xxxx | xxxxx | 1325 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 506 | 430 | 953 | xxxx | xxxx | xxxxx | 1325 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.97 | 0.00 | 0.10 | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 9.2 | xxxxx | xxxx | xxxxx | 7.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 506 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 12.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 60.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 51.9 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: B[ 14.7]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 413 | 435 | 90 | xxxx | xxxx | xxxxx | 207 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 599 | 517 | 973 | xxxx | xxxx | xxxxx | 1376 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 576 | 492 | 973 | xxxx | xxxx | xxxxx | 1376 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.45 | 0.01 | 0.09 | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 9.1 | xxxxx | xxxx | xxxxx | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 575 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 2.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 16.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | C | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 14.7 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | B | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.582 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 21.9 |
| Optimal Cycle: | 32 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.97 | 0.97 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.81 | 0.19 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1491 | 360 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.36 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.05 | 0.06 | 0.00 | 0.00 | 0.14 | 0.14 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.63 | 0.00 | 0.63 | 0.00 | 0.00 | 0.00 | 0.08 | 0.31 | 0.00 | 0.00 | 0.23 | 0.23 |
| Volume/Cap: | 0.58 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.58 | 0.18 | 0.00 | 0.00 | 0.58 | 0.58 |
| Delay/Veh: | 12.0 | 0.0 | 7.5 | 0.0 | 0.0 | 0.0 | 50.3 | 25.1 | 0.0 | 0.0 | 36.0 | 36.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 12.0 | 0.0 | 7.5 | 0.0 | 0.0 | 0.0 | 50.3 | 25.1 | 0.0 | 0.0 | 36.0 | 36.0 |
| LOS by Move: | B | A | A | A | A | A | D | C | A | A | D | D |
| HCM2k95thQ: | 17 | 0 | 2 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 13 | 13 |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.329 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 20.7 |
| Optimal Cycle: | 21 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.88 | 0.88 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.97 | 0.97 |
| Lanes: | 0.98 | 0.02 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.79 | 0.21 |
| Final Sat.: | 1647 | 25 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1453 | 392 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.16 | 0.16 | 0.05 | 0.00 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.00 | 0.11 | 0.11 |
| Crit Moves: | | **** | | | | | | **** | | | | **** |
| Green/Cycle: | 0.48 | 0.48 | 0.48 | 0.00 | 0.00 | 0.00 | 0.12 | 0.46 | 0.00 | 0.00 | 0.34 | 0.34 |
| Volume/Cap: | 0.33 | 0.33 | 0.11 | 0.00 | 0.00 | 0.00 | 0.33 | 0.10 | 0.00 | 0.00 | 0.33 | 0.33 |
| Delay/Veh: | 16.1 | 16.1 | 14.2 | 0.0 | 0.0 | 0.0 | 41.5 | 15.5 | 0.0 | 0.0 | 24.8 | 24.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 16.1 | 16.1 | 14.2 | 0.0 | 0.0 | 0.0 | 41.5 | 15.5 | 0.0 | 0.0 | 24.8 | 24.8 |
| LOS by Move: | B | B | B | A | A | A | D | B | A | A | C | C |
| HCM2k95thQ: | 10 | 10 | 3 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 9 | 9 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: B[ 13.5]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 122 | xxxx | xxxxx | 52 | xxxx | xxxxx | 393 | 365 | 77 | 426 | 410 | 52 |
| Potent Cap.: | 1478 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 571 | 567 | 990 | 542 | 535 | 1022 |
| Move Cap.: | 1478 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 490 | 519 | 990 | 437 | 490 | 1022 |
| Volume/Cap: | 0.07 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.16 | 0.08 | 0.08 | 0.00 | 0.10 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.2 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 7.6 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 623 | xxxxx | xxxx | 537 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 1.4 | xxxxx | xxxxx | 0.4 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 13.5 | xxxxx | xxxxx | 12.5 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | B | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 13.5 | | | 12.5 | | |
| ApproachLOS: | * | | | * | | | B | | | B | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Short Term Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 7.6 Worst Case Level Of Service: B[ 12.0]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 101 | xxxx | xxxxx | 32 | xxxx | xxxxx | 333 | 305 | 65 | 364 | 341 | 32 |
| Potent Cap.: | 1504 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 625 | 612 | 1005 | 596 | 585 | 1048 |
| Move Cap.: | 1504 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 547 | 568 | 1005 | 490 | 543 | 1048 |
| Volume/Cap: | 0.06 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.10 | 0.08 | 0.08 | 0.00 | 0.09 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.2 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 7.6 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 692 | xxxxx | xxxx | 591 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 1.0 | xxxxx | xxxxx | 0.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 12.0 | xxxxx | xxxxx | 11.8 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | B | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 12.0 | | | 11.8 | | |
| ApproachLOS: | * | | | * | | | B | | | B | | |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Short-term

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 22 | 4.3 | 0.204 | 11.4 | LOS B | 27 | 0.56 | 0.79 | 23.9 |
| 16T | T | 92 | 2.2 | 0.204 | 4.3 | LOS A | 27 | 0.56 | 0.46 | 27.5 |
| 16R | R | 55 | 1.8 | 0.204 | 5.9 | LOS A | 27 | 0.56 | 0.58 | 26.4 |
| **Approach** | | **170** | **2.4** | **0.204** | **5.7** | **LOS A** | **27** | **0.56** | **0.54** | **26.5** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.083 | 14.1 | LOS B | 11 | 0.56 | 0.84 | 23.2 |
| 6T | T | 40 | 2.5 | 0.082 | 4.6 | LOS A | 11 | 0.56 | 0.49 | 27.5 |
| 6R | R | 20 | 4.8 | 0.082 | 5.9 | LOS A | 11 | 0.56 | 0.59 | 26.5 |
| **Approach** | | **63** | **4.8** | **0.082** | **5.3** | **LOS A** | **11** | **0.56** | **0.53** | **27.0** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 43 | 2.3 | 0.171 | 13.1 | LOS B | 23 | 0.56 | 0.81 | 23.4 |
| 14T | T | 77 | 2.6 | 0.171 | 4.4 | LOS A | 23 | 0.56 | 0.47 | 27.5 |
| 14R | R | 19 | 5.0 | 0.171 | 6.0 | LOS A | 23 | 0.56 | 0.59 | 26.4 |
| **Approach** | | **140** | **2.9** | **0.171** | **7.3** | **LOS A** | **23** | **0.56** | **0.59** | **25.7** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 133 | 2.3 | 0.136 | 10.8 | LOS B | 24 | 0.16 | 0.60 | 24.7 |
| 2T | T | 24 | 4.0 | 0.136 | 1.8 | LOS A | 24 | 0.16 | 0.20 | 30.9 |
| 2R | R | 45 | 2.2 | 0.136 | 1.8 | LOS A | 24 | 0.16 | 0.20 | 30.9 |
| **Approach** | | **203** | **2.5** | **0.136** | **7.7** | **LOS A** | **24** | **0.16** | **0.46** | **26.3** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 515 | 1.9 | 0.264 | 12.5 | LOS B | 44 | 0.39 | 0.67 | 23.7 |
| 18T | T | 41 | 2.4 | 0.265 | 2.8 | LOS A | 44 | 0.39 | 0.30 | 28.8 |
| 18R | R | 64 | 1.6 | 0.264 | 4.0 | LOS A | 44 | 0.39 | 0.40 | 27.8 |
| **Approach** | | **619** | **1.9** | **0.264** | **11.0** | **LOS B** | **44** | **0.39** | **0.62** | **24.2** |
| **All Vehicles** | | **1195** | **2.3** | **0.265** | **8.9** | **LOS A** | **44** | **0.41** | **0.57** | **25.1** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Short-term

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 22 | 4.3 | 0.181 | 10.7 | LOS B | 24 | 0.47 | 0.73 | 24.2 |
| 16T | T | 92 | 2.2 | 0.181 | 3.6 | LOS A | 24 | 0.47 | 0.38 | 28.1 |
| 16R | R | 55 | 1.8 | 0.182 | 5.2 | LOS A | 24 | 0.47 | 0.51 | 26.9 |
| **Approach** | | **170** | **2.4** | **0.181** | **5.1** | **LOS A** | **24** | **0.47** | **0.47** | **27.1** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.074 | 13.5 | LOS B | 9 | 0.49 | 0.79 | 23.4 |
| 6T | T | 40 | 2.5 | 0.073 | 3.9 | LOS A | 9 | 0.49 | 0.42 | 28.0 |
| 6R | R | 20 | 4.8 | 0.073 | 5.3 | LOS A | 9 | 0.49 | 0.52 | 27.0 |
| **Approach** | | **63** | **4.8** | **0.073** | **4.7** | **LOS A** | **9** | **0.49** | **0.47** | **27.5** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 43 | 2.3 | 0.151 | 12.4 | LOS B | 20 | 0.48 | 0.74 | 23.7 |
| 14T | T | 77 | 2.6 | 0.152 | 3.7 | LOS A | 20 | 0.48 | 0.40 | 28.1 |
| 14R | R | 19 | 5.0 | 0.152 | 5.3 | LOS A | 20 | 0.48 | 0.52 | 26.9 |
| **Approach** | | **140** | **2.9** | **0.152** | **6.6** | **LOS A** | **20** | **0.48** | **0.52** | **26.2** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 133 | 2.3 | 0.136 | 10.8 | LOS B | 24 | 0.16 | 0.60 | 24.7 |
| 2T | T | 24 | 4.0 | 0.136 | 1.8 | LOS A | 24 | 0.16 | 0.20 | 30.9 |
| 2R | R | 45 | 2.2 | 0.136 | 1.8 | LOS A | 24 | 0.16 | 0.20 | 31.0 |
| **Approach** | | **203** | **2.5** | **0.136** | **7.7** | **LOS A** | **24** | **0.16** | **0.46** | **26.3** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 276 | 2.2 | 0.164 | 12.4 | LOS B | 25 | 0.36 | 0.66 | 23.8 |
| 18T | T | 41 | 2.4 | 0.163 | 2.7 | LOS A | 25 | 0.36 | 0.29 | 29.0 |
| 18R | R | 64 | 1.6 | 0.164 | 3.9 | LOS A | 25 | 0.36 | 0.39 | 28.0 |
| **Approach** | | **381** | **2.1** | **0.163** | **9.9** | **LOS A** | **25** | **0.36** | **0.58** | **24.7** |
| **All Vehicles** | | **957** | **2.5** | **0.182** | **7.8** | **LOS A** | **25** | **0.36** | **0.52** | **25.7** |

Symbols which may appear in this table:

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt A

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 489.00 | 419.00 | 489 | 419 | 908 | 100.0 |
| | Zone 38 Subtotal | | | | | 489 | 419 | 908 | 100.0 |
| TOTAL | | | | | | 489 | 419 | 908 | 100.0 |





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt A

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 732.00 | 585.00 | 732 | 585 | 1317 | 100.0 |
| | Zone 38 Subtotal | | | | | 732 | 585 | 1317 | 100.0 |
| TOTAL | | | | | | 732 | 585 | 1317 | 100.0 |

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.371 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.7 |
| Optimal Cycle: | 18 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Added Vol: | 0 | 4 | 27 | 0 | 5 | 0 | 0 | 0 | 0 | 29 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 76 | 384 | 127 | 44 | 262 | 17 | 18 | 43 | 98 | 176 | 44 | 51 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 76 | 384 | 127 | 44 | 262 | 17 | 18 | 43 | 98 | 176 | 44 | 51 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 76 | 384 | 127 | 44 | 262 | 17 | 18 | 43 | 98 | 176 | 44 | 51 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 76 | 384 | 127 | 44 | 262 | 17 | 18 | 43 | 98 | 176 | 44 | 51 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.81 | 0.81 | 0.85 | 0.81 | 0.81 | 0.81 | 0.88 | 0.88 | 0.88 | 0.72 | 0.72 | 0.72 |
| Lanes: | 0.33 | 1.67 | 1.00 | 0.27 | 1.62 | 0.11 | 0.11 | 0.27 | 0.62 | 0.65 | 0.16 | 0.19 |
| Final Sat.: | 506 | 2559 | 1615 | 421 | 2510 | 163 | 190 | 453 | 1032 | 883 | 221 | 256 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.08 | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | 0.09 | 0.20 | 0.20 | 0.20 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 |
| Volume/Cap: | 0.37 | 0.37 | 0.19 | 0.26 | 0.26 | 0.26 | 0.18 | 0.18 | 0.18 | 0.37 | 0.37 | 0.37 |
| Delay/Veh: | 14.8 | 14.8 | 13.6 | 13.9 | 13.9 | 13.9 | 8.4 | 8.4 | 8.4 | 9.7 | 9.7 | 9.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.8 | 14.8 | 13.6 | 13.9 | 13.9 | 13.9 | 8.4 | 8.4 | 8.4 | 9.7 | 9.7 | 9.7 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | A | A | A |
| HCM2kAvgQ: | 4 | 4 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 4 | 4 | 4 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.351 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.7 |
| Optimal Cycle: | 17 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Added Vol: | 0 | 6 | 38 | 0 | 7 | 0 | 0 | 0 | 0 | 41 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 88 | 328 | 159 | 46 | 322 | 17 | 18 | 43 | 86 | 167 | 44 | 48 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 88 | 328 | 159 | 46 | 322 | 17 | 18 | 43 | 86 | 167 | 44 | 48 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 88 | 328 | 159 | 46 | 322 | 17 | 18 | 43 | 86 | 167 | 44 | 48 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 88 | 328 | 159 | 46 | 322 | 17 | 18 | 43 | 86 | 167 | 44 | 48 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.77 | 0.77 | 0.85 | 0.83 | 0.83 | 0.83 | 0.88 | 0.88 | 0.88 | 0.73 | 0.73 | 0.73 |
| Lanes: | 0.42 | 1.58 | 1.00 | 0.24 | 1.67 | 0.09 | 0.12 | 0.29 | 0.59 | 0.64 | 0.17 | 0.19 |
| Final Sat.: | 617 | 2300 | 1615 | 375 | 2626 | 139 | 206 | 491 | 983 | 889 | 234 | 255 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.14 | 0.14 | 0.10 | 0.12 | 0.12 | 0.12 | 0.09 | 0.09 | 0.09 | 0.19 | 0.19 | 0.19 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 |
| Volume/Cap: | 0.35 | 0.35 | 0.24 | 0.24 | 0.30 | 0.30 | 0.16 | 0.16 | 0.16 | 0.35 | 0.35 | 0.35 |
| Delay/Veh: | 14.5 | 14.5 | 13.9 | 14.2 | 14.2 | 14.2 | 8.3 | 8.3 | 8.3 | 9.6 | 9.6 | 9.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.5 | 14.5 | 13.9 | 14.2 | 14.2 | 14.2 | 8.3 | 8.3 | 8.3 | 9.6 | 9.6 | 9.6 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | A | A | A |
| HCM2kAvgQ: | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[ 21.6]

| Street Name: | Cloverdale Blvd | | | | | | | | | Lake St | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 542 | 113 | 46 | 472 | 0 | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 542 | 113 | 46 | 472 | 0 | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | | | |
| Added Vol: | 0 | 31 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| Initial Fut: | 0 | 573 | 113 | 46 | 506 | 0 | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Volume: | 0 | 573 | 113 | 46 | 506 | 0 | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 573 | 113 | 46 | 506 | 0 | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 6.8 | xxxx | 6.9 | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 3.5 | xxxx | 3.3 | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 686 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 975 | xxxx | 343 | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 917 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 253 | xxxx | 659 | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 917 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 243 | xxxx | 659 | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | | 0.31 | xxxx | 0.05 | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 1.3 | xxxx | 0.2 | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 9.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 26.5 | xxxx | 10.8 | | | | | | | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | | D | * | B | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | | 21.6 | | | | | | | | | |
| ApproachLOS: | * | | | * | | | * | | | | C | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: C[ 15.1]

| Street Name: | Cloverdale Blvd | | | | | | | | | Lake St | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 371 | 71 | 28 | 367 | 0 | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 371 | 71 | 28 | 367 | 0 | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | | | |
| Added Vol: | 0 | 44 | 0 | 0 | 48 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| Initial Fut: | 0 | 415 | 71 | 28 | 415 | 0 | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Volume: | 0 | 415 | 71 | 28 | 415 | 0 | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 415 | 71 | 28 | 415 | 0 | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 6.8 | xxxx | 6.9 | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 3.5 | xxxx | 3.3 | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 486 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 714 | xxxx | 243 | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1087 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 370 | xxxx | 764 | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 1087 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 363 | xxxx | 764 | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.03 | xxxx | xxxx | xxxx | xxxx | xxxx | | 0.19 | xxxx | 0.04 | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.7 | xxxx | 0.1 | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 17.2 | xxxx | 9.9 | | | | | | | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | | C | * | A | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | | 15.1 | | | | | | | | | |
| ApproachLOS: | * | | | * | | | * | | | | C | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.401 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 14.8 |
| Optimal Cycle: | 23 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Added Vol: | 0 | 0 | 4 | 34 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 31 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 15 | 465 | 137 | 186 | 446 | 6 | 5 | 14 | 25 | 198 | 25 | 272 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 15 | 465 | 137 | 186 | 446 | 6 | 5 | 14 | 25 | 198 | 25 | 272 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 15 | 465 | 137 | 186 | 446 | 6 | 5 | 14 | 25 | 198 | 25 | 272 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 15 | 465 | 137 | 186 | 446 | 6 | 5 | 14 | 25 | 198 | 25 | 272 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.92 | 0.92 | 0.95 | 0.95 | 0.95 | 0.92 | 0.92 | 0.92 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.54 | 0.46 | 1.00 | 1.97 | 0.03 | 0.11 | 0.32 | 0.57 | 1.78 | 0.22 | 1.00 |
| Final Sat.: | 1805 | 2694 | 794 | 1805 | 3555 | 48 | 198 | 555 | 990 | 3229 | 408 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.01 | 0.17 | 0.17 | 0.10 | 0.13 | 0.13 | 0.03 | 0.03 | 0.03 | 0.06 | 0.06 | 0.17 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.04 | 0.43 | 0.43 | 0.26 | 0.65 | 0.65 | 0.06 | 0.06 | 0.06 | 0.16 | 0.16 | 0.42 |
| Volume/Cap: | 0.19 | 0.40 | 0.40 | 0.40 | 0.19 | 0.19 | 0.40 | 0.40 | 0.40 | 0.38 | 0.38 | 0.40 |
| Delay/Veh: | 33.6 | 13.9 | 13.9 | 22.1 | 5.1 | 5.1 | 33.9 | 33.9 | 33.9 | 26.5 | 26.5 | 14.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.6 | 13.9 | 13.9 | 22.1 | 5.1 | 5.1 | 33.9 | 33.9 | 33.9 | 26.5 | 26.5 | 14.5 |
| LOS by Move: | C | B | B | C | A | A | C | C | C | C | C | B |
| HCM2kAvgQ: | 1 | 5 | 5 | 4 | 2 | 2 | 1 | 1 | 1 | 3 | 3 | 4 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.379 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 22.0 |
| Optimal Cycle: | 22 | Level Of Service: | C |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Added Vol: | 0 | 0 | 5 | 48 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 44 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 53 | 50 | 141 | 93 | 44 | 10 | 8 | 175 | 42 | 140 | 158 | 89 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 53 | 50 | 141 | 93 | 44 | 10 | 8 | 175 | 42 | 140 | 158 | 89 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 53 | 50 | 141 | 93 | 44 | 10 | 8 | 175 | 42 | 140 | 158 | 89 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 53 | 50 | 141 | 93 | 44 | 10 | 8 | 175 | 42 | 140 | 158 | 89 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.84 | 0.84 | 0.95 | 0.92 | 0.92 | 0.92 | 0.97 | 0.97 | 0.98 | 0.98 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.63 | 0.37 | 0.03 | 0.78 | 0.19 | 1.00 | 1.00 | 1.00 |
| Final Sat.: | 1805 | 1605 | 1605 | 1805 | 2859 | 650 | 66 | 1438 | 345 | 1856 | 1856 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.03 | 0.09 | 0.05 | 0.02 | 0.02 | 0.12 | 0.12 | 0.12 | 0.08 | 0.09 | 0.06 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.24 | 0.23 | 0.23 | 0.14 | 0.13 | 0.13 | 0.32 | 0.32 | 0.32 | 0.22 | 0.22 | 0.36 |
| Volume/Cap: | 0.12 | 0.13 | 0.38 | 0.38 | 0.12 | 0.12 | 0.38 | 0.38 | 0.38 | 0.34 | 0.38 | 0.15 |
| Delay/Veh: | 20.9 | 21.3 | 23.1 | 28.5 | 27.2 | 27.2 | 18.8 | 18.8 | 18.8 | 23.0 | 23.3 | 15.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 20.9 | 21.3 | 23.1 | 28.5 | 27.2 | 27.2 | 18.8 | 18.8 | 18.8 | 23.0 | 23.3 | 15.3 |
| LOS by Move: | C | C | C | C | C | C | B | B | B | C | C | B |
| HCM2kAvgQ: | 1 | 1 | 3 | 2 | 1 | 1 | 4 | 4 | 4 | 3 | 3 | 1 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: B[ 14.6]

| Street Name: | US 101 South Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 1 | 0 0 1 | 0 | 0 | 0 1 | 1 0 | 1 | 0 2 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 |
| Added Vol: | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 15 | 23 | 91 | 35 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 42 | 0 | 41 | 0 | 85 | 215 | 137 | 490 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 42 | 0 | 41 | 0 | 85 | 215 | 137 | 490 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 42 | 0 | 41 | 0 | 85 | 215 | 137 | 490 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 807 | 1064 | 245 | xxxx | xxxx | xxxxx | 300 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 323 | 225 | 762 | xxxx | xxxx | xxxxx | 1273 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 297 | 201 | 762 | xxxx | xxxx | xxxxx | 1273 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.14 | 0.00 | 0.05 | xxxx | xxxx | xxxx | 0.11 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 19.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx |
| LOS by Move: | * | * | * | C | * | * | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 762 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.0 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 14.6 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | B | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 3.1 Worst Case Level Of Service: B[ 13.7]

| Street Name: | US 101 South Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 1 | 0 0 1 | 0 | 0 | 0 1 | 1 0 | 1 | 0 2 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 |
| Added Vol: | 0 | 0 | 0 | 51 | 0 | 0 | 0 | 22 | 32 | 126 | 49 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 57 | 0 | 33 | 0 | 78 | 207 | 160 | 279 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 57 | 0 | 33 | 0 | 78 | 207 | 160 | 279 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 57 | 0 | 33 | 0 | 78 | 207 | 160 | 279 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 638 | 884 | 140 | xxxx | xxxx | xxxxx | 285 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 414 | 286 | 889 | xxxx | xxxx | xxxxx | 1289 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 374 | 251 | 889 | xxxx | xxxx | xxxxx | 1289 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.15 | 0.00 | 0.04 | xxxx | xxxx | xxxx | 0.12 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 16.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx |
| LOS by Move: | * | * | * | C | * | * | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 889 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.1 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 13.7 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | B | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.3 Worst Case Level Of Service: B[ 13.5]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 361 | | 0 | 79 | | 0 | 0 | | 0 | | 38 | 31 | | 0 | | 0 | 99 | | 16 | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 361 | | 0 | 79 | | 0 | 0 | | 0 | | 38 | 31 | | 0 | | 0 | 99 | | 16 | |
| Added Vol: | 0 | | 0 | 132 | | 0 | 0 | | 0 | | 0 | 49 | | 0 | | 0 | 126 | | 29 | |
| PasserByVol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| Initial Fut: | 361 | | 0 | 211 | | 0 | 0 | | 0 | | 38 | 80 | | 0 | | 0 | 225 | | 45 | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 361 | | 0 | 211 | | 0 | 0 | | 0 | | 38 | 80 | | 0 | | 0 | 225 | | 45 | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| FinalVolume: | 361 | | 0 | 211 | | 0 | 0 | | 0 | | 38 | 80 | | 0 | | 0 | 225 | | 45 | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 269 | 426 | | 40 | xxxx | xxxx | xxxxx | | 270 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 704 | 524 | | 1029 | xxxx | xxxx | xxxxx | | 1305 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 688 | 508 | | 1029 | xxxx | xxxx | xxxxx | | 1305 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.52 | 0.00 | | 0.21 | xxxx | xxxx | xxxx | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.8 | xxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 9.4 | xxxxx | xxxx | xxxxx | | 7.8 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 688 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | 3.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | 15.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | C | * | | * | * | * | * | * | * | * | * | * | * | | | | | | | |
| ApproachDel: | 13.5 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 5.6 Worst Case Level Of Service: B[ 10.9]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 187 | | 0 | 42 | | 0 | 0 | | 0 | | 33 | 30 | | 0 | | 0 | 82 | | 16 | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 187 | | 0 | 42 | | 0 | 0 | | 0 | | 33 | 30 | | 0 | | 0 | 82 | | 16 | |
| Added Vol: | 0 | | 0 | 198 | | 0 | 0 | | 0 | | 0 | 73 | | 0 | | 0 | 175 | | 41 | |
| PasserByVol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| Initial Fut: | 187 | | 0 | 240 | | 0 | 0 | | 0 | | 33 | 103 | | 0 | | 0 | 257 | | 57 | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 187 | | 0 | 240 | | 0 | 0 | | 0 | | 33 | 103 | | 0 | | 0 | 257 | | 57 | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| FinalVolume: | 187 | | 0 | 240 | | 0 | 0 | | 0 | | 33 | 103 | | 0 | | 0 | 257 | | 57 | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 298 | 483 | | 52 | xxxx | xxxx | xxxxx | | 314 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 675 | 486 | | 1012 | xxxx | xxxx | xxxxx | | 1258 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 662 | 473 | | 1012 | xxxx | xxxx | xxxxx | | 1258 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.28 | 0.00 | | 0.24 | xxxx | xxxx | xxxx | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.9 | xxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 9.7 | xxxxx | xxxx | xxxxx | | 7.9 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 662 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | 1.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | 12.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | B | * | | * | * | * | * | * | * | * | * | * | * | | | | | | | |
| ApproachDel: | 10.9 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.4 Worst Case Level Of Service: B[ 11.3]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Citrus Fair Dr | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 | | | | | | | | |
| Added Vol: | 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 181 | 0 | 0 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 224 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 207 | 0 | 0 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 224 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 207 | 0 | 0 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 224 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 207 | 0 | 0 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 93 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 576 | xxxx | 52 | xxxx | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 482 | xxxx | 1021 | xxxx | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 428 | xxxx | 1021 | xxxx | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | 0.15 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.21 | xxxx | 0.20 | xxxx | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.8 | xxxx | 0.8 | xxxx | xxxx | xxxxx | | | | | | | | |
| Control Del: | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 15.6 | xxxx | 9.4 | xxxxx | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | A | * | * | * | * | * | C | * | A | * | * | * | | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 11.3 | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | * | | | * | | | B | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.7 Worst Case Level Of Service: B[ 10.5]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Citrus Fair Dr | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 | | | | | | | | |
| Added Vol: | 216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 271 | 0 | 0 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 261 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 298 | 0 | 0 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 261 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 298 | 0 | 0 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 261 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 298 | 0 | 0 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 77 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 615 | xxxx | 43 | xxxx | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 458 | xxxx | 1033 | xxxx | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 398 | xxxx | 1033 | xxxx | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | 0.17 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.10 | xxxx | 0.29 | xxxx | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | 1.2 | xxxx | xxxx | xxxxx | | | | | | | | |
| Control Del: | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 15.1 | xxxx | 9.9 | xxxxx | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | A | * | * | * | * | * | C | * | A | * | * | * | | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 10.5 | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | * | | | * | | | B | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 25.6 Worst Case Level Of Service: F[ 63.5]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Project Access | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 0 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 308 | 181 | 0 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 119 | 308 | 181 | 72 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 119 | 308 | 181 | 72 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 119 | 308 | 181 | 72 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 427 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 707 | 707 | 273 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1143 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 405 | 363 | 771 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1143 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 350 | 299 | 771 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.75 | 0.00 | 0.20 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 438 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 11.4 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 63.5 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 63.5 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 174.6 Worst Case Level Of Service: F[429.6]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Project Access | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 0 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 461 | 271 | 0 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 77 | 461 | 271 | 60 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 77 | 461 | 271 | 60 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 77 | 461 | 271 | 60 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 538 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 910 | 910 | 308 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1040 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 308 | 277 | 737 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1040 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 235 | 192 | 737 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.26 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.57 | 0.00 | 0.29 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 313 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 39.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 430 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 429.6 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.502
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.6
Optimal Cycle: 27 | Level Of Service: C

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1 | 0 1 | 1 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 308 | 181 | 0 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 119 | 308 | 181 | 72 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 119 | 308 | 181 | 72 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 119 | 308 | 181 | 72 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 119 | 308 | 181 | 72 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.06 | 0.19 | 0.10 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.10 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.38 | 0.38 | 0.60 | 0.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.36 | 0.00 | 0.36 |
| Volume/Cap: | 0.00 | 0.16 | 0.50 | 0.22 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.27 |
| Delay/Veh: | 0.0 | 20.6 | 24.4 | 9.1 | 9.2 | 0.0 | 0.0 | 0.0 | 0.0 | 25.8 | 0.0 | 22.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 20.6 | 24.4 | 9.1 | 9.2 | 0.0 | 0.0 | 0.0 | 0.0 | 25.8 | 0.0 | 22.9 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 5 | 14 | 5 | 2 | 0 | 0 | 0 | 0 | 13 | 0 | 7 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.732
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 25.1
Optimal Cycle: 46 | Level Of Service: C

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1 | 0 1 | 1 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 461 | 271 | 0 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 77 | 461 | 271 | 60 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 77 | 461 | 271 | 60 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 77 | 461 | 271 | 60 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 77 | 461 | 271 | 60 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.04 | 0.29 | 0.15 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.00 | 0.13 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.39 | 0.39 | 0.62 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.34 | 0.00 | 0.34 |
| Volume/Cap: | 0.00 | 0.10 | 0.73 | 0.31 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.73 | 0.00 | 0.39 |
| Delay/Veh: | 0.0 | 19.5 | 30.5 | 9.0 | 8.5 | 0.0 | 0.0 | 0.0 | 0.0 | 34.2 | 0.0 | 25.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 19.5 | 30.5 | 9.0 | 8.5 | 0.0 | 0.0 | 0.0 | 0.0 | 34.2 | 0.0 | 25.2 |
| LOS by Move: | A | B | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 3 | 24 | 8 | 2 | 0 | 0 | 0 | 0 | 21 | 0 | 10 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[ 15.3]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 308 | 0 | 0 | 264 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 414 | 16 | 5 | 350 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 414 | 16 | 5 | 350 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 414 | 16 | 5 | 350 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 430 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 782 | 782 | 422 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1140 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 366 | 328 | 636 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1140 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 364 | 327 | 636 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.07 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 381 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 15.3 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 15.3 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[ 11.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Added Vol: | 0 | 461 | 0 | 0 | 369 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 526 | 1 | 4 | 444 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 526 | 1 | 4 | 444 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 526 | 1 | 4 | 444 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 527 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 527 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1050 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 555 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1050 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 555 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.5 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.5 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[ 12.3]

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Rights: | Include | | | | | | Include | | | | | | Include | | | | | | Include | | | | | |
| Lanes: | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 1 | 0 | 1 | | 0 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | |
| Volume Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 199 | 444 | 0 | 0 | 214 | 50 | | | | | | | 36 | 0 | 91 | 0 | 0 | 0 | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| Initial Bse: | 199 | 444 | 0 | 0 | 214 | 50 | | | | | | | 36 | 0 | 91 | 0 | 0 | 0 | | | | | | |
| Added Vol: | 11 | 4 | 0 | 0 | 4 | 0 | | | | | | | 0 | 0 | 11 | 0 | 0 | 0 | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Initial Fut: | 210 | 448 | 0 | 0 | 218 | 50 | | | | | | | 36 | 0 | 102 | 0 | 0 | 0 | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Volume: | 210 | 448 | 0 | 0 | 218 | 50 | | | | | | | 36 | 0 | 102 | 0 | 0 | 0 | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| FinalVolume: | 210 | 448 | 0 | 0 | 218 | 50 | | | | | | | 36 | 0 | 102 | 0 | 0 | 0 | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 268 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 1086 | 1086 | 218 | xxxx | xxxx | xxxxx | | | | | | |
| Potent Cap.: | 1307 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 242 | 218 | 827 | xxxx | xxxx | xxxxx | | | | | | |
| Move Cap.: | 1307 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 212 | 183 | 827 | xxxx | xxxx | xxxxx | | | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 295 | 263 | xxxxx | 216 | 245 | xxxxx | | | | | | |
| Volume/Cap: | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx | | | | | | | 0.12 | 0.00 | 0.12 | xxxx | xxxx | xxxx | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | xxxxx | xxxx | 10.0 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | * | * | * | * | | | | | | | * | * | A | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 295 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 18.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shared LOS: | * | * | * | * | * | * | | | | | | | C | * | * | * | * | * | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | | | | | | 12.3 | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | * | | | | | | | | | B | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: B[ 12.5]

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Rights: | Include | | | | | | Include | | | | | | Include | | | | | | Include | | | | | |
| Lanes: | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 1 | 0 | 1 | | 0 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | |
| Volume Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 146 | 340 | 0 | 0 | 318 | 43 | | | | | | | 43 | 0 | 144 | 0 | 0 | 0 | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| Initial Bse: | 146 | 340 | 0 | 0 | 318 | 43 | | | | | | | 43 | 0 | 144 | 0 | 0 | 0 | | | | | | |
| Added Vol: | 16 | 5 | 0 | 0 | 5 | 0 | | | | | | | 0 | 0 | 16 | 0 | 0 | 0 | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Initial Fut: | 162 | 345 | 0 | 0 | 323 | 43 | | | | | | | 43 | 0 | 160 | 0 | 0 | 0 | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Volume: | 162 | 345 | 0 | 0 | 323 | 43 | | | | | | | 43 | 0 | 160 | 0 | 0 | 0 | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| FinalVolume: | 162 | 345 | 0 | 0 | 323 | 43 | | | | | | | 43 | 0 | 160 | 0 | 0 | 0 | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 366 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 992 | 992 | 323 | xxxx | xxxx | xxxxx | | | | | | |
| Potent Cap.: | 1204 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 275 | 248 | 723 | xxxx | xxxx | xxxxx | | | | | | |
| Move Cap.: | 1204 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 246 | 214 | 723 | xxxx | xxxx | xxxxx | | | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 354 | 314 | xxxxx | 219 | 287 | xxxxx | | | | | | |
| Volume/Cap: | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx | | | | | | | 0.12 | 0.00 | 0.22 | xxxx | xxxx | xxxx | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | xxxx | xxxx | 0.8 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 8.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | xxxxx | xxxx | 11.4 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | * | * | * | * | | | | | | | * | * | B | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 354 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 16.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shared LOS: | * | * | * | * | * | * | | | | | | | C | * | * | * | * | * | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | | | | | | 12.5 | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | * | | | | | | | | | B | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 11.1 Worst Case Level Of Service: C[ 16.6]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 1 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Added Vol: | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 110 | 68 | 301 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 594 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 110 | 68 | 301 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 594 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 110 | 68 | 301 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 594 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 178 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 822 | xxxx | 144 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 346 | xxxx | 909 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 290 | xxxx | 909 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.21 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.23 | xxxx | 0.65 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.9 | xxxx | 5.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 21.1 | xxxx | 16.1 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | C |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 16.6 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: B[ 11.4]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 1 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Added Vol: | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 54 | 56 | 291 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 353 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 54 | 56 | 291 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 353 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 54 | 56 | 291 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 353 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 110 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 728 | xxxx | 82 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 393 | xxxx | 983 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 334 | xxxx | 983 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.12 | xxxx | 0.36 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | 1.6 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 17.2 | xxxx | 10.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.4 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 5.2 Worst Case Level Of Service: E[ 37.2]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 249 | 15 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 223 | 362 | 594 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 223 | 362 | 594 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 223 | 362 | 594 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1577 | 1688 | 594 | xxxx | xxxx | xxxxx | 370 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 122 | 95 | 509 | xxxx | xxxx | xxxxx | 1200 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 93 | 66 | 509 | xxxx | xxxx | xxxxx | 1200 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.47 | 0.00 | 0.13 | xxxx | xxxx | xxxx | 0.30 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.5 | xxxx | xxxx | xxxxx | 1.3 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 13.1 | xxxxx | xxxx | xxxxx | 9.3 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 93 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 2.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 73.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 37.2 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | E | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 5.8 Worst Case Level Of Service: D[ 31.7]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 347 | 21 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 253 | 444 | 345 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 253 | 444 | 345 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 253 | 444 | 345 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1485 | 1611 | 345 | xxxx | xxxx | xxxxx | 378 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 139 | 105 | 702 | xxxx | xxxx | xxxxx | 1192 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 99 | 66 | 702 | xxxx | xxxx | xxxxx | 1192 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.39 | 0.00 | 0.08 | xxxx | xxxx | xxxx | 0.37 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 1.7 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.6 | xxxxx | xxxx | xxxxx | 9.8 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 99 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 62.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 31.7 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | D | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 71.5 Worst Case Level Of Service: F[127.2]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Added Vol: | 0 | 0 | 308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 264 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 489 | 0 | 407 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 467 | 49 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Volume: | 489 | 0 | 407 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 467 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 489 | 0 | 407 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 467 | 49 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 767 | 791 | 107 | xxxx | xxxx | xxxxx | 516 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 373 | 324 | 953 | xxxx | xxxx | xxxxx | 1060 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 351 | 299 | 953 | xxxx | xxxx | xxxxx | 1060 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 1.39 | 0.00 | 0.43 | xxxx | xxxx | xxxx | 0.08 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 2.2 | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 11.6 | xxxxx | xxxx | xxxxx | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 351 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 24.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 223.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 127.2 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 12.5 Worst Case Level Of Service: C[ 23.0]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Added Vol: | 0 | 0 | 461 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 369 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 4 | 548 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 532 | 44 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Volume: | 262 | 4 | 548 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 532 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 262 | 4 | 548 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 532 | 44 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 782 | 804 | 90 | xxxx | xxxx | xxxxx | 576 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 366 | 319 | 973 | xxxx | xxxx | xxxxx | 1007 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 347 | 297 | 973 | xxxx | xxxx | xxxxx | 1007 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.76 | 0.01 | 0.56 | xxxx | xxxx | xxxx | 0.07 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 3.6 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 13.4 | xxxxx | xxxx | xxxxx | 8.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 346 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 6.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 42.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | E | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 23.0 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | C | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.730 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 26.2 |
| Optimal Cycle: | 46 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Added Vol: | 0 | 0 | 308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 264 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 489 | 0 | 407 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 467 | 49 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 489 | 0 | 407 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 467 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 489 | 0 | 407 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 467 | 49 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 489 | 0 | 407 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 467 | 49 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.91 | 0.09 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1697 | 178 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.36 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 | 0.05 | 0.06 | 0.00 | 0.00 | 0.28 | 0.28 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.50 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 | 0.06 | 0.44 | 0.00 | 0.00 | 0.38 | 0.38 |
| Volume/Cap: | 0.73 | 0.00 | 0.51 | 0.00 | 0.00 | 0.00 | 0.73 | 0.13 | 0.00 | 0.00 | 0.73 | 0.73 |
| Delay/Veh: | 23.8 | 0.0 | 17.4 | 0.0 | 0.0 | 0.0 | 66.9 | 16.6 | 0.0 | 0.0 | 30.6 | 30.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 23.8 | 0.0 | 17.4 | 0.0 | 0.0 | 0.0 | 66.9 | 16.6 | 0.0 | 0.0 | 30.6 | 30.6 |
| LOS by Move: | C | A | B | A | A | A | E | B | A | A | C | C |
| HCM2k95thQ: | 24 | 0 | 16 | 0 | 0 | 0 | 5 | 4 | 0 | 0 | 24 | 24 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.731 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 26.2 |
| Optimal Cycle: | 46 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Added Vol: | 0 | 0 | 461 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 369 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 4 | 548 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 532 | 44 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 4 | 548 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 532 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 262 | 4 | 548 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 532 | 44 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 262 | 4 | 548 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 532 | 44 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.94 | 0.94 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 0.98 | 0.02 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.92 | 0.08 |
| Final Sat.: | 1764 | 27 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1737 | 144 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.34 | 0.00 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.00 | 0.31 | 0.31 |
| Crit Moves: | | | **** | | | | **** | | | | **** | |
| Green/Cycle: | 0.47 | 0.47 | 0.47 | 0.00 | 0.00 | 0.00 | 0.05 | 0.47 | 0.00 | 0.00 | 0.42 | 0.42 |
| Volume/Cap: | 0.32 | 0.32 | 0.73 | 0.00 | 0.00 | 0.00 | 0.73 | 0.10 | 0.00 | 0.00 | 0.73 | 0.73 |
| Delay/Veh: | 16.8 | 16.8 | 25.2 | 0.0 | 0.0 | 0.0 | 71.8 | 14.7 | 0.0 | 0.0 | 27.9 | 27.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 16.8 | 16.8 | 25.2 | 0.0 | 0.0 | 0.0 | 71.8 | 14.7 | 0.0 | 0.0 | 27.9 | 27.9 |
| LOS by Move: | B | B | C | A | A | A | E | B | A | A | C | C |
| HCM2k95thQ: | 10 | 10 | 26 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 25 | 25 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 67.3  Worst Case Level Of Service: F[144.5]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 264 | 308 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 355 | 387 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 355 | 387 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 355 | 387 | 43 | 81 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 386 | xxxx | xxxxx | 52 | xxxx | xxxxx | 525 | 497 | 209 | 558 | 674 | 52 |
| Potent Cap.: | 1184 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 467 | 478 | 837 | 443 | 379 | 1022 |
| Move Cap.: | 1184 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 381 | 429 | 837 | 341 | 340 | 1022 |
| Volume/Cap: | 0.09 | xxxx | xxxx | 0.01 | xxxx | xxxx | 1.01 | 0.10 | 0.10 | 0.00 | 0.14 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.3 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 422 | xxxxx | xxxx | 384 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 20.5 | xxxxx | xxxxx | 0.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 144 | xxxxx | xxxxx | 16.0 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 144.5 | | | 16.0 | | |
| ApproachLOS: | * | | | * | | | F | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 136.3  Worst Case Level Of Service: F[275.7]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 369 | 461 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 442 | 516 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 442 | 516 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 442 | 516 | 43 | 77 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 470 | xxxx | xxxxx | 32 | xxxx | xxxxx | 517 | 489 | 249 | 549 | 710 | 32 |
| Potent Cap.: | 1102 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 472 | 482 | 795 | 450 | 361 | 1048 |
| Move Cap.: | 1102 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 386 | 436 | 795 | 349 | 327 | 1048 |
| Volume/Cap: | 0.09 | xxxx | xxxx | 0.01 | xxxx | xxxx | 1.34 | 0.10 | 0.10 | 0.00 | 0.14 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.6 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 415 | xxxxx | xxxx | 371 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 34.5 | xxxxx | xxxxx | 0.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 276 | xxxxx | xxxxx | 16.5 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 275.7 | | | 16.5 | | |
| ApproachLOS: | * | | | * | | | F | | | C | | |

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.682
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 33.4
Optimal Cycle: 40 | Level Of Service: C

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 264 | 308 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 355 | 387 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 355 | 387 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 108 | 51 | 1 | 10 | 31 | 355 | 387 | 43 | 81 | 1 | 47 | 10 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 355 | 387 | 43 | 81 | 1 | 47 | 10 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.97 | 0.97 | 0.97 | 0.88 | 0.88 | 0.88 | 0.94 | 0.94 | 0.94 | 0.98 | 0.98 | 0.98 |
| Lanes: | 0.67 | 0.32 | 0.01 | 0.02 | 0.08 | 0.90 | 0.76 | 0.08 | 0.16 | 0.02 | 0.81 | 0.17 |
| Final Sat.: | 1239 | 585 | 11 | 42 | 131 | 1496 | 1358 | 151 | 284 | 32 | 1503 | 320 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.09 | 0.09 | 0.09 | 0.24 | 0.24 | 0.24 | 0.28 | 0.28 | 0.28 | 0.03 | 0.03 | 0.03 |
| Crit Moves: | | **** | | | **** | | | **** | | | | **** |
| Green/Cycle: | 0.13 | 0.13 | 0.13 | 0.35 | 0.35 | 0.35 | 0.42 | 0.42 | 0.42 | 0.05 | 0.05 | 0.05 |
| Volume/Cap: | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 |
| Delay/Veh: | 49.6 | 49.6 | 49.6 | 31.2 | 31.2 | 31.2 | 26.3 | 26.3 | 26.3 | 67.3 | 67.3 | 67.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 49.6 | 49.6 | 49.6 | 31.2 | 31.2 | 31.2 | 26.3 | 26.3 | 26.3 | 67.3 | 67.3 | 67.3 |
| LOS by Move: | D | D | D | C | C | C | C | C | C | E | E | E |
| HCM2k95thQ: | 12 | 12 | 12 | 21 | 21 | 21 | 23 | 23 | 23 | 6 | 6 | 6 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.790
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 37.7
Optimal Cycle: 56 | Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 369 | 461 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 442 | 516 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 442 | 516 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 94 | 31 | 1 | 10 | 28 | 442 | 516 | 43 | 77 | 1 | 47 | 10 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 442 | 516 | 43 | 77 | 1 | 47 | 10 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.96 | 0.96 | 0.96 | 0.88 | 0.88 | 0.88 | 0.95 | 0.95 | 0.95 | 0.98 | 0.98 | 0.98 |
| Lanes: | 0.75 | 0.24 | 0.01 | 0.02 | 0.06 | 0.92 | 0.81 | 0.07 | 0.12 | 0.02 | 0.81 | 0.17 |
| Final Sat.: | 1365 | 450 | 15 | 35 | 97 | 1531 | 1458 | 121 | 218 | 32 | 1503 | 320 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.07 | 0.07 | 0.29 | 0.29 | 0.29 | 0.35 | 0.35 | 0.35 | 0.03 | 0.03 | 0.03 |
| Crit Moves: | | **** | | | **** | | | **** | | | | **** |
| Green/Cycle: | 0.09 | 0.09 | 0.09 | 0.37 | 0.37 | 0.37 | 0.45 | 0.45 | 0.45 | 0.04 | 0.04 | 0.04 |
| Volume/Cap: | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 |
| Delay/Veh: | 67.6 | 67.6 | 67.6 | 35.2 | 35.2 | 35.2 | 28.9 | 28.9 | 28.9 | 90.1 | 90.1 | 90.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 67.6 | 67.6 | 67.6 | 35.2 | 35.2 | 35.2 | 28.9 | 28.9 | 28.9 | 90.1 | 90.1 | 90.1 |
| LOS by Move: | E | E | E | D | D | D | C | C | C | F | F | F |
| HCM2k95thQ: | 11 | 11 | 11 | 26 | 26 | 26 | 30 | 30 | 30 | 7 | 7 | 7 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Short-term + Project A Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 22 | 4.3 | 0.242 | 12.4 | LOS B | 34 | 0.65 | 0.86 | 23.5 |
| 16T | T | 92 | 2.2 | 0.241 | 5.3 | LOS A | 34 | 0.65 | 0.57 | 26.8 |
| 16R | R | 55 | 1.8 | 0.241 | 6.9 | LOS A | 34 | 0.65 | 0.68 | 25.8 |
| **Approach** | | **170** | **2.4** | **0.241** | **6.7** | **LOS A** | **34** | **0.65** | **0.64** | **25.9** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.095 | 15.2 | LOS B | 13 | 0.65 | 0.89 | 22.8 |
| 6T | T | 40 | 2.5 | 0.097 | 5.6 | LOS A | 13 | 0.65 | 0.60 | 26.8 |
| 6R | R | 20 | 4.8 | 0.097 | 7.0 | LOS A | 13 | 0.65 | 0.67 | 26.0 |
| **Approach** | | **63** | **4.8** | **0.097** | **6.4** | **LOS A** | **13** | **0.65** | **0.63** | **26.4** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 43 | 2.3 | 0.512 | 15.1 | LOS B | 101 | 0.70 | 0.95 | 22.6 |
| 14T | T | 355 | 2.0 | 0.512 | 6.4 | LOS A | 101 | 0.70 | 0.74 | 26.4 |
| 14R | R | 19 | 5.0 | 0.513 | 8.0 | LOS A | 101 | 0.70 | 0.81 | 25.5 |
| **Approach** | | **418** | **2.2** | **0.512** | **7.4** | **LOS A** | **101** | **0.70** | **0.77** | **25.9** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 133 | 2.3 | 0.136 | 10.8 | LOS B | 25 | 0.17 | 0.60 | 24.7 |
| 2T | T | 24 | 4.0 | 0.137 | 1.8 | LOS A | 25 | 0.17 | 0.20 | 30.9 |
| 2R | R | 45 | 2.2 | 0.136 | 1.8 | LOS A | 25 | 0.17 | 0.20 | 30.9 |
| **Approach** | | **203** | **2.5** | **0.136** | **7.7** | **LOS A** | **25** | **0.17** | **0.46** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 515 | 1.9 | 0.397 | 12.7 | LOS B | 75 | 0.44 | 0.69 | 23.5 |
| 18T | T | 365 | 1.9 | 0.397 | 3.0 | LOS A | 75 | 0.44 | 0.32 | 28.4 |
| 18R | R | 64 | 1.6 | 0.398 | 4.1 | LOS A | 75 | 0.44 | 0.41 | 27.5 |
| **Approach** | | **943** | **1.9** | **0.397** | **8.4** | **LOS A** | **75** | **0.44** | **0.53** | **25.2** |
| **All Vehicles** | | **1797** | **2.2** | **0.513** | **7.8** | **LOS A** | **101** | **0.50** | **0.59** | **25.5** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Short-term+ Project A Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 21 | 4.5 | 0.182 | 12.2 | LOS B | 26 | 0.62 | 0.84 | 23.6 |
| 16T | T | 78 | 2.6 | 0.183 | 5.1 | LOS A | 26 | 0.62 | 0.55 | 27.0 |
| 16R | R | 34 | 2.9 | 0.183 | 6.7 | LOS A | 26 | 0.62 | 0.66 | 26.0 |
| **Approach** | | **134** | **3.0** | **0.182** | **6.7** | **LOS A** | **26** | **0.62** | **0.62** | **26.0** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.091 | 15.0 | LOS B | 13 | 0.62 | 0.88 | 22.9 |
| 6T | T | 39 | 2.6 | 0.092 | 5.4 | LOS A | 13 | 0.62 | 0.58 | 27.0 |
| 6R | R | 21 | 4.5 | 0.092 | 6.7 | LOS A | 13 | 0.62 | 0.64 | 26.2 |
| **Approach** | | **63** | **4.8** | **0.092** | **6.1** | **LOS A** | **13** | **0.62** | **0.61** | **26.5** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 40 | 2.5 | 0.526 | 13.4 | LOS B | 97 | 0.59 | 0.85 | 23.3 |
| 14T | T | 448 | 2.0 | 0.526 | 4.7 | LOS A | 97 | 0.59 | 0.53 | 27.2 |
| 14R | R | 17 | 5.6 | 0.529 | 6.3 | LOS A | 97 | 0.59 | 0.65 | 26.2 |
| **Approach** | | **506** | **2.2** | **0.526** | **5.4** | **LOS A** | **97** | **0.59** | **0.56** | **26.8** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 102 | 2.0 | 0.113 | 10.9 | LOS B | 20 | 0.16 | 0.61 | 24.7 |
| 2T | T | 23 | 4.2 | 0.113 | 1.8 | LOS A | 20 | 0.16 | 0.19 | 31.0 |
| 2R | R | 42 | 2.4 | 0.113 | 1.8 | LOS A | 20 | 0.16 | 0.19 | 31.0 |
| **Approach** | | **168** | **2.4** | **0.113** | **7.3** | **LOS A** | **20** | **0.16** | **0.44** | **26.5** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 276 | 2.2 | 0.287 | 12.6 | LOS B | 42 | 0.39 | 0.67 | 23.7 |
| 18T | T | 518 | 1.9 | 0.430 | 2.9 | LOS A | 84 | 0.42 | 0.30 | 28.5 |
| 18R | R | 62 | 1.6 | 0.431 | 4.0 | LOS A | 84 | 0.42 | 0.40 | 27.6 |
| **Approach** | | **856** | **2.0** | **0.430** | **6.1** | **LOS A** | **84** | **0.41** | **0.43** | **26.4** |
| **All Vehicles** | | **1727** | **2.3** | **0.529** | **6.1** | **LOS A** | **97** | **0.46** | **0.49** | **26.5** |

Symbols which may appear in this table:

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt B

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 363.00 | 323.00 | 363 | 323 | 686 | 100.0 |
| | Zone 38 Subtotal | | | | | 363 | 323 | 686 | 100.0 |
| TOTAL | | | | | | 363 | 323 | 686 | 100.0 |





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt B

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 545.00 | 439.00 | 545 | 439 | 984 | 100.0 |
| | Zone 38 Subtotal | | | | | 545 | 439 | 984 | 100.0 |
| TOTAL | | | | | | 545 | 439 | 984 | 100.0 |

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.364 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.5 |
| Optimal Cycle: | 18 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1! | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Added Vol: | 0 | 3 | 21 | 0 | 4 | 0 | 0 | 0 | 0 | 22 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 76 | 383 | 121 | 44 | 261 | 17 | 18 | 43 | 98 | 169 | 44 | 51 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 76 | 383 | 121 | 44 | 261 | 17 | 18 | 43 | 98 | 169 | 44 | 51 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 76 | 383 | 121 | 44 | 261 | 17 | 18 | 43 | 98 | 169 | 44 | 51 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 76 | 383 | 121 | 44 | 261 | 17 | 18 | 43 | 98 | 169 | 44 | 51 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.81 | 0.81 | 0.85 | 0.81 | 0.81 | 0.81 | 0.88 | 0.88 | 0.88 | 0.72 | 0.72 | 0.72 |
| Lanes: | 0.33 | 1.67 | 1.00 | 0.27 | 1.62 | 0.11 | 0.11 | 0.27 | 0.62 | 0.64 | 0.17 | 0.19 |
| Final Sat.: | 507 | 2557 | 1615 | 423 | 2508 | 163 | 190 | 453 | 1033 | 875 | 228 | 264 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.07 | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | 0.09 | 0.19 | 0.19 | 0.19 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| Volume/Cap: | 0.36 | 0.36 | 0.18 | 0.25 | 0.25 | 0.25 | 0.18 | 0.18 | 0.18 | 0.36 | 0.36 | 0.36 |
| Delay/Veh: | 14.4 | 14.4 | 13.2 | 13.6 | 13.6 | 13.6 | 8.6 | 8.6 | 8.6 | 9.9 | 9.9 | 9.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.4 | 14.4 | 13.2 | 13.6 | 13.6 | 13.6 | 8.6 | 8.6 | 8.6 | 9.9 | 9.9 | 9.9 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | A | A | A |
| HCM2kAvgQ: | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.341 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.5 |
| Optimal Cycle: | 17 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1! | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Added Vol: | 0 | 4 | 29 | 0 | 5 | 0 | 0 | 0 | 0 | 31 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 88 | 326 | 150 | 46 | 320 | 17 | 18 | 43 | 86 | 157 | 44 | 48 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 88 | 326 | 150 | 46 | 320 | 17 | 18 | 43 | 86 | 157 | 44 | 48 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 88 | 326 | 150 | 46 | 320 | 17 | 18 | 43 | 86 | 157 | 44 | 48 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 88 | 326 | 150 | 46 | 320 | 17 | 18 | 43 | 86 | 157 | 44 | 48 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.77 | 0.77 | 0.85 | 0.83 | 0.83 | 0.83 | 0.88 | 0.88 | 0.88 | 0.73 | 0.73 | 0.73 |
| Lanes: | 0.43 | 1.57 | 1.00 | 0.24 | 1.67 | 0.09 | 0.12 | 0.29 | 0.59 | 0.63 | 0.18 | 0.19 |
| Final Sat.: | 620 | 2297 | 1615 | 377 | 2624 | 139 | 206 | 491 | 983 | 875 | 245 | 268 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.14 | 0.14 | 0.09 | 0.12 | 0.12 | 0.12 | 0.09 | 0.09 | 0.09 | 0.18 | 0.18 | 0.18 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| Volume/Cap: | 0.34 | 0.34 | 0.22 | 0.29 | 0.29 | 0.29 | 0.17 | 0.17 | 0.17 | 0.34 | 0.34 | 0.34 |
| Delay/Veh: | 14.1 | 14.1 | 13.3 | 13.7 | 13.7 | 13.7 | 8.7 | 8.7 | 8.7 | 9.8 | 9.8 | 9.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.1 | 14.1 | 13.3 | 13.7 | 13.7 | 13.7 | 8.7 | 8.7 | 8.7 | 9.8 | 9.8 | 9.8 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | A | A | A |
| HCM2kAvgQ: | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[ 21.2]

| Street Name: | Cloverdale Blvd | | | | | | | | | Lake St | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 542 | 113 | | 46 | 472 | 0 | | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | |
| Initial Bse: | 0 | 542 | 113 | | 46 | 472 | 0 | | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | |
| Added Vol: | 0 | 24 | 0 | | 0 | 25 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | |
| PasserByVol: | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | |
| Initial Fut: | 0 | 566 | 113 | | 46 | 497 | 0 | | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | |
| PHF Volume: | 0 | 566 | 113 | | 46 | 497 | 0 | | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | |
| Reduct Vol: | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | |
| FinalVolume: | 0 | 566 | 113 | | 46 | 497 | 0 | | 0 | 0 | 0 | | 76 | 0 | 34 | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | 6.8 | xxxx | 6.9 | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | 3.5 | xxxx | 3.3 | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | | 679 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | 963 | xxxx | 340 | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | | 923 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | 257 | xxxx | 662 | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | | 923 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | 247 | xxxx | 662 | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | | 0.05 | xxxx | xxxx | | xxxx | xxxx | xxxx | | 0.31 | xxxx | 0.05 | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | 1.3 | xxxx | 0.2 | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | | 9.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | 25.9 | xxxx | 10.7 | | | | | |
| LOS by Move: | * | * | * | | A | * | * | * | * | * | | | D | * | B | | | | | |
| Movement: | LT - LTR - RT | | | | | LT - LTR - RT | | | | | LT - LTR - RT | | | | | LT - LTR - RT | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | | 9.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shared LOS: | * | * | * | | A | * | * | * | * | * | * | | * | * | * | | | | | |
| ApproachDel: | xxxxxx | | | | xxxxxx | | | xxxxxx | | | | | 21.2 | | | | | | | |
| ApproachLOS: | * | | | | * | | | * | | | | | C | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[ 14.8]

| Street Name: | Cloverdale Blvd | | | | | | | | | Lake St | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 371 | 71 | | 28 | 367 | 0 | | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | |
| Initial Bse: | 0 | 371 | 71 | | 28 | 367 | 0 | | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | |
| Added Vol: | 0 | 33 | 0 | | 0 | 36 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | |
| PasserByVol: | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | |
| Initial Fut: | 0 | 404 | 71 | | 28 | 403 | 0 | | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | |
| PHF Volume: | 0 | 404 | 71 | | 28 | 403 | 0 | | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | |
| Reduct Vol: | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | |
| FinalVolume: | 0 | 404 | 71 | | 28 | 403 | 0 | | 0 | 0 | 0 | | 68 | 0 | 27 | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | 6.8 | xxxx | 6.9 | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | 3.5 | xxxx | 3.3 | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | | 475 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | 697 | xxxx | 238 | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | | 1098 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | 380 | xxxx | 770 | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | | 1098 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | 372 | xxxx | 770 | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | 0.18 | xxxx | 0.04 | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | 0.7 | xxxx | 0.1 | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | 16.8 | xxxx | 9.8 | | | | | |
| LOS by Move: | * | * | * | | A | * | * | * | * | * | | | C | * | A | | | | | |
| Movement: | LT - LTR - RT | | | | | LT - LTR - RT | | | | | LT - LTR - RT | | | | | LT - LTR - RT | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shared LOS: | * | * | * | | A | * | * | * | * | * | * | | * | * | * | | | | | |
| ApproachDel: | xxxxxx | | | | xxxxxx | | | xxxxxx | | | | | 14.8 | | | | | | | |
| ApproachLOS: | * | | | | * | | | * | | | | | B | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.396 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 14.8 |
| Optimal Cycle: | 23 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Added Vol: | 0 | 0 | 3 | 25 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 24 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 15 | 465 | 136 | 177 | 446 | 6 | 5 | 14 | 25 | 197 | 25 | 265 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 15 | 465 | 136 | 177 | 446 | 6 | 5 | 14 | 25 | 197 | 25 | 265 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 15 | 465 | 136 | 177 | 446 | 6 | 5 | 14 | 25 | 197 | 25 | 265 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 15 | 465 | 136 | 177 | 446 | 6 | 5 | 14 | 25 | 197 | 25 | 265 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.92 | 0.92 | 0.95 | 0.95 | 0.95 | 0.92 | 0.92 | 0.92 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.55 | 0.45 | 1.00 | 1.97 | 0.03 | 0.11 | 0.32 | 0.57 | 1.77 | 0.23 | 1.00 |
| Final Sat.: | 1805 | 2698 | 789 | 1805 | 3555 | 48 | 198 | 555 | 990 | 3230 | 410 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.01 | 0.17 | 0.17 | 0.10 | 0.13 | 0.13 | 0.03 | 0.03 | 0.03 | 0.06 | 0.06 | 0.16 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.04 | 0.44 | 0.44 | 0.25 | 0.64 | 0.64 | 0.06 | 0.06 | 0.06 | 0.17 | 0.17 | 0.41 |
| Volume/Cap: | 0.20 | 0.40 | 0.40 | 0.40 | 0.20 | 0.20 | 0.40 | 0.40 | 0.40 | 0.37 | 0.37 | 0.40 |
| Delay/Veh: | 33.6 | 13.6 | 13.6 | 22.5 | 5.2 | 5.2 | 33.8 | 33.8 | 33.8 | 26.2 | 26.2 | 14.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.6 | 13.6 | 13.6 | 22.5 | 5.2 | 5.2 | 33.8 | 33.8 | 33.8 | 26.2 | 26.2 | 14.7 |
| LOS by Move: | C | B | B | C | A | A | C | C | C | C | C | B |
| HCM2kAvgQ: | 1 | 5 | 5 | 4 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 4 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.371 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 21.9 |
| Optimal Cycle: | 22 | Level Of Service: | C |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Added Vol: | 0 | 0 | 4 | 36 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 53 | 50 | 140 | 81 | 44 | 10 | 8 | 175 | 42 | 139 | 158 | 78 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 53 | 50 | 140 | 81 | 44 | 10 | 8 | 175 | 42 | 139 | 158 | 78 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 53 | 50 | 140 | 81 | 44 | 10 | 8 | 175 | 42 | 139 | 158 | 78 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 53 | 50 | 140 | 81 | 44 | 10 | 8 | 175 | 42 | 139 | 158 | 78 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.84 | 0.84 | 0.84 | 0.95 | 0.92 | 0.92 | 0.97 | 0.97 | 0.97 | 0.98 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.63 | 0.37 | 0.03 | 0.78 | 0.19 | 1.00 | 1.00 | 1.00 |
| Final Sat.: | 1805 | 1605 | 1605 | 1805 | 2859 | 650 | 66 | 1438 | 345 | 1856 | 1856 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.03 | 0.09 | 0.04 | 0.02 | 0.02 | 0.12 | 0.12 | 0.12 | 0.07 | 0.09 | 0.05 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.23 | 0.24 | 0.24 | 0.12 | 0.12 | 0.12 | 0.33 | 0.33 | 0.33 | 0.23 | 0.23 | 0.35 |
| Volume/Cap: | 0.13 | 0.13 | 0.37 | 0.37 | 0.13 | 0.13 | 0.37 | 0.37 | 0.37 | 0.33 | 0.37 | 0.14 |
| Delay/Veh: | 21.3 | 21.2 | 22.9 | 29.4 | 27.5 | 27.5 | 18.4 | 18.4 | 18.4 | 22.7 | 23.0 | 15.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 21.3 | 21.2 | 22.9 | 29.4 | 27.5 | 27.5 | 18.4 | 18.4 | 18.4 | 22.7 | 23.0 | 15.6 |
| LOS by Move: | C | C | C | C | C | C | B | B | B | C | C | B |
| HCM2kAvgQ: | 1 | 1 | 3 | 2 | 1 | 1 | 4 | 4 | 4 | 3 | 3 | 1 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: B[ 13.2]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 1 | 0 0 1 | 0 | 0 0 | 1 | 1 0 | 1 | 0 2 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 |
| Added Vol: | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 11 | 17 | 70 | 27 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 33 | 0 | 41 | 0 | 81 | 209 | 116 | 482 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 33 | 0 | 41 | 0 | 81 | 209 | 116 | 482 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 33 | 0 | 41 | 0 | 81 | 209 | 116 | 482 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 755 | 1004 | 241 | xxxx | xxxx | xxxxx | 290 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 349 | 244 | 766 | xxxx | xxxx | xxxxx | 1283 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 325 | 222 | 766 | xxxx | xxxx | xxxxx | 1283 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.10 | 0.00 | 0.05 | xxxx | xxxx | xxxx | 0.09 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 17.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx |
| LOS by Move: | * | * | * | C | * | * | * | * | * | A | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 766 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.0 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 13.2 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | B | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.7 Worst Case Level Of Service: B[ 12.1]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 1 | 0 0 1 | 0 | 0 0 | 1 | 1 0 | 1 | 0 2 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 |
| Added Vol: | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 16 | 24 | 95 | 37 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 44 | 0 | 33 | 0 | 72 | 199 | 129 | 267 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 44 | 0 | 33 | 0 | 72 | 199 | 129 | 267 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 44 | 0 | 33 | 0 | 72 | 199 | 129 | 267 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 561 | 796 | 134 | xxxx | xxxx | xxxxx | 271 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 462 | 322 | 897 | xxxx | xxxx | xxxxx | 1304 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 427 | 290 | 897 | xxxx | xxxx | xxxxx | 1304 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.10 | 0.00 | 0.04 | xxxx | xxxx | xxxx | 0.10 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 14.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx |
| LOS by Move: | * | * | * | B | * | * | * | * | * | A | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 897 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.1 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 12.1 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | B | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: B[ 13.1]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 31 | | 0 | 0 | | 99 | | 16 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 31 | | 0 | 0 | | 99 | | 16 |
| Added Vol: | 0 | | 0 | | 98 | 0 | | 0 | | 0 | 0 | | 36 | | 0 | 0 | | 97 | | 23 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 361 | | 0 | | 177 | 0 | | 0 | | 0 | 38 | | 67 | | 0 | 0 | | 196 | | 39 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 361 | | 0 | | 177 | 0 | | 0 | | 0 | 38 | | 67 | | 0 | 0 | | 196 | | 39 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 361 | | 0 | | 177 | 0 | | 0 | | 0 | 38 | | 67 | | 0 | 0 | | 196 | | 39 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | | 6.9 | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 3.5 | 4.0 | | | 3.3 | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 241 | 378 | | | 34 | xxxx | xxxx | xxxxx | | | 235 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| Potent Cap.: | 732 | 557 | | | 1039 | xxxx | xxxx | xxxxx | | | 1344 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| Move Cap.: | 716 | 541 | | | 1039 | xxxx | xxxx | xxxxx | | | 1344 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| Volume/Cap: | 0.50 | 0.00 | | | 0.17 | xxxx | xxxx | xxxx | | | 0.03 | xxxx | xxxx | | | xxxx | xxxx | xxxx | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | | 0.6 | xxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| Control Del: | xxxxx | xxxx | | | 9.2 | xxxxx | xxxx | xxxxx | | | 7.8 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| LOS by Move: | * | * | | | A | * | * | * | | | A | * | * | | | * | * | * | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 716 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | 2.9 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | 15.0 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | C | * | | * | | * | * | | * | | * | * | | * | | * | * | | * | |
| ApproachDel: | 13.1 | | | xxxxxx | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 5.6 Worst Case Level Of Service: B[ 10.6]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 30 | | 0 | 0 | | 82 | | 16 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 30 | | 0 | 0 | | 82 | | 16 |
| Added Vol: | 0 | | 0 | | 147 | 0 | | 0 | | 0 | 0 | | 55 | | 0 | 0 | | 132 | | 31 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 187 | | 0 | | 189 | 0 | | 0 | | 0 | 33 | | 85 | | 0 | 0 | | 214 | | 47 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 187 | | 0 | | 189 | 0 | | 0 | | 0 | 33 | | 85 | | 0 | 0 | | 214 | | 47 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 187 | | 0 | | 189 | 0 | | 0 | | 0 | 33 | | 85 | | 0 | 0 | | 214 | | 47 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | | 6.9 | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 3.5 | 4.0 | | | 3.3 | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 258 | 412 | | | 43 | xxxx | xxxx | xxxxx | | | 261 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| Potent Cap.: | 714 | 533 | | | 1025 | xxxx | xxxx | xxxxx | | | 1315 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| Move Cap.: | 701 | 520 | | | 1025 | xxxx | xxxx | xxxxx | | | 1315 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| Volume/Cap: | 0.27 | 0.00 | | | 0.18 | xxxx | xxxx | xxxx | | | 0.03 | xxxx | xxxx | | | xxxx | xxxx | xxxx | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | | 0.7 | xxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| Control Del: | xxxxx | xxxx | | | 9.3 | xxxxx | xxxx | xxxxx | | | 7.8 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| LOS by Move: | * | * | | | A | * | * | * | | | A | * | * | | | * | * | * | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 701 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | 1.1 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | 12.0 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | B | * | | * | | * | * | | * | | * | * | | * | | * | * | | * | |
| ApproachDel: | 10.6 | | | xxxxxx | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.9 Worst Case Level Of Service: B[ 11.0]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Citrus Fair Dr | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 | | | | | | | | |
| Added Vol: | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 134 | 0 | 0 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 189 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 160 | 0 | 0 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 189 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 160 | 0 | 0 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 189 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 160 | 0 | 0 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 93 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 506 | xxxx | 52 | xxxx | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 530 | xxxx | 1021 | xxxx | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 479 | xxxx | 1021 | xxxx | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | 0.12 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.18 | xxxx | 0.16 | xxxx | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.7 | xxxx | 0.6 | xxxx | xxxx | xxxxx | | | | | | | | |
| Control Del: | 7.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 14.2 | xxxx | 9.2 | xxxxx | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | A | * | * | * | * | * | B | * | A | * | * | * | | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 11.0 | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | * | | | * | | | B | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.1 Worst Case Level Of Service: B[ 10.1]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Citrus Fair Dr | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 | | | | | | | | |
| Added Vol: | 162 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 202 | 0 | 0 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 207 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 229 | 0 | 0 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 207 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 229 | 0 | 0 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 207 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 229 | 0 | 0 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 77 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 507 | xxxx | 43 | xxxx | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 529 | xxxx | 1033 | xxxx | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 474 | xxxx | 1033 | xxxx | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.09 | xxxx | 0.22 | xxxx | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | 0.8 | xxxx | xxxx | xxxxx | | | | | | | | |
| Control Del: | 7.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 13.3 | xxxx | 9.5 | xxxxx | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | A | * | * | * | * | * | B | * | A | * | * | * | | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 10.1 | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | * | | | * | | | B | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 9.3 Worst Case Level Of Service: C[ 21.8]

| Street Name: | Asti (Frontage) Rd | | | | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 229 | 134 | 0 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 119 | 229 | 134 | 72 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 119 | 229 | 134 | 72 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 119 | 229 | 134 | 72 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 348 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 574 | 574 | 234 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1222 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 484 | 432 | 811 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1222 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 440 | 381 | 811 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.11 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.46 | 0.00 | 0.15 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 530 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 4.0 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 21.8 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 21.8 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 32.6 Worst Case Level Of Service: F[ 79.1]

| Street Name: | Asti (Frontage) Rd | | | | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 343 | 202 | 0 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 77 | 343 | 202 | 60 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 77 | 343 | 202 | 60 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 77 | 343 | 202 | 60 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 420 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 713 | 713 | 249 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1150 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 402 | 360 | 795 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1150 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 341 | 289 | 795 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.18 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.81 | 0.00 | 0.20 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 432 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 13.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 79.1 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 79.1 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.378 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 19.5 |
| Optimal Cycle: | 22 | Level Of Service: | B |

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1 | 0 1 | 1 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 229 | 134 | 0 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 119 | 229 | 134 | 72 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 119 | 229 | 134 | 72 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 119 | 229 | 134 | 72 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 119 | 229 | 134 | 72 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.06 | 0.14 | 0.07 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.07 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.38 | 0.38 | 0.59 | 0.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.37 | 0.00 | 0.37 |
| Volume/Cap: | 0.00 | 0.17 | 0.38 | 0.17 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.38 | 0.00 | 0.20 |
| Delay/Veh: | 0.0 | 20.9 | 23.1 | 9.2 | 9.5 | 0.0 | 0.0 | 0.0 | 0.0 | 23.6 | 0.0 | 21.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 20.9 | 23.1 | 9.2 | 9.5 | 0.0 | 0.0 | 0.0 | 0.0 | 23.6 | 0.0 | 21.7 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 5 | 10 | 4 | 2 | 0 | 0 | 0 | 0 | 9 | 0 | 5 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.547 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 21.2 |
| Optimal Cycle: | 30 | Level Of Service: | C |

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1 | 0 1 | 1 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 343 | 202 | 0 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 77 | 343 | 202 | 60 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 77 | 343 | 202 | 60 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 77 | 343 | 202 | 60 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 77 | 343 | 202 | 60 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.04 | 0.21 | 0.11 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.10 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.39 | 0.39 | 0.61 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.35 | 0.00 | 0.35 |
| Volume/Cap: | 0.00 | 0.10 | 0.55 | 0.23 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.55 | 0.00 | 0.29 |
| Delay/Veh: | 0.0 | 19.5 | 24.8 | 8.6 | 8.6 | 0.0 | 0.0 | 0.0 | 0.0 | 27.6 | 0.0 | 24.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 19.5 | 24.8 | 8.6 | 8.6 | 0.0 | 0.0 | 0.0 | 0.0 | 27.6 | 0.0 | 24.0 |
| LOS by Move: | A | B | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 3 | 16 | 6 | 2 | 0 | 0 | 0 | 0 | 14 | 0 | 7 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[ 13.4]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 229 | 0 | 0 | 203 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 335 | 16 | 5 | 289 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 335 | 16 | 5 | 289 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 335 | 16 | 5 | 289 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 351 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 642 | 642 | 343 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1219 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 442 | 395 | 704 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1219 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 440 | 393 | 704 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.06 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 457 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.2 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 13.4 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 13.4 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[ 10.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Added Vol: | 0 | 343 | 0 | 0 | 277 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 408 | 1 | 4 | 352 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 408 | 1 | 4 | 352 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 408 | 1 | 4 | 352 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 409 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 409 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1161 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 647 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1161 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 647 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 10.6 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[ 12.3]

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Rights: | Include | | | | | | Include | | | | | | Include | | | | | | Include | | | | | |
| Lanes: | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 1 | 0 | 1 | | 0 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | |
| Volume Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 199 | 444 | 0 | 0 | 214 | 50 | | | | | | | 36 | 0 | 91 | 0 | 0 | 0 | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| Initial Bse: | 199 | 444 | 0 | 0 | 214 | 50 | | | | | | | 36 | 0 | 91 | 0 | 0 | 0 | | | | | | |
| Added Vol: | 9 | 3 | 0 | 0 | 3 | 0 | | | | | | | 0 | 0 | 9 | 0 | 0 | 0 | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Initial Fut: | 208 | 447 | 0 | 0 | 217 | 50 | | | | | | | 36 | 0 | 100 | 0 | 0 | 0 | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Volume: | 208 | 447 | 0 | 0 | 217 | 50 | | | | | | | 36 | 0 | 100 | 0 | 0 | 0 | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| FinalVolume: | 208 | 447 | 0 | 0 | 217 | 50 | | | | | | | 36 | 0 | 100 | 0 | 0 | 0 | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 267 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 1080 | 1080 | 217 | xxxx | xxxx | xxxxx | | | | | | |
| Potent Cap.: | 1308 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 244 | 220 | 828 | xxxx | xxxx | xxxxx | | | | | | |
| Move Cap.: | 1308 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 214 | 185 | 828 | xxxx | xxxx | xxxxx | | | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 297 | 264 | xxxxx | 218 | 247 | xxxxx | | | | | | |
| Volume/Cap: | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx | | | | | | | 0.12 | 0.00 | 0.12 | xxxx | xxxx | xxxx | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | xxxxx | xxxx | 9.9 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | * | * | * | * | | | | | | | * | * | A | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | | | | LT - LTR - RT | | | | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 297 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 18.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shared LOS: | * | * | * | * | * | * | | | | | | | C | * | * | * | * | * | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | | | | | | 12.3 | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | * | | | | | | | | | B | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: B[ 12.4]

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Rights: | Include | | | | | | Include | | | | | | Include | | | | | | Include | | | | | |
| Lanes: | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 1 | 0 | 1 | | 0 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | |
| Volume Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 146 | 340 | 0 | 0 | 318 | 43 | | | | | | | 43 | 0 | 144 | 0 | 0 | 0 | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| Initial Bse: | 146 | 340 | 0 | 0 | 318 | 43 | | | | | | | 43 | 0 | 144 | 0 | 0 | 0 | | | | | | |
| Added Vol: | 12 | 4 | 0 | 0 | 4 | 0 | | | | | | | 0 | 0 | 12 | 0 | 0 | 0 | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Initial Fut: | 158 | 344 | 0 | 0 | 322 | 43 | | | | | | | 43 | 0 | 156 | 0 | 0 | 0 | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Volume: | 158 | 344 | 0 | 0 | 322 | 43 | | | | | | | 43 | 0 | 156 | 0 | 0 | 0 | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| FinalVolume: | 158 | 344 | 0 | 0 | 322 | 43 | | | | | | | 43 | 0 | 156 | 0 | 0 | 0 | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 365 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 982 | 982 | 322 | xxxx | xxxx | xxxxx | | | | | | |
| Potent Cap.: | 1205 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 279 | 251 | 724 | xxxx | xxxx | xxxxx | | | | | | |
| Move Cap.: | 1205 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 251 | 218 | 724 | xxxx | xxxx | xxxxx | | | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 358 | 317 | xxxxx | 225 | 291 | xxxxx | | | | | | |
| Volume/Cap: | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx | | | | | | | 0.12 | 0.00 | 0.22 | xxxx | xxxx | xxxx | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | xxxx | xxxx | 0.8 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | xxxxx | xxxx | 11.3 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | * | * | * | * | | | | | | | * | * | B | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | | | | LT - LTR - RT | | | | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 358 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 16.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shared LOS: | * | * | * | * | * | * | | | | | | | C | * | * | * | * | * | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | | | | | | 12.4 | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | * | | | | | | | | | B | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 11.0 Worst Case Level Of Service: C[ 16.5]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1 | 0 | 1 | 0 1 | 0 | 0 0 | 0 | 0 0 | 1 | 0 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Added Vol: | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 110 | 68 | 298 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 591 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 110 | 68 | 298 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 591 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 110 | 68 | 298 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 591 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 178 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 816 | xxxx | 144 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 349 | xxxx | 909 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 292 | xxxx | 909 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.21 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.23 | xxxx | 0.65 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.9 | xxxx | 5.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 20.9 | xxxx | 16.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | C |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 16.5 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: B[ 11.3]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1 | 0 | 1 | 0 1 | 0 | 0 0 | 0 | 0 0 | 1 | 0 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Added Vol: | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 54 | 56 | 286 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 348 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 54 | 56 | 286 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 348 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 54 | 56 | 286 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 348 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 110 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 718 | xxxx | 82 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 399 | xxxx | 983 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 340 | xxxx | 983 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.12 | xxxx | 0.35 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | 1.6 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 17.0 | xxxx | 10.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.3 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.4 Worst Case Level Of Service: D[ 29.3]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 1 | 0 0 | 0 | 1 0 | 1 | 0 | 1 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 192 | 12 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 220 | 305 | 591 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 220 | 305 | 591 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 220 | 305 | 591 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1458 | 1568 | 591 | xxxx | xxxx | xxxxx | 367 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 144 | 112 | 511 | xxxx | xxxx | xxxxx | 1203 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 116 | 84 | 511 | xxxx | xxxx | xxxxx | 1203 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.38 | 0.00 | 0.13 | xxxx | xxxx | xxxx | 0.25 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | 1.0 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 13.1 | xxxxx | xxxx | xxxxx | 9.0 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 116 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 53.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 29.3 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | D | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.7 Worst Case Level Of Service: C[ 22.9]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 1 | 0 0 | 0 | 1 0 | 1 | 0 | 1 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 261 | 16 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 248 | 358 | 340 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 248 | 358 | 340 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 248 | 358 | 340 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1305 | 1429 | 340 | xxxx | xxxx | xxxxx | 373 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 178 | 136 | 707 | xxxx | xxxx | xxxxx | 1197 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 137 | 95 | 707 | xxxx | xxxx | xxxxx | 1197 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.28 | 0.00 | 0.08 | xxxx | xxxx | xxxx | 0.30 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 1.3 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.5 | xxxxx | xxxx | xxxxx | 9.3 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 137 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 41.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | E | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 22.9 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 61.1 Worst Case Level Of Service: F[108.6]

| Street Name: | 101 N Ramps | | | | | | | | | South Interchange | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | Stop Sign | | | | Uncontrolled | | | | Uncontrolled | | | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 489 | | 0 | | 99 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 203 | | 49 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 489 | | 0 | | 99 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 203 | | 49 |
| Added Vol: | 0 | | 0 | | 229 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 203 | | 0 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 489 | | 0 | | 328 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 406 | | 49 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 489 | | 0 | | 328 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 406 | | 49 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 489 | | 0 | | 328 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 406 | | 49 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | | 6.2 | xxxxx | xxxx | xxxxx | | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 706 | 730 | | 107 | xxxx | xxxx | xxxxx | | | | 455 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Potent Cap.: | 406 | 352 | | 953 | xxxx | xxxx | xxxxx | | | | 1116 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Move Cap.: | 382 | 325 | | 953 | xxxx | xxxx | xxxxx | | | | 1116 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Volume/Cap: | 1.28 | 0.00 | | 0.34 | xxxx | xxxx | xxxx | | | | 0.08 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 1.5 | xxxx | xxxx | xxxxx | | | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Control Del: | xxxxx | xxxx | | 10.8 | xxxxx | xxxx | xxxxx | | | | 8.5 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | |
| LOS by Move: | * | * | | B | * | * | * | | | | A | * | * | | * | * | * | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 382 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | 21.8 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | 174.2 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | F | * | | * | | * | * | | * | | * | * | | * | | * | * | | * | |
| ApproachDel: | 108.6 | | | | | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | |
| ApproachLOS: | F | | | | | * | | | | | * | | | | | * | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 10.4 Worst Case Level Of Service: C[ 19.1]

| Street Name: | 101 N Ramps | | | | | | | | | South Interchange | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | Stop Sign | | | | Uncontrolled | | | | Uncontrolled | | | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 262 | | 4 | | 87 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 163 | | 44 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 262 | | 4 | | 87 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 163 | | 44 |
| Added Vol: | 0 | | 0 | | 343 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 277 | | 0 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 262 | | 4 | | 430 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 440 | | 44 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 262 | | 4 | | 430 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 440 | | 44 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 262 | | 4 | | 430 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 440 | | 44 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | | 6.2 | xxxxx | xxxx | xxxxx | | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 690 | 712 | | 90 | xxxx | xxxx | xxxxx | | | | 484 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Potent Cap.: | 414 | 360 | | 973 | xxxx | xxxx | xxxxx | | | | 1089 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Move Cap.: | 394 | 337 | | 973 | xxxx | xxxx | xxxxx | | | | 1089 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Volume/Cap: | 0.66 | 0.01 | | 0.44 | xxxx | xxxx | xxxx | | | | 0.06 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 2.3 | xxxx | xxxx | xxxxx | | | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Control Del: | xxxxx | xxxx | | 11.6 | xxxxx | xxxx | xxxxx | | | | 8.5 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | |
| LOS by Move: | * | * | | B | * | * | * | | | | A | * | * | | * | * | * | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 393 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | 4.8 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | 31.3 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | D | * | | * | | * | * | | * | | * | * | | * | | * | * | | * | |
| ApproachDel: | 19.1 | | | | | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | |
| ApproachLOS: | C | | | | | * | | | | | * | | | | | * | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.695 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 24.8 |
| Optimal Cycle: | 42 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Added Vol: | 0 | 0 | 229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 203 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 489 | 0 | 328 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 406 | 49 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 489 | 0 | 328 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 406 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 489 | 0 | 328 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 406 | 49 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 489 | 0 | 328 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 406 | 49 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.89 | 0.11 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1670 | 202 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.36 | 0.00 | 0.21 | 0.00 | 0.00 | 0.00 | 0.05 | 0.06 | 0.00 | 0.00 | 0.24 | 0.24 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.52 | 0.00 | 0.52 | 0.00 | 0.00 | 0.00 | 0.07 | 0.42 | 0.00 | 0.00 | 0.35 | 0.35 |
| Volume/Cap: | 0.70 | 0.00 | 0.39 | 0.00 | 0.00 | 0.00 | 0.70 | 0.14 | 0.00 | 0.00 | 0.70 | 0.70 |
| Delay/Veh: | 20.9 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 61.9 | 18.1 | 0.0 | 0.0 | 31.2 | 31.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 20.9 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 61.9 | 18.1 | 0.0 | 0.0 | 31.2 | 31.2 |
| LOS by Move: | C | A | B | A | A | A | E | B | A | A | C | C |
| HCM2k95thQ: | 22 | 0 | 12 | 0 | 0 | 0 | 5 | 4 | 0 | 0 | 21 | 21 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.601 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 22.9 |
| Optimal Cycle: | 33 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Added Vol: | 0 | 0 | 343 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 277 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 4 | 430 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 440 | 44 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 4 | 430 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 440 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 262 | 4 | 430 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 440 | 44 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 262 | 4 | 430 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 440 | 44 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.93 | 0.93 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 0.98 | 0.02 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.91 | 0.09 |
| Final Sat.: | 1749 | 27 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1707 | 171 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.27 | 0.00 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.00 | 0.26 | 0.26 |
| Crit Moves: | | | **** | | | | **** | | | | **** | |
| Green/Cycle: | 0.45 | 0.45 | 0.45 | 0.00 | 0.00 | 0.00 | 0.06 | 0.49 | 0.00 | 0.00 | 0.43 | 0.43 |
| Volume/Cap: | 0.33 | 0.33 | 0.60 | 0.00 | 0.00 | 0.00 | 0.60 | 0.10 | 0.00 | 0.00 | 0.60 | 0.60 |
| Delay/Veh: | 18.2 | 18.2 | 22.3 | 0.0 | 0.0 | 0.0 | 54.2 | 13.6 | 0.0 | 0.0 | 23.2 | 23.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 18.2 | 18.2 | 22.3 | 0.0 | 0.0 | 0.0 | 54.2 | 13.6 | 0.0 | 0.0 | 23.2 | 23.2 |
| LOS by Move: | B | B | C | A | A | A | D | B | A | A | C | C |
| HCM2k95thQ: | 10 | 10 | 19 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 20 | 20 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 28.5  Worst Case Level Of Service: F[ 60.8]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 203 | 229 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 294 | 308 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 294 | 308 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 294 | 308 | 43 | 81 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 325 | xxxx | xxxxx | 52 | xxxx | xxxxx | 494 | 466 | 178 | 528 | 613 | 52 |
| Potent Cap.: | 1246 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 489 | 497 | 870 | 465 | 411 | 1022 |
| Move Cap.: | 1246 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 405 | 448 | 870 | 362 | 370 | 1022 |
| Volume/Cap: | 0.09 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.76 | 0.10 | 0.09 | 0.00 | 0.13 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.2 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 455 | xxxxx | xxxx | 416 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 11.4 | xxxxx | xxxxx | 0.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 60.8 | xxxxx | xxxxx | 15.1 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 60.8 | | | 15.1 | | |
| ApproachLOS: | * | | | * | | | F | | | C | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 53.8  Worst Case Level Of Service: F[109.9]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 277 | 343 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 350 | 398 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 350 | 398 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 350 | 398 | 43 | 77 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 378 | xxxx | xxxxx | 32 | xxxx | xxxxx | 471 | 443 | 203 | 503 | 618 | 32 |
| Potent Cap.: | 1192 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 506 | 512 | 843 | 483 | 408 | 1048 |
| Move Cap.: | 1192 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 423 | 467 | 843 | 380 | 372 | 1048 |
| Volume/Cap: | 0.08 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.94 | 0.09 | 0.09 | 0.00 | 0.13 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.3 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 460 | xxxxx | xxxx | 418 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 18.0 | xxxxx | xxxxx | 0.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 110 | xxxxx | xxxxx | 15.0 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 109.9 | | | 15.0 | | |
| ApproachLOS: | * | | | * | | | F | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.596 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 31.2 |
| Optimal Cycle: | 33 | Level Of Service: | C |

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1! | 0 | 0 | 0 1! | 0 | 0 | 0 1! | 0 | 0 | 0 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 203 | 229 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 294 | 308 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 294 | 308 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 108 | 51 | 1 | 10 | 31 | 294 | 308 | 43 | 81 | 1 | 47 | 10 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 294 | 308 | 43 | 81 | 1 | 47 | 10 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.97 | 0.97 | 0.97 | 0.88 | 0.88 | 0.88 | 0.94 | 0.94 | 0.94 | 0.98 | 0.98 | 0.98 |
| Lanes: | 0.67 | 0.32 | 0.01 | 0.03 | 0.09 | 0.88 | 0.71 | 0.10 | 0.19 | 0.02 | 0.81 | 0.17 |
| Final Sat.: | 1239 | 585 | 11 | 50 | 155 | 1468 | 1276 | 178 | 336 | 32 | 1503 | 320 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.09 | 0.09 | 0.09 | 0.20 | 0.20 | 0.20 | 0.24 | 0.24 | 0.24 | 0.03 | 0.03 | 0.03 |
| Crit Moves: | | **** | | **** | | | | | **** | | | **** |
| Green/Cycle: | 0.15 | 0.15 | 0.15 | 0.34 | 0.34 | 0.34 | 0.41 | 0.41 | 0.41 | 0.05 | 0.05 | 0.05 |
| Volume/Cap: | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Delay/Veh: | 43.5 | 43.5 | 43.5 | 29.3 | 29.3 | 29.3 | 24.7 | 24.7 | 24.7 | 56.0 | 56.0 | 56.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 43.5 | 43.5 | 43.5 | 29.3 | 29.3 | 29.3 | 24.7 | 24.7 | 24.7 | 56.0 | 56.0 | 56.0 |
| LOS by Move: | D | D | D | C | C | C | C | C | C | E | E | E |
| HCM2k95thQ: | 11 | 11 | 11 | 17 | 17 | 17 | 19 | 19 | 19 | 6 | 6 | 6 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.662 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 31.7 |
| Optimal Cycle: | 38 | Level Of Service: | C |

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1! | 0 | 0 | 0 1! | 0 | 0 | 0 1! | 0 | 0 | 0 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 277 | 343 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 350 | 398 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 350 | 398 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 94 | 31 | 1 | 10 | 28 | 350 | 398 | 43 | 77 | 1 | 47 | 10 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 350 | 398 | 43 | 77 | 1 | 47 | 10 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.96 | 0.96 | 0.96 | 0.88 | 0.88 | 0.88 | 0.94 | 0.94 | 0.94 | 0.98 | 0.98 | 0.98 |
| Lanes: | 0.75 | 0.24 | 0.01 | 0.03 | 0.07 | 0.90 | 0.77 | 0.08 | 0.15 | 0.02 | 0.81 | 0.17 |
| Final Sat.: | 1365 | 450 | 15 | 43 | 120 | 1503 | 1378 | 149 | 267 | 32 | 1503 | 320 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.07 | 0.07 | 0.23 | 0.23 | 0.23 | 0.29 | 0.29 | 0.29 | 0.03 | 0.03 | 0.03 |
| Crit Moves: | | **** | | **** | | | | | **** | | | **** |
| Green/Cycle: | 0.10 | 0.10 | 0.10 | 0.35 | 0.35 | 0.35 | 0.44 | 0.44 | 0.44 | 0.05 | 0.05 | 0.05 |
| Volume/Cap: | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 |
| Delay/Veh: | 51.5 | 51.5 | 51.5 | 30.2 | 30.2 | 30.2 | 24.4 | 24.4 | 24.4 | 64.1 | 64.1 | 64.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 51.5 | 51.5 | 51.5 | 30.2 | 30.2 | 30.2 | 24.4 | 24.4 | 24.4 | 64.1 | 64.1 | 64.1 |
| LOS by Move: | D | D | D | C | C | C | C | C | C | E | E | E |
| HCM2k95thQ: | 10 | 10 | 10 | 20 | 20 | 20 | 23 | 23 | 23 | 6 | 6 | 6 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Short-term+ Project B Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 22 | 4.3 | 0.230 | 12.1 | LOS B | 32 | 0.63 | 0.84 | 23.6 |
| 16T | T | 92 | 2.2 | 0.229 | 5.0 | LOS A | 32 | 0.63 | 0.53 | 27.0 |
| 16R | R | 55 | 1.8 | 0.229 | 6.5 | LOS A | 32 | 0.63 | 0.65 | 26.0 |
| **Approach** | | **170** | **2.4** | **0.230** | **6.4** | **LOS A** | **32** | **0.63** | **0.61** | **26.1** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.091 | 14.9 | LOS B | 13 | 0.62 | 0.88 | 23.0 |
| 6T | T | 40 | 2.5 | 0.093 | 5.3 | LOS A | 13 | 0.62 | 0.57 | 27.0 |
| 6R | R | 20 | 4.8 | 0.093 | 6.7 | LOS A | 13 | 0.62 | 0.65 | 26.1 |
| **Approach** | | **63** | **4.8** | **0.093** | **6.1** | **LOS A** | **13** | **0.62** | **0.61** | **26.5** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 41 | 2.4 | 0.441 | 14.4 | LOS B | 80 | 0.69 | 0.92 | 22.9 |
| 14T | T | 291 | 2.1 | 0.442 | 6.0 | LOS A | 80 | 0.69 | 0.67 | 26.6 |
| 14R | R | 19 | 5.0 | 0.444 | 7.5 | LOS A | 80 | 0.69 | 0.77 | 25.6 |
| **Approach** | | **352** | **2.3** | **0.443** | **7.0** | **LOS A** | **80** | **0.69** | **0.71** | **25.9** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 133 | 2.3 | 0.136 | 10.8 | LOS B | 25 | 0.16 | 0.60 | 24.7 |
| 2T | T | 24 | 4.0 | 0.136 | 1.8 | LOS A | 25 | 0.16 | 0.20 | 30.9 |
| 2R | R | 45 | 2.2 | 0.136 | 1.8 | LOS A | 25 | 0.16 | 0.20 | 30.9 |
| **Approach** | | **203** | **2.5** | **0.136** | **7.7** | **LOS A** | **25** | **0.16** | **0.46** | **26.3** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 515 | 1.9 | 0.363 | 12.6 | LOS B | 66 | 0.43 | 0.68 | 23.6 |
| 18T | T | 282 | 2.1 | 0.363 | 2.9 | LOS A | 66 | 0.42 | 0.31 | 28.5 |
| 18R | R | 64 | 1.6 | 0.364 | 4.1 | LOS A | 66 | 0.42 | 0.41 | 27.6 |
| **Approach** | | **860** | **2.0** | **0.363** | **8.8** | **LOS A** | **66** | **0.43** | **0.54** | **25.0** |
| **All Vehicles** | | **1648** | **2.2** | **0.444** | **7.9** | **LOS A** | **80** | **0.48** | **0.58** | **25.5** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Short-term+ Project B Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 21 | 4.5 | 0.168 | 11.6 | LOS B | 23 | 0.57 | 0.81 | 23.8 |
| 16T | T | 78 | 2.6 | 0.168 | 4.5 | LOS A | 23 | 0.57 | 0.48 | 27.4 |
| 16R | R | 34 | 2.9 | 0.168 | 6.1 | LOS A | 23 | 0.57 | 0.60 | 26.3 |
| **Approach** | | **134** | **3.0** | **0.168** | **6.1** | **LOS A** | **23** | **0.57** | **0.57** | **26.4** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.083 | 14.3 | LOS B | 11 | 0.58 | 0.85 | 23.1 |
| 6T | T | 40 | 2.5 | 0.084 | 4.7 | LOS A | 11 | 0.58 | 0.51 | 27.4 |
| 6R | R | 20 | 4.8 | 0.084 | 6.1 | LOS A | 11 | 0.58 | 0.60 | 26.4 |
| **Approach** | | **63** | **4.8** | **0.084** | **5.5** | **LOS A** | **11** | **0.58** | **0.55** | **26.8** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 40 | 2.5 | 0.440 | 13.0 | LOS B | 72 | 0.57 | 0.81 | 23.4 |
| 14T | T | 352 | 2.0 | 0.437 | 4.3 | LOS A | 72 | 0.57 | 0.47 | 27.4 |
| 14R | R | 17 | 5.6 | 0.439 | 5.9 | LOS A | 72 | 0.57 | 0.59 | 26.3 |
| **Approach** | | **410** | **2.2** | **0.437** | **5.2** | **LOS A** | **72** | **0.57** | **0.51** | **26.8** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 102 | 2.0 | 0.113 | 10.9 | LOS B | 20 | 0.15 | 0.61 | 24.7 |
| 2T | T | 23 | 4.2 | 0.113 | 1.8 | LOS A | 20 | 0.15 | 0.19 | 31.0 |
| 2R | R | 42 | 2.4 | 0.113 | 1.8 | LOS A | 20 | 0.15 | 0.19 | 31.0 |
| **Approach** | | **168** | **2.4** | **0.113** | **7.3** | **LOS A** | **20** | **0.15** | **0.44** | **26.5** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 276 | 2.2 | 0.272 | 12.5 | LOS B | 40 | 0.37 | 0.67 | 23.8 |
| 18T | T | 394 | 2.0 | 0.341 | 2.8 | LOS A | 61 | 0.38 | 0.29 | 28.8 |
| 18R | R | 62 | 1.6 | 0.341 | 3.9 | LOS A | 61 | 0.38 | 0.39 | 27.9 |
| **Approach** | | **732** | **2.0** | **0.341** | **6.5** | **LOS A** | **61** | **0.38** | **0.44** | **26.3** |
| **All Vehicles** | | **1507** | **2.3** | **0.440** | **6.2** | **LOS A** | **72** | **0.43** | **0.48** | **26.5** |

Symbols which may appear in this table:

about:blank 1/14/2009

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt C

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 344.00 | 305.00 | 344 | 305 | 649 | 100.0 |
| | Zone 38 Subtotal | | | | | 344 | 305 | 649 | 100.0 |
| TOTAL | | | | | | 344 | 305 | 649 | 100.0 |





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt C

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 504.00 | 402.00 | 504 | 402 | 906 | 100.0 |
| | Zone 38 Subtotal | | | | | 504 | 402 | 906 | 100.0 |
| TOTAL | | | | | | 504 | 402 | 906 | 100.0 |

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.363 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.5 |
| Optimal Cycle: | 18 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 0 | 1 | 0 | 1 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Added Vol: | 0 | 3 | 20 | 0 | 3 | 0 | 0 | 0 | 0 | 21 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 76 | 383 | 120 | 44 | 260 | 17 | 18 | 43 | 98 | 168 | 44 | 51 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 76 | 383 | 120 | 44 | 260 | 17 | 18 | 43 | 98 | 168 | 44 | 51 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 76 | 383 | 120 | 44 | 260 | 17 | 18 | 43 | 98 | 168 | 44 | 51 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 76 | 383 | 120 | 44 | 260 | 17 | 18 | 43 | 98 | 168 | 44 | 51 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.81 | 0.81 | 0.85 | 0.81 | 0.81 | 0.81 | 0.88 | 0.88 | 0.88 | 0.72 | 0.72 | 0.72 |
| Lanes: | 0.33 | 1.67 | 1.00 | 0.27 | 1.62 | 0.11 | 0.11 | 0.27 | 0.62 | 0.64 | 0.17 | 0.19 |
| Final Sat.: | 508 | 2560 | 1615 | 424 | 2506 | 164 | 190 | 453 | 1033 | 874 | 229 | 265 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.07 | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | 0.09 | 0.19 | 0.19 | 0.19 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| Volume/Cap: | 0.36 | 0.36 | 0.18 | 0.25 | 0.25 | 0.25 | 0.18 | 0.18 | 0.18 | 0.36 | 0.36 | 0.36 |
| Delay/Veh: | 14.4 | 14.4 | 13.2 | 13.6 | 13.6 | 13.6 | 8.6 | 8.6 | 8.6 | 9.9 | 9.9 | 9.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.4 | 14.4 | 13.2 | 13.6 | 13.6 | 13.6 | 8.6 | 8.6 | 8.6 | 9.9 | 9.9 | 9.9 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | A | A | A |
| HCM2kAvgQ: | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.338 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.4 |
| Optimal Cycle: | 17 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 0 | 1 | 0 | 1 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Added Vol: | 0 | 4 | 26 | 0 | 5 | 0 | 0 | 0 | 0 | 28 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 88 | 326 | 147 | 46 | 320 | 17 | 18 | 43 | 86 | 154 | 44 | 48 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 88 | 326 | 147 | 46 | 320 | 17 | 18 | 43 | 86 | 154 | 44 | 48 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 88 | 326 | 147 | 46 | 320 | 17 | 18 | 43 | 86 | 154 | 44 | 48 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 88 | 326 | 147 | 46 | 320 | 17 | 18 | 43 | 86 | 154 | 44 | 48 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.77 | 0.77 | 0.85 | 0.83 | 0.83 | 0.83 | 0.88 | 0.88 | 0.88 | 0.73 | 0.73 | 0.73 |
| Lanes: | 0.43 | 1.57 | 1.00 | 0.24 | 1.67 | 0.09 | 0.12 | 0.29 | 0.59 | 0.63 | 0.18 | 0.19 |
| Final Sat.: | 620 | 2297 | 1615 | 377 | 2624 | 139 | 206 | 491 | 983 | 872 | 249 | 272 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.14 | 0.14 | 0.09 | 0.12 | 0.12 | 0.12 | 0.09 | 0.09 | 0.09 | 0.18 | 0.18 | 0.18 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 |
| Volume/Cap: | 0.34 | 0.34 | 0.22 | 0.29 | 0.29 | 0.29 | 0.17 | 0.17 | 0.17 | 0.34 | 0.34 | 0.34 |
| Delay/Veh: | 13.9 | 13.9 | 13.1 | 13.5 | 13.5 | 13.5 | 8.8 | 8.8 | 8.8 | 10.0 | 10.0 | 10.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 13.9 | 13.9 | 13.1 | 13.5 | 13.5 | 13.5 | 8.8 | 8.8 | 8.8 | 10.0 | 10.0 | 10.0 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | A | A | A |
| HCM2kAvgQ: | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[ 21.2]

| Street Name: | Cloverdale Blvd | | | | | | | | | Lake St | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 542 | 113 | | | 46 | 472 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Initial Bse: | 0 | 542 | 113 | | | 46 | 472 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| Added Vol: | 0 | 23 | 0 | | | 0 | 24 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| PasserByVol: | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| Initial Fut: | 0 | 565 | 113 | | | 46 | 496 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| User Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| PHF Volume: | 0 | 565 | 113 | | | 46 | 496 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| Reduct Vol: | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| FinalVolume: | 0 | 565 | 113 | | | 46 | 496 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 6.8 | xxxx | 6.9 | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 3.5 | xxxx | 3.3 | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | | | 678 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 962 | xxxx | 339 | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | | | 923 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 257 | xxxx | 663 | | |
| Move Cap.: | xxxx | xxxx | xxxxx | | | 923 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 247 | xxxx | 663 | | |
| Volume/Cap: | xxxx | xxxx | xxxx | | | 0.05 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | 0.31 | xxxx | 0.05 | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 1.3 | xxxx | 0.2 | | |
| Control Del: | xxxxx | xxxx | xxxxx | | | 9.1 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | 25.9 | xxxx | 10.7 | | |
| LOS by Move: | * | * | * | | | A | * | * | | * | * | * | | | | D | * | B | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | | | 0.2 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | | | 9.1 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | * | * | * | | | A | * | * | | | * | * | * | | | * | * | * | | |
| ApproachDel: | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | | 21.2 | | | | |
| ApproachLOS: | * | | | | | * | | | | | * | | | | | C | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[ 14.8]

| Street Name: | Cloverdale Blvd | | | | | | | | | Lake St | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 371 | 71 | | | 28 | 367 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Initial Bse: | 0 | 371 | 71 | | | 28 | 367 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| Added Vol: | 0 | 30 | 0 | | | 0 | 33 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| PasserByVol: | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| Initial Fut: | 0 | 401 | 71 | | | 28 | 400 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| User Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| PHF Volume: | 0 | 401 | 71 | | | 28 | 400 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| Reduct Vol: | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| FinalVolume: | 0 | 401 | 71 | | | 28 | 400 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 6.8 | xxxx | 6.9 | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 3.5 | xxxx | 3.3 | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | | | 472 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 693 | xxxx | 236 | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | | | 1100 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 382 | xxxx | 772 | | |
| Move Cap.: | xxxx | xxxx | xxxxx | | | 1100 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 375 | xxxx | 772 | | |
| Volume/Cap: | xxxx | xxxx | xxxx | | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | 0.18 | xxxx | 0.03 | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 0.7 | xxxx | 0.1 | | |
| Control Del: | xxxxx | xxxx | xxxxx | | | 8.4 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | 16.7 | xxxx | 9.8 | | |
| LOS by Move: | * | * | * | | | A | * | * | | * | * | * | | | | C | * | A | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | | | 8.4 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | * | * | * | | | A | * | * | | | * | * | * | | | * | * | * | | |
| ApproachDel: | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | | 14.8 | | | | |
| ApproachLOS: | * | | | | | * | | | | | * | | | | | B | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.395 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 14.8 |
| Optimal Cycle: | 23 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Added Vol: | 0 | 0 | 3 | 24 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 23 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 15 | 465 | 136 | 176 | 446 | 6 | 5 | 14 | 25 | 197 | 25 | 264 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 15 | 465 | 136 | 176 | 446 | 6 | 5 | 14 | 25 | 197 | 25 | 264 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 15 | 465 | 136 | 176 | 446 | 6 | 5 | 14 | 25 | 197 | 25 | 264 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 15 | 465 | 136 | 176 | 446 | 6 | 5 | 14 | 25 | 197 | 25 | 264 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.92 | 0.92 | 0.95 | 0.95 | 0.95 | 0.92 | 0.92 | 0.92 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.55 | 0.45 | 1.00 | 1.97 | 0.03 | 0.11 | 0.32 | 0.57 | 1.77 | 0.23 | 1.00 |
| Final Sat.: | 1805 | 2698 | 789 | 1805 | 3555 | 48 | 198 | 555 | 990 | 3230 | 410 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.01 | 0.17 | 0.17 | 0.10 | 0.13 | 0.13 | 0.03 | 0.03 | 0.03 | 0.06 | 0.06 | 0.16 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.04 | 0.44 | 0.44 | 0.25 | 0.64 | 0.64 | 0.06 | 0.06 | 0.06 | 0.17 | 0.17 | 0.41 |
| Volume/Cap: | 0.20 | 0.39 | 0.39 | 0.39 | 0.20 | 0.20 | 0.39 | 0.39 | 0.39 | 0.37 | 0.37 | 0.39 |
| Delay/Veh: | 33.6 | 13.6 | 13.6 | 22.6 | 5.2 | 5.2 | 33.8 | 33.8 | 33.8 | 26.2 | 26.2 | 14.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.6 | 13.6 | 13.6 | 22.6 | 5.2 | 5.2 | 33.8 | 33.8 | 33.8 | 26.2 | 26.2 | 14.8 |
| LOS by Move: | C | B | B | C | A | A | C | C | C | C | C | B |
| HCM2kAvgQ: | 1 | 5 | 5 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 4 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.369 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 21.8 |
| Optimal Cycle: | 22 | Level Of Service: | C |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Added Vol: | 0 | 0 | 4 | 33 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 30 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 53 | 50 | 140 | 78 | 44 | 10 | 8 | 175 | 42 | 139 | 158 | 75 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 53 | 50 | 140 | 78 | 44 | 10 | 8 | 175 | 42 | 139 | 158 | 75 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 53 | 50 | 140 | 78 | 44 | 10 | 8 | 175 | 42 | 139 | 158 | 75 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 53 | 50 | 140 | 78 | 44 | 10 | 8 | 175 | 42 | 139 | 158 | 75 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.84 | 0.84 | 0.84 | 0.95 | 0.92 | 0.92 | 0.97 | 0.97 | 0.97 | 0.98 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.63 | 0.37 | 0.03 | 0.78 | 0.19 | 1.00 | 1.00 | 1.00 |
| Final Sat.: | 1805 | 1605 | 1605 | 1805 | 2859 | 650 | 66 | 1438 | 345 | 1856 | 1856 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.03 | 0.09 | 0.04 | 0.02 | 0.02 | 0.12 | 0.12 | 0.12 | 0.07 | 0.09 | 0.05 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.23 | 0.24 | 0.24 | 0.12 | 0.12 | 0.12 | 0.33 | 0.33 | 0.33 | 0.23 | 0.23 | 0.35 |
| Volume/Cap: | 0.13 | 0.13 | 0.37 | 0.37 | 0.13 | 0.13 | 0.37 | 0.37 | 0.37 | 0.32 | 0.37 | 0.13 |
| Delay/Veh: | 21.4 | 21.1 | 22.8 | 29.6 | 27.6 | 27.6 | 18.3 | 18.3 | 18.3 | 22.6 | 22.9 | 15.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 21.4 | 21.1 | 22.8 | 29.6 | 27.6 | 27.6 | 18.3 | 18.3 | 18.3 | 22.6 | 22.9 | 15.7 |
| LOS by Move: | C | C | C | C | C | C | B | B | B | C | C | B |
| HCM2kAvgQ: | 1 | 1 | 3 | 2 | 1 | 1 | 4 | 4 | 4 | 3 | 3 | 1 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: B[ 13.1]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 10 | 16 | 66 | 26 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 32 | 0 | 41 | 0 | 80 | 208 | 112 | 481 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 32 | 0 | 41 | 0 | 80 | 208 | 112 | 481 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 32 | 0 | 41 | 0 | 80 | 208 | 112 | 481 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 745 | 993 | 241 | xxxx | xxxx | xxxxx | 288 | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 354 | 247 | 767 | xxxx | xxxx | xxxxx | 1286 | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 330 | 226 | 767 | xxxx | xxxx | xxxxx | 1286 | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.10 | 0.00 | 0.05 | xxxx | xxxx | xxxx | 0.09 | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 17.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | * | * | * | C | * | * | * | * | * | A | * | * | | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 767 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.0 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | 13.1 | | | xxxxxx | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: B[ 11.8]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 15 | 22 | 87 | 34 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 41 | 0 | 33 | 0 | 71 | 197 | 121 | 264 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 41 | 0 | 33 | 0 | 71 | 197 | 121 | 264 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 41 | 0 | 33 | 0 | 71 | 197 | 121 | 264 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 542 | 774 | 132 | xxxx | xxxx | xxxxx | 268 | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 476 | 332 | 899 | xxxx | xxxx | xxxxx | 1307 | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 442 | 301 | 899 | xxxx | xxxx | xxxxx | 1307 | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.09 | 0.00 | 0.04 | xxxx | xxxx | xxxx | 0.09 | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 14.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | * | * | * | B | * | * | * | * | * | A | * | * | | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 899 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.1 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | 11.8 | | | xxxxxx | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: B[ 13.0]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 31 | | 0 | 0 | | 99 | | 16 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 31 | | 0 | 0 | | 99 | | 16 |
| Added Vol: | 0 | | 0 | | 93 | 0 | | 0 | | 0 | 0 | | 34 | | 0 | 0 | | 91 | | 21 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 361 | | 0 | | 172 | 0 | | 0 | | 0 | 38 | | 65 | | 0 | 0 | | 190 | | 37 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 361 | | 0 | | 172 | 0 | | 0 | | 0 | 38 | | 65 | | 0 | 0 | | 190 | | 37 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 361 | | 0 | | 172 | 0 | | 0 | | 0 | 38 | | 65 | | 0 | 0 | | 190 | | 37 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | | 6.9 | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 3.5 | 4.0 | | | 3.3 | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 236 | 368 | | | 33 | xxxx | xxxx | xxxxx | | | 227 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Potent Cap.: | 737 | 564 | | | 1040 | xxxx | xxxx | xxxxx | | | 1353 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Move Cap.: | 721 | 548 | | | 1040 | xxxx | xxxx | xxxxx | | | 1353 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Volume/Cap: | 0.50 | 0.00 | | | 0.17 | xxxx | xxxx | | xxxx | | 0.03 | xxxx | | xxxx | | xxxx | xxxx | | xxxx | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | | 0.6 | xxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Control Del: | xxxxx | xxxx | | | 9.1 | xxxxx | xxxx | xxxxx | | | 7.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | * | * | | | A | * | * | * | | | A | * | * | * | * | * | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 721 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | 2.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | 14.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | B | * | | * | * | * | | * | * | * | * | * | | * | * | * | | | | |
| ApproachDel: | 13.0 | | | xxxxxx | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 5.7 Worst Case Level Of Service: B[ 10.6]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 30 | | 0 | 0 | | 82 | | 16 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 30 | | 0 | 0 | | 82 | | 16 |
| Added Vol: | 0 | | 0 | | 136 | 0 | | 0 | | 0 | 0 | | 50 | | 0 | 0 | | 121 | | 28 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 187 | | 0 | | 178 | 0 | | 0 | | 0 | 33 | | 80 | | 0 | 0 | | 203 | | 44 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 187 | | 0 | | 178 | 0 | | 0 | | 0 | 33 | | 80 | | 0 | 0 | | 203 | | 44 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 187 | | 0 | | 178 | 0 | | 0 | | 0 | 33 | | 80 | | 0 | 0 | | 203 | | 44 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | | 6.9 | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 3.5 | 4.0 | | | 3.3 | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 248 | 393 | | | 40 | xxxx | xxxx | xxxxx | | | 247 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Potent Cap.: | 725 | 546 | | | 1029 | xxxx | xxxx | xxxxx | | | 1331 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Move Cap.: | 711 | 533 | | | 1029 | xxxx | xxxx | xxxxx | | | 1331 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Volume/Cap: | 0.26 | 0.00 | | | 0.17 | xxxx | xxxx | | xxxx | | 0.02 | xxxx | | xxxx | | xxxx | xxxx | | xxxx | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | | 0.6 | xxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Control Del: | xxxxx | xxxx | | | 9.2 | xxxxx | xxxx | xxxxx | | | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | * | * | | | A | * | * | * | | | A | * | * | * | * | * | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 711 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | 1.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | 11.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | B | * | | * | * | * | | * | * | * | * | * | | * | * | * | | | | |
| ApproachDel: | 10.6 | | | xxxxxx | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.8 Worst Case Level Of Service: B[ 10.9]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Citrus Fair Dr | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 69 | | 76 | | 0 | 0 | | 52 | | 41 | 88 | | 0 | | 26 | 0 | | 0 | | 0 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 69 | | 76 | | 0 | 0 | | 52 | | 41 | 88 | | 0 | | 26 | 0 | | 0 | | 0 |
| Added Vol: | 113 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 127 | 0 | | 0 | | 0 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 182 | | 76 | | 0 | 0 | | 52 | | 41 | 88 | | 0 | | 153 | 0 | | 0 | | 0 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 182 | | 76 | | 0 | 0 | | 52 | | 41 | 88 | | 0 | | 153 | 0 | | 0 | | 0 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 182 | | 76 | | 0 | 0 | | 52 | | 41 | 88 | | 0 | | 153 | 0 | | 0 | | 0 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 6.4 | xxxx | | 6.2 | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 3.5 | xxxx | | 3.3 | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 93 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 492 | xxxx | | 52 | xxxx | xxxx | xxxxx | | | | | | |
| Potent Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 540 | xxxx | | 1021 | xxxx | xxxx | xxxxx | | | | | | |
| Move Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 490 | xxxx | | 1021 | xxxx | xxxx | xxxxx | | | | | | |
| Volume/Cap: | 0.12 | xxxx | xxxx | xxxx | xxxx | xxxx | | 0.18 | xxxx | | 0.15 | xxxx | xxxx | xxxx | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.6 | xxxx | | 0.5 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 7.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 13.9 | xxxx | | 9.1 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | | * | * | * | | B | * | | A | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | |
| Shared LOS: | * | * | * | * | * | * | | * | * | * | | * | * | * | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | 10.9 | | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | * | | | | B | | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.0 Worst Case Level Of Service: A[ 10.0]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Citrus Fair Dr | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 45 | | 50 | | 0 | 0 | | 43 | | 34 | 41 | | 0 | | 27 | 0 | | 0 | | 0 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 45 | | 50 | | 0 | 0 | | 43 | | 34 | 41 | | 0 | | 27 | 0 | | 0 | | 0 |
| Added Vol: | 149 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 186 | 0 | | 0 | | 0 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 194 | | 50 | | 0 | 0 | | 43 | | 34 | 41 | | 0 | | 213 | 0 | | 0 | | 0 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 194 | | 50 | | 0 | 0 | | 43 | | 34 | 41 | | 0 | | 213 | 0 | | 0 | | 0 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 194 | | 50 | | 0 | 0 | | 43 | | 34 | 41 | | 0 | | 213 | 0 | | 0 | | 0 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 6.4 | xxxx | | 6.2 | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 3.5 | xxxx | | 3.3 | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 77 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 481 | xxxx | | 43 | xxxx | xxxx | xxxxx | | | | | | |
| Potent Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 548 | xxxx | | 1033 | xxxx | xxxx | xxxxx | | | | | | |
| Move Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 495 | xxxx | | 1033 | xxxx | xxxx | xxxxx | | | | | | |
| Volume/Cap: | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx | | 0.08 | xxxx | | 0.21 | xxxx | xxxx | xxxx | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.3 | xxxx | | 0.8 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 7.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 12.9 | xxxx | | 9.4 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | | * | * | * | | B | * | | A | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | |
| Shared LOS: | * | * | * | * | * | * | | * | * | * | | * | * | * | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | 10.0 | | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | * | | | | A | | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: C[ 19.7]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Project Access | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 217 | 127 | 0 | 0 | 0 | 0 | 0 | 192 | 0 | 113 | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Initial Fut: | 0 | 119 | 217 | 127 | 72 | 0 | 0 | 0 | 0 | 192 | 0 | 113 | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Volume: | 0 | 119 | 217 | 127 | 72 | 0 | 0 | 0 | 0 | 192 | 0 | 113 | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| FinalVolume: | 0 | 119 | 217 | 127 | 72 | 0 | 0 | 0 | 0 | 192 | 0 | 113 | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 336 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 554 | 554 | 228 | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1235 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 497 | 444 | 817 | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 1235 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 455 | 394 | 817 | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.10 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.42 | 0.00 | 0.14 | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 544 | xxxxx | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 3.4 | xxxxx | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 19.7 | xxxxx | | | | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 19.7 | | | | | | |
| ApproachLOS: | * | | | * | | | * | | | C | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 19.3 Worst Case Level Of Service: E[ 46.2]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Project Access | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 318 | 186 | 0 | 0 | 0 | 0 | 0 | 253 | 0 | 149 | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Initial Fut: | 0 | 77 | 318 | 186 | 60 | 0 | 0 | 0 | 0 | 253 | 0 | 149 | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Volume: | 0 | 77 | 318 | 186 | 60 | 0 | 0 | 0 | 0 | 253 | 0 | 149 | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| FinalVolume: | 0 | 77 | 318 | 186 | 60 | 0 | 0 | 0 | 0 | 253 | 0 | 149 | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 395 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 668 | 668 | 236 | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1175 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 426 | 382 | 808 | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 1175 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 369 | 314 | 808 | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.69 | 0.00 | 0.18 | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 8.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 462 | xxxxx | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 9.1 | xxxxx | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 46.2 | xxxxx | | | | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | E | * | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 46.2 | | | | | | |
| ApproachLOS: | * | | | * | | | * | | | E | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[ 13.2]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 217 | 0 | 0 | 192 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 323 | 16 | 5 | 278 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 323 | 16 | 5 | 278 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 323 | 16 | 5 | 278 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 339 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 619 | 619 | 331 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1231 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 455 | 407 | 715 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1231 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 454 | 405 | 715 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.06 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 7.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 471 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.2 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 7.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 13.2 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 13.2 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[ 10.4]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Added Vol: | 0 | 318 | 0 | 0 | 253 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 383 | 1 | 4 | 328 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 383 | 1 | 4 | 328 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 383 | 1 | 4 | 328 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 384 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 384 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1186 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 668 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1186 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 668 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.4 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 10.4 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[ 12.3]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Volume Module: | | | | | | | | | | | | | | | | |
| Base Vol: | 199 | 444 | 0 | 0 | 214 | 50 | 36 | 0 | 91 | 0 | 0 | 0 | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Initial Bse: | 199 | 444 | 0 | 0 | 214 | 50 | 36 | 0 | 91 | 0 | 0 | 0 | | | | |
| Added Vol: | 8 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Initial Fut: | 207 | 447 | 0 | 0 | 217 | 50 | 36 | 0 | 99 | 0 | 0 | 0 | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Volume: | 207 | 447 | 0 | 0 | 217 | 50 | 36 | 0 | 99 | 0 | 0 | 0 | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| FinalVolume: | 207 | 447 | 0 | 0 | 217 | 50 | 36 | 0 | 99 | 0 | 0 | 0 | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 267 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1078 | 1078 | 217 | xxxx | xxxx | xxxxx | | | | |
| Potent Cap.: | 1308 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 244 | 220 | 828 | xxxx | xxxx | xxxxx | | | | |
| Move Cap.: | 1308 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 215 | 186 | 828 | xxxx | xxxx | xxxxx | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 298 | 265 | xxxxx | 219 | 247 | xxxxx | | | | |
| Volume/Cap: | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.12 | 0.00 | 0.12 | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | | | | |
| Control Del: | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.9 | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | A | * | * | * | * | * | * | * | A | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 298 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 18.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | * | * | * | * | * | * | C | * | * | * | * | * | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 12.3 | | | xxxxxx | | | | | | |
| ApproachLOS: | * | | | * | | | B | | | * | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: B[ 12.4]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Volume Module: | | | | | | | | | | | | | | | | |
| Base Vol: | 146 | 340 | 0 | 0 | 318 | 43 | 43 | 0 | 144 | 0 | 0 | 0 | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Initial Bse: | 146 | 340 | 0 | 0 | 318 | 43 | 43 | 0 | 144 | 0 | 0 | 0 | | | | |
| Added Vol: | 11 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Initial Fut: | 157 | 344 | 0 | 0 | 322 | 43 | 43 | 0 | 155 | 0 | 0 | 0 | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Volume: | 157 | 344 | 0 | 0 | 322 | 43 | 43 | 0 | 155 | 0 | 0 | 0 | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| FinalVolume: | 157 | 344 | 0 | 0 | 322 | 43 | 43 | 0 | 155 | 0 | 0 | 0 | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 365 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 980 | 980 | 322 | xxxx | xxxx | xxxxx | | | | |
| Potent Cap.: | 1205 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 279 | 252 | 724 | xxxx | xxxx | xxxxx | | | | |
| Move Cap.: | 1205 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 251 | 219 | 724 | xxxx | xxxx | xxxxx | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 359 | 318 | xxxxx | 226 | 291 | xxxxx | | | | |
| Volume/Cap: | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.12 | 0.00 | 0.21 | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.8 | xxxx | xxxx | xxxxx | | | | |
| Control Del: | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.3 | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 359 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 16.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | * | * | * | * | * | * | C | * | * | * | * | * | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 12.4 | | | xxxxxx | | | | | | |
| ApproachLOS: | * | | | * | | | B | | | * | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 11.0 Worst Case Level Of Service: C[ 16.5]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 1 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Added Vol: | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 110 | 68 | 297 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 590 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 110 | 68 | 297 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 590 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 110 | 68 | 297 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 590 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 178 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 814 | xxxx | 144 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 350 | xxxx | 909 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 293 | xxxx | 909 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.21 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.23 | xxxx | 0.65 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.9 | xxxx | 4.9 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 20.9 | xxxx | 16.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | C |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 16.5 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.8 Worst Case Level Of Service: B[ 11.3]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 1 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Added Vol: | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 54 | 56 | 284 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 346 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 54 | 56 | 284 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 346 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 54 | 56 | 284 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 346 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 110 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 714 | xxxx | 82 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 401 | xxxx | 983 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 342 | xxxx | 983 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.12 | xxxx | 0.35 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | 1.6 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 16.9 | xxxx | 10.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.3 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: D[ 28.1]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 1 | 0 0 | 0 | 1 0 | 1 | 0 | 1 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 181 | 11 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 219 | 294 | 590 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 219 | 294 | 590 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 219 | 294 | 590 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1435 | 1544 | 590 | xxxx | xxxx | xxxxx | 366 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 149 | 116 | 511 | xxxx | xxxx | xxxxx | 1204 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 121 | 88 | 511 | xxxx | xxxx | xxxxx | 1204 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.36 | 0.00 | 0.13 | xxxx | xxxx | xxxx | 0.24 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | 1.0 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 13.1 | xxxxx | xxxx | xxxxx | 9.0 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 121 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 50.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 28.1 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | D | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.5 Worst Case Level Of Service: C[ 21.3]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 1 | 0 0 | 0 | 1 0 | 1 | 0 | 1 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 239 | 14 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 246 | 336 | 338 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 246 | 336 | 338 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 246 | 336 | 338 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1258 | 1381 | 338 | xxxx | xxxx | xxxxx | 371 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 190 | 145 | 709 | xxxx | xxxx | xxxxx | 1199 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 149 | 105 | 709 | xxxx | xxxx | xxxxx | 1199 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.25 | 0.00 | 0.08 | xxxx | xxxx | xxxx | 0.28 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.5 | xxxxx | xxxx | xxxxx | 9.2 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 149 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 37.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | E | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 21.3 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 59.2  Worst Case Level Of Service: F[105.0]

| Street Name: | 101 N Ramps | | | | | | | | | South Interchange | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | Stop Sign | | | | Uncontrolled | | | | Uncontrolled | | | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 489 | | 0 | | 99 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 203 | | 49 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 489 | | 0 | | 99 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 203 | | 49 |
| Added Vol: | 0 | | 0 | | 217 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 192 | | 0 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 489 | | 0 | | 316 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 395 | | 49 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 489 | | 0 | | 316 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 395 | | 49 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 489 | | 0 | | 316 | 0 | | 0 | | 0 | 84 | | 107 | | 0 | 0 | | 395 | | 49 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.4 | | 6.5 | | 6.2 | xxxxx | | xxxx | | xxxxx | 4.1 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| FollowUpTim: | 3.5 | | 4.0 | | 3.3 | xxxxx | | xxxx | | xxxxx | 2.2 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 695 | | 719 | | 107 | xxxx | | xxxx | | xxxxx | 444 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| Potent Cap.: | 412 | | 357 | | 953 | xxxx | | xxxx | | xxxxx | 1127 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| Move Cap.: | 388 | | 330 | | 953 | xxxx | | xxxx | | xxxxx | 1127 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| Volume/Cap: | 1.26 | | 0.00 | | 0.33 | xxxx | | xxxx | | xxxx | 0.07 | | xxxx | | xxxx | xxxx | | xxxx | | xxxx |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | | xxxx | | 1.5 | xxxx | | xxxx | | xxxxx | 0.2 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| Control Del: | xxxxx | | xxxx | | 10.6 | xxxxx | | xxxx | | xxxxx | 8.5 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| LOS by Move: | * | | * | | B | * | | * | | * | A | | * | | * | * | | * | | * |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 388 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| SharedQueue: | 21.2 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| Shrd ConDel: | 166.0 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| Shared LOS: | F | | * | | * | * | | * | | * | * | | * | | * | * | | * | | * |
| ApproachDel: | 105.0 | | | | | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | |
| ApproachLOS: | F | | | | | * | | | | | * | | | | | * | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 10.0  Worst Case Level Of Service: C[ 18.4]

| Street Name: | 101 N Ramps | | | | | | | | | South Interchange | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | Stop Sign | | | | Uncontrolled | | | | Uncontrolled | | | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 262 | | 4 | | 87 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 163 | | 44 |
| Growth Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Initial Bse: | 262 | | 4 | | 87 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 163 | | 44 |
| Added Vol: | 0 | | 0 | | 318 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 253 | | 0 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 262 | | 4 | | 405 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 416 | | 44 |
| User Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | | 1.00 |
| PHF Volume: | 262 | | 4 | | 405 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 416 | | 44 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 262 | | 4 | | 405 | 0 | | 0 | | 0 | 69 | | 90 | | 0 | 0 | | 416 | | 44 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.4 | | 6.5 | | 6.2 | xxxxx | | xxxx | | xxxxx | 4.1 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| FollowUpTim: | 3.5 | | 4.0 | | 3.3 | xxxxx | | xxxx | | xxxxx | 2.2 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 666 | | 688 | | 90 | xxxx | | xxxx | | xxxxx | 460 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| Potent Cap.: | 428 | | 372 | | 973 | xxxx | | xxxx | | xxxxx | 1112 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| Move Cap.: | 407 | | 349 | | 973 | xxxx | | xxxx | | xxxxx | 1112 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| Volume/Cap: | 0.64 | | 0.01 | | 0.42 | xxxx | | xxxx | | xxxx | 0.06 | | xxxx | | xxxx | xxxx | | xxxx | | xxxx |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | | xxxx | | 2.1 | xxxx | | xxxx | | xxxxx | 0.2 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| Control Del: | xxxxx | | xxxx | | 11.3 | xxxxx | | xxxx | | xxxxx | 8.5 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| LOS by Move: | * | | * | | B | * | | * | | * | A | | * | | * | * | | * | | * |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 406 | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx | xxxx | | xxxx | | xxxxx |
| SharedQueue: | 4.5 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| Shrd ConDel: | 29.2 | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx | xxxxx | | xxxx | | xxxxx |
| Shared LOS: | D | | * | | * | * | | * | | * | * | | * | | * | * | | * | | * |
| ApproachDel: | 18.4 | | | | | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | |
| ApproachLOS: | C | | | | | * | | | | | * | | | | | * | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.689 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 24.6 |
| Optimal Cycle: | 41 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Added Vol: | 0 | 0 | 217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 192 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 489 | 0 | 316 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 395 | 49 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 489 | 0 | 316 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 395 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 489 | 0 | 316 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 395 | 49 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 489 | 0 | 316 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 395 | 49 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.89 | 0.11 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1665 | 207 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.36 | 0.00 | 0.20 | 0.00 | 0.00 | 0.00 | 0.05 | 0.06 | 0.00 | 0.00 | 0.24 | 0.24 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.53 | 0.00 | 0.53 | 0.00 | 0.00 | 0.00 | 0.07 | 0.41 | 0.00 | 0.00 | 0.34 | 0.34 |
| Volume/Cap: | 0.69 | 0.00 | 0.37 | 0.00 | 0.00 | 0.00 | 0.69 | 0.14 | 0.00 | 0.00 | 0.69 | 0.69 |
| Delay/Veh: | 20.4 | 0.0 | 14.1 | 0.0 | 0.0 | 0.0 | 61.0 | 18.4 | 0.0 | 0.0 | 31.4 | 31.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 20.4 | 0.0 | 14.1 | 0.0 | 0.0 | 0.0 | 61.0 | 18.4 | 0.0 | 0.0 | 31.4 | 31.4 |
| LOS by Move: | C | A | B | A | A | A | E | B | A | A | C | C |
| HCM2k95thQ: | 22 | 0 | 11 | 0 | 0 | 0 | 5 | 4 | 0 | 0 | 21 | 21 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.571 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 22.4 |
| Optimal Cycle: | 31 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Added Vol: | 0 | 0 | 318 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 253 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 4 | 405 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 416 | 44 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 4 | 405 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 416 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 262 | 4 | 405 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 416 | 44 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 262 | 4 | 405 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 416 | 44 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.93 | 0.93 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 0.98 | 0.02 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.90 | 0.10 |
| Final Sat.: | 1745 | 27 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1696 | 179 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.25 | 0.00 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.00 | 0.25 | 0.25 |
| Crit Moves: | | | **** | | | | **** | | | | **** | |
| Green/Cycle: | 0.44 | 0.44 | 0.44 | 0.00 | 0.00 | 0.00 | 0.07 | 0.50 | 0.00 | 0.00 | 0.43 | 0.43 |
| Volume/Cap: | 0.34 | 0.34 | 0.57 | 0.00 | 0.00 | 0.00 | 0.57 | 0.10 | 0.00 | 0.00 | 0.57 | 0.57 |
| Delay/Veh: | 18.5 | 18.5 | 21.9 | 0.0 | 0.0 | 0.0 | 51.7 | 13.4 | 0.0 | 0.0 | 22.5 | 22.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 18.5 | 18.5 | 21.9 | 0.0 | 0.0 | 0.0 | 51.7 | 13.4 | 0.0 | 0.0 | 22.5 | 22.5 |
| LOS by Move: | B | B | C | A | A | A | D | B | A | A | C | C |
| HCM2k95thQ: | 10 | 10 | 18 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 19 | 19 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 24.9 Worst Case Level Of Service: F[ 52.8]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 192 | 217 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 283 | 296 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 283 | 296 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 283 | 296 | 43 | 81 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 314 | xxxx | xxxxx | 52 | xxxx | xxxxx | 489 | 461 | 173 | 522 | 602 | 52 |
| Potent Cap.: | 1258 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 493 | 501 | 876 | 468 | 417 | 1022 |
| Move Cap.: | 1258 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 409 | 452 | 876 | 365 | 376 | 1022 |
| Volume/Cap: | 0.09 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.72 | 0.10 | 0.09 | 0.00 | 0.12 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.1 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 461 | xxxxx | xxxx | 422 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.2 | xxxxx | xxxxx | 0.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 52.8 | xxxxx | xxxxx | 14.9 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 52.8 | | | 14.9 | | |
| ApproachLOS: | * | | | * | | | F | | | B | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 40.8 Worst Case Level Of Service: F[ 82.8]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 253 | 318 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 326 | 373 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 326 | 373 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 326 | 373 | 43 | 77 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 354 | xxxx | xxxxx | 32 | xxxx | xxxxx | 459 | 431 | 191 | 491 | 594 | 32 |
| Potent Cap.: | 1216 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 516 | 520 | 856 | 492 | 421 | 1048 |
| Move Cap.: | 1216 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 433 | 475 | 856 | 389 | 384 | 1048 |
| Volume/Cap: | 0.08 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.86 | 0.09 | 0.09 | 0.00 | 0.12 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.2 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 473 | xxxxx | xxxx | 431 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 14.9 | xxxxx | xxxxx | 0.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 82.8 | xxxxx | xxxxx | 14.6 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 82.8 | | | 14.6 | | |
| ApproachLOS: | * | | | * | | | F | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.582 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 30.9 |
| Optimal Cycle: | 32 | Level Of Service: | C |

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 192 | 217 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 283 | 296 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 283 | 296 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 108 | 51 | 1 | 10 | 31 | 283 | 296 | 43 | 81 | 1 | 47 | 10 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 283 | 296 | 43 | 81 | 1 | 47 | 10 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.97 | 0.97 | 0.97 | 0.88 | 0.88 | 0.88 | 0.94 | 0.94 | 0.94 | 0.98 | 0.98 | 0.98 |
| Lanes: | 0.67 | 0.32 | 0.01 | 0.03 | 0.10 | 0.87 | 0.71 | 0.10 | 0.19 | 0.02 | 0.81 | 0.17 |
| Final Sat.: | 1239 | 585 | 11 | 52 | 160 | 1461 | 1260 | 183 | 345 | 32 | 1503 | 320 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.09 | 0.09 | 0.09 | 0.19 | 0.19 | 0.19 | 0.23 | 0.23 | 0.23 | 0.03 | 0.03 | 0.03 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.15 | 0.15 | 0.15 | 0.33 | 0.33 | 0.33 | 0.40 | 0.40 | 0.40 | 0.05 | 0.05 | 0.05 |
| Volume/Cap: | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 |
| Delay/Veh: | 42.7 | 42.7 | 42.7 | 29.2 | 29.2 | 29.2 | 24.5 | 24.5 | 24.5 | 54.7 | 54.7 | 54.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 42.7 | 42.7 | 42.7 | 29.2 | 29.2 | 29.2 | 24.5 | 24.5 | 24.5 | 54.7 | 54.7 | 54.7 |
| LOS by Move: | D | D | D | C | C | C | C | C | C | D | D | D |
| HCM2k95thQ: | 11 | 11 | 11 | 16 | 16 | 16 | 18 | 18 | 18 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.631 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 30.8 |
| Optimal Cycle: | 35 | Level Of Service: | C |

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 253 | 318 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 326 | 373 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 326 | 373 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 94 | 31 | 1 | 10 | 28 | 326 | 373 | 43 | 77 | 1 | 47 | 10 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 326 | 373 | 43 | 77 | 1 | 47 | 10 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.96 | 0.96 | 0.96 | 0.88 | 0.88 | 0.88 | 0.94 | 0.94 | 0.94 | 0.98 | 0.98 | 0.98 |
| Lanes: | 0.75 | 0.24 | 0.01 | 0.03 | 0.08 | 0.89 | 0.76 | 0.09 | 0.15 | 0.02 | 0.81 | 0.17 |
| Final Sat.: | 1365 | 450 | 15 | 46 | 128 | 1494 | 1357 | 156 | 280 | 32 | 1503 | 320 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.07 | 0.07 | 0.22 | 0.22 | 0.22 | 0.27 | 0.27 | 0.27 | 0.03 | 0.03 | 0.03 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.11 | 0.11 | 0.11 | 0.35 | 0.35 | 0.35 | 0.44 | 0.44 | 0.44 | 0.05 | 0.05 | 0.05 |
| Volume/Cap: | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 |
| Delay/Veh: | 49.0 | 49.0 | 49.0 | 29.6 | 29.6 | 29.6 | 23.6 | 23.6 | 23.6 | 60.0 | 60.0 | 60.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 49.0 | 49.0 | 49.0 | 29.6 | 29.6 | 29.6 | 23.6 | 23.6 | 23.6 | 60.0 | 60.0 | 60.0 |
| LOS by Move: | D | D | D | C | C | C | C | C | C | E | E | E |
| HCM2k95thQ: | 9 | 9 | 9 | 19 | 19 | 19 | 21 | 21 | 21 | 6 | 6 | 6 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Short-term+ Project C Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 22 | 4.3 | 0.230 | 12.1 | LOS B | 32 | 0.63 | 0.84 | 23.6 |
| 16T | T | 92 | 2.2 | 0.229 | 5.0 | LOS A | 32 | 0.63 | 0.53 | 27.0 |
| 16R | R | 55 | 1.8 | 0.229 | 6.5 | LOS A | 32 | 0.63 | 0.65 | 26.0 |
| **Approach** | | **170** | **2.4** | **0.229** | **6.4** | **LOS A** | **32** | **0.63** | **0.61** | **26.1** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.091 | 14.8 | LOS B | 13 | 0.62 | 0.88 | 23.0 |
| 6T | T | 40 | 2.5 | 0.092 | 5.3 | LOS A | 13 | 0.62 | 0.57 | 27.0 |
| 6R | R | 20 | 4.8 | 0.092 | 6.6 | LOS A | 13 | 0.62 | 0.64 | 26.1 |
| **Approach** | | **63** | **4.8** | **0.092** | **6.0** | **LOS A** | **13** | **0.62** | **0.60** | **26.5** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 43 | 2.3 | 0.430 | 14.5 | LOS B | 76 | 0.68 | 0.92 | 22.9 |
| 14T | T | 279 | 2.2 | 0.429 | 5.8 | LOS A | 76 | 0.68 | 0.65 | 26.6 |
| 14R | R | 19 | 5.0 | 0.426 | 7.4 | LOS A | 76 | 0.68 | 0.76 | 25.7 |
| **Approach** | | **342** | **2.3** | **0.429** | **7.0** | **LOS A** | **76** | **0.68** | **0.69** | **25.9** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 133 | 2.3 | 0.136 | 10.8 | LOS B | 25 | 0.17 | 0.60 | 24.7 |
| 2T | T | 24 | 4.0 | 0.136 | 1.8 | LOS A | 25 | 0.17 | 0.20 | 30.9 |
| 2R | R | 45 | 2.2 | 0.136 | 1.8 | LOS A | 25 | 0.17 | 0.20 | 30.9 |
| **Approach** | | **203** | **2.5** | **0.136** | **7.7** | **LOS A** | **25** | **0.17** | **0.46** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 515 | 1.9 | 0.358 | 12.7 | LOS B | 65 | 0.43 | 0.68 | 23.6 |
| 18T | T | 269 | 1.9 | 0.358 | 2.9 | LOS A | 65 | 0.42 | 0.31 | 28.5 |
| 18R | R | 64 | 1.6 | 0.358 | 4.1 | LOS A | 65 | 0.42 | 0.41 | 27.6 |
| **Approach** | | **847** | **1.9** | **0.358** | **8.9** | **LOS A** | **65** | **0.43** | **0.54** | **25.0** |
| **All Vehicles** | | **1625** | **2.2** | **0.430** | **8.0** | **LOS A** | **76** | **0.48** | **0.57** | **25.5** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Short-term+ Project C Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 21 | 4.5 | 0.165 | 11.5 | LOS B | 22 | 0.56 | 0.80 | 23.8 |
| 16T | T | 78 | 2.6 | 0.166 | 4.4 | LOS A | 22 | 0.56 | 0.47 | 27.4 |
| 16R | R | 34 | 2.9 | 0.166 | 6.0 | LOS A | 22 | 0.56 | 0.59 | 26.4 |
| **Approach** | | **134** | **3.0** | **0.166** | **6.0** | **LOS A** | **22** | **0.56** | **0.56** | **26.4** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.083 | 14.2 | LOS B | 11 | 0.56 | 0.84 | 23.2 |
| 6T | T | 39 | 2.6 | 0.083 | 4.6 | LOS A | 11 | 0.56 | 0.50 | 27.4 |
| 6R | R | 21 | 4.5 | 0.083 | 5.9 | LOS A | 11 | 0.56 | 0.59 | 26.5 |
| **Approach** | | **63** | **4.8** | **0.083** | **5.4** | **LOS A** | **11** | **0.56** | **0.54** | **26.9** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 40 | 2.5 | 0.412 | 12.8 | LOS B | 65 | 0.56 | 0.80 | 23.4 |
| 14T | T | 326 | 2.1 | 0.410 | 4.1 | LOS A | 65 | 0.56 | 0.44 | 27.5 |
| 14R | R | 17 | 5.6 | 0.409 | 5.7 | LOS A | 65 | 0.56 | 0.56 | 26.4 |
| **Approach** | | **385** | **2.3** | **0.410** | **5.1** | **LOS A** | **65** | **0.56** | **0.48** | **26.8** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 102 | 2.0 | 0.113 | 10.9 | LOS B | 20 | 0.15 | 0.61 | 24.7 |
| 2T | T | 23 | 4.2 | 0.113 | 1.8 | LOS A | 20 | 0.15 | 0.19 | 31.0 |
| 2R | R | 42 | 2.4 | 0.113 | 1.8 | LOS A | 20 | 0.15 | 0.19 | 31.0 |
| **Approach** | | **168** | **2.4** | **0.113** | **7.3** | **LOS A** | **20** | **0.15** | **0.44** | **26.5** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 276 | 2.2 | 0.269 | 12.5 | LOS B | 39 | 0.37 | 0.67 | 23.8 |
| 18T | T | 367 | 1.9 | 0.322 | 2.7 | LOS A | 56 | 0.37 | 0.29 | 28.9 |
| 18R | R | 62 | 1.6 | 0.321 | 3.8 | LOS A | 56 | 0.37 | 0.39 | 27.9 |
| **Approach** | | **705** | **2.0** | **0.322** | **6.6** | **LOS A** | **56** | **0.37** | **0.45** | **26.2** |
| **All Vehicles** | | **1455** | **2.3** | **0.412** | **6.2** | **LOS A** | **65** | **0.42** | **0.47** | **26.5** |

Symbols which may appear in this table:

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt D

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 291.00 | 262.00 | 291 | 262 | 553 | 100.0 |
| | Zone 38 Subtotal | | | | | 291 | 262 | 553 | 100.0 |
| TOTAL | | | | | | 291 | 262 | 553 | 100.0 |





Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt D

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 448.00 | 354.00 | 448 | 354 | 802 | 100.0 |
| | Zone 38 Subtotal | | | | | 448 | 354 | 802 | 100.0 |
| TOTAL | | | | | | 448 | 354 | 802 | 100.0 |

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.360 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.4 |
| Optimal Cycle: | 18 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1! | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Added Vol: | 0 | 3 | 17 | 0 | 3 | 0 | 0 | 0 | 0 | 18 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 76 | 383 | 117 | 44 | 260 | 17 | 18 | 43 | 98 | 165 | 44 | 51 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 76 | 383 | 117 | 44 | 260 | 17 | 18 | 43 | 98 | 165 | 44 | 51 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 76 | 383 | 117 | 44 | 260 | 17 | 18 | 43 | 98 | 165 | 44 | 51 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 76 | 383 | 117 | 44 | 260 | 17 | 18 | 43 | 98 | 165 | 44 | 51 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.81 | 0.81 | 0.85 | 0.81 | 0.81 | 0.81 | 0.88 | 0.88 | 0.88 | 0.72 | 0.72 | 0.72 |
| Lanes: | 0.33 | 1.67 | 1.00 | 0.27 | 1.62 | 0.11 | 0.11 | 0.27 | 0.62 | 0.63 | 0.17 | 0.20 |
| Final Sat.: | 508 | 2560 | 1615 | 424 | 2506 | 164 | 190 | 453 | 1033 | 870 | 232 | 269 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.07 | 0.10 | 0.10 | 0.10 | 0.09 | 0.09 | 0.09 | 0.19 | 0.19 | 0.19 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| Volume/Cap: | 0.36 | 0.36 | 0.17 | 0.25 | 0.25 | 0.25 | 0.18 | 0.18 | 0.18 | 0.36 | 0.36 | 0.36 |
| Delay/Veh: | 14.2 | 14.2 | 13.0 | 13.4 | 13.4 | 13.4 | 8.7 | 8.7 | 8.7 | 10.0 | 10.0 | 10.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.2 | 14.2 | 13.0 | 13.4 | 13.4 | 13.4 | 8.7 | 8.7 | 8.7 | 10.0 | 10.0 | 10.0 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | A | A | A |
| HCM2kAvgQ: | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.335 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.3 |
| Optimal Cycle: | 17 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1! | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Added Vol: | 0 | 4 | 23 | 0 | 4 | 0 | 0 | 0 | 0 | 25 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 88 | 326 | 144 | 46 | 319 | 17 | 18 | 43 | 86 | 151 | 44 | 48 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 88 | 326 | 144 | 46 | 319 | 17 | 18 | 43 | 86 | 151 | 44 | 48 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 88 | 326 | 144 | 46 | 319 | 17 | 18 | 43 | 86 | 151 | 44 | 48 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 88 | 326 | 144 | 46 | 319 | 17 | 18 | 43 | 86 | 151 | 44 | 48 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.77 | 0.77 | 0.85 | 0.83 | 0.83 | 0.83 | 0.89 | 0.89 | 0.89 | 0.73 | 0.73 | 0.73 |
| Lanes: | 0.43 | 1.57 | 1.00 | 0.24 | 1.67 | 0.09 | 0.12 | 0.29 | 0.59 | 0.62 | 0.18 | 0.20 |
| Final Sat.: | 621 | 2300 | 1615 | 378 | 2622 | 140 | 206 | 492 | 984 | 867 | 253 | 276 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.14 | 0.14 | 0.09 | 0.12 | 0.12 | 0.12 | 0.09 | 0.09 | 0.09 | 0.17 | 0.17 | 0.17 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 |
| Volume/Cap: | 0.33 | 0.33 | 0.21 | 0.29 | 0.29 | 0.29 | 0.17 | 0.17 | 0.17 | 0.33 | 0.33 | 0.33 |
| Delay/Veh: | 13.7 | 13.7 | 12.9 | 13.4 | 13.4 | 13.4 | 8.9 | 8.9 | 8.9 | 10.1 | 10.1 | 10.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 13.7 | 13.7 | 12.9 | 13.4 | 13.4 | 13.4 | 8.9 | 8.9 | 8.9 | 10.1 | 10.1 | 10.1 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[ 21.0]

| Street Name: | Cloverdale Blvd | | | | | | | | | Lake St | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 542 | 113 | | | 46 | 472 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Initial Bse: | 0 | 542 | 113 | | | 46 | 472 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| Added Vol: | 0 | 20 | 0 | | | 0 | 21 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| PasserByVol: | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| Initial Fut: | 0 | 562 | 113 | | | 46 | 493 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| User Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| PHF Volume: | 0 | 562 | 113 | | | 46 | 493 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| Reduct Vol: | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| FinalVolume: | 0 | 562 | 113 | | | 46 | 493 | 0 | | | 0 | 0 | 0 | | | 76 | 0 | 34 | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 6.8 | xxxx | 6.9 | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 3.5 | xxxx | 3.3 | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | | | 675 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 957 | xxxx | 338 | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | | | 926 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 259 | xxxx | 664 | | |
| Move Cap.: | xxxx | xxxx | xxxxx | | | 926 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 249 | xxxx | 664 | | |
| Volume/Cap: | xxxx | xxxx | xxxx | | | 0.05 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | 0.31 | xxxx | 0.05 | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 1.2 | xxxx | 0.2 | | |
| Control Del: | xxxxx | xxxx | xxxxx | | | 9.1 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | 25.7 | xxxx | 10.7 | | |
| LOS by Move: | * | * | * | | | A | * | * | | * | * | * | | | | D | * | B | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | | | 0.2 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | | | 9.1 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | * | * | * | | | A | * | * | | | * | * | * | | | * | * | * | | |
| ApproachDel: | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | | 21.0 | | | | |
| ApproachLOS: | * | | | | | * | | | | | * | | | | | C | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[ 14.7]

| Street Name: | Cloverdale Blvd | | | | | | | | | Lake St | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 371 | 71 | | | 28 | 367 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Initial Bse: | 0 | 371 | 71 | | | 28 | 367 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| Added Vol: | 0 | 27 | 0 | | | 0 | 29 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| PasserByVol: | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| Initial Fut: | 0 | 398 | 71 | | | 28 | 396 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| User Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| PHF Volume: | 0 | 398 | 71 | | | 28 | 396 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| Reduct Vol: | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | |
| FinalVolume: | 0 | 398 | 71 | | | 28 | 396 | 0 | | | 0 | 0 | 0 | | | 68 | 0 | 27 | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 6.8 | xxxx | 6.9 | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | 3.5 | xxxx | 3.3 | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | | | 469 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 688 | xxxx | 235 | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | | | 1103 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 385 | xxxx | 773 | | |
| Move Cap.: | xxxx | xxxx | xxxxx | | | 1103 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 377 | xxxx | 773 | | |
| Volume/Cap: | xxxx | xxxx | xxxx | | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | 0.18 | xxxx | 0.03 | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | 0.6 | xxxx | 0.1 | | |
| Control Del: | xxxxx | xxxx | xxxxx | | | 8.3 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | 16.6 | xxxx | 9.8 | | |
| LOS by Move: | * | * | * | | | A | * | * | | * | * | * | | | | C | * | A | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | | | 0.1 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | | | 8.3 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | * | * | * | | | A | * | * | | | * | * | * | | | * | * | * | | |
| ApproachDel: | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | | 14.7 | | | | |
| ApproachLOS: | * | | | | | * | | | | | * | | | | | B | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.393 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 14.7 |
| Optimal Cycle: | 22 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Added Vol: | 0 | 0 | 2 | 21 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 20 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 15 | 465 | 135 | 173 | 446 | 6 | 5 | 14 | 25 | 196 | 25 | 261 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 15 | 465 | 135 | 173 | 446 | 6 | 5 | 14 | 25 | 196 | 25 | 261 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 15 | 465 | 135 | 173 | 446 | 6 | 5 | 14 | 25 | 196 | 25 | 261 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 15 | 465 | 135 | 173 | 446 | 6 | 5 | 14 | 25 | 196 | 25 | 261 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.92 | 0.92 | 0.95 | 0.95 | 0.95 | 0.92 | 0.92 | 0.92 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.55 | 0.45 | 1.00 | 1.97 | 0.03 | 0.11 | 0.32 | 0.57 | 1.77 | 0.23 | 1.00 |
| Final Sat.: | 1805 | 2703 | 785 | 1805 | 3555 | 48 | 198 | 555 | 990 | 3229 | 412 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.01 | 0.17 | 0.17 | 0.10 | 0.13 | 0.13 | 0.03 | 0.03 | 0.03 | 0.06 | 0.06 | 0.16 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.04 | 0.44 | 0.44 | 0.24 | 0.64 | 0.64 | 0.06 | 0.06 | 0.06 | 0.17 | 0.17 | 0.41 |
| Volume/Cap: | 0.20 | 0.39 | 0.39 | 0.39 | 0.20 | 0.20 | 0.39 | 0.39 | 0.39 | 0.36 | 0.36 | 0.39 |
| Delay/Veh: | 33.6 | 13.5 | 13.5 | 22.7 | 5.2 | 5.2 | 33.7 | 33.7 | 33.7 | 26.2 | 26.2 | 14.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.6 | 13.5 | 13.5 | 22.7 | 5.2 | 5.2 | 33.7 | 33.7 | 33.7 | 26.2 | 26.2 | 14.8 |
| LOS by Move: | C | B | B | C | A | A | C | C | C | C | C | B |
| HCM2kAvgQ: | 1 | 5 | 5 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 4 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.366 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 21.8 |
| Optimal Cycle: | 22 | Level Of Service: | C |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Added Vol: | 0 | 0 | 3 | 29 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 27 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 53 | 50 | 139 | 74 | 44 | 10 | 8 | 175 | 42 | 138 | 158 | 72 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 53 | 50 | 139 | 74 | 44 | 10 | 8 | 175 | 42 | 138 | 158 | 72 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 53 | 50 | 139 | 74 | 44 | 10 | 8 | 175 | 42 | 138 | 158 | 72 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 53 | 50 | 139 | 74 | 44 | 10 | 8 | 175 | 42 | 138 | 158 | 72 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.85 | 0.85 | 0.95 | 0.92 | 0.92 | 0.97 | 0.97 | 0.97 | 0.98 | 0.98 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.63 | 0.37 | 0.03 | 0.78 | 0.19 | 1.00 | 1.00 | 1.00 |
| Final Sat.: | 1805 | 1606 | 1606 | 1805 | 2859 | 650 | 66 | 1438 | 345 | 1856 | 1856 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.03 | 0.09 | 0.04 | 0.02 | 0.02 | 0.12 | 0.12 | 0.12 | 0.07 | 0.09 | 0.04 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.23 | 0.24 | 0.24 | 0.11 | 0.12 | 0.12 | 0.33 | 0.33 | 0.33 | 0.23 | 0.23 | 0.34 |
| Volume/Cap: | 0.13 | 0.13 | 0.37 | 0.37 | 0.13 | 0.13 | 0.37 | 0.37 | 0.37 | 0.32 | 0.37 | 0.13 |
| Delay/Veh: | 21.6 | 21.1 | 22.8 | 29.9 | 27.7 | 27.7 | 18.1 | 18.1 | 18.1 | 22.5 | 22.8 | 15.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 21.6 | 21.1 | 22.8 | 29.9 | 27.7 | 27.7 | 18.1 | 18.1 | 18.1 | 22.5 | 22.8 | 15.8 |
| LOS by Move: | C | C | C | C | C | C | B | B | B | C | C | B |
| HCM2kAvgQ: | 1 | 1 | 3 | 2 | 1 | 1 | 4 | 4 | 4 | 3 | 3 | 1 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: B[ 12.6]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 9 | 14 | 57 | 22 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 28 | 0 | 41 | 0 | 79 | 206 | 103 | 477 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 28 | 0 | 41 | 0 | 79 | 206 | 103 | 477 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 28 | 0 | 41 | 0 | 79 | 206 | 103 | 477 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 723 | 968 | 239 | xxxx | xxxx | xxxxx | 285 | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 366 | 256 | 769 | xxxx | xxxx | xxxxx | 1289 | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 343 | 235 | 769 | xxxx | xxxx | xxxxx | 1289 | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.08 | 0.00 | 0.05 | xxxx | xxxx | xxxx | 0.08 | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 16.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | * | * | * | C | * | * | * | * | * | A | * | * | | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 769 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.9 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | 12.6 | | | xxxxxx | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.4 Worst Case Level Of Service: B[ 11.4]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 13 | 19 | 76 | 30 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 37 | 0 | 33 | 0 | 69 | 194 | 110 | 260 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 37 | 0 | 33 | 0 | 69 | 194 | 110 | 260 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 37 | 0 | 33 | 0 | 69 | 194 | 110 | 260 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 515 | 743 | 130 | xxxx | xxxx | xxxxx | 263 | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 495 | 346 | 902 | xxxx | xxxx | xxxxx | 1313 | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 463 | 317 | 902 | xxxx | xxxx | xxxxx | 1313 | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.08 | 0.00 | 0.04 | xxxx | xxxx | xxxx | 0.08 | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 13.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | * | * | * | B | * | * | * | * | * | A | * | * | | | | | | | | |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 902 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.1 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.1 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | 11.4 | | | xxxxxx | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.4 Worst Case Level Of Service: B[ 12.9]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 361 | | 0 | 79 | | 0 | 0 | | 0 | | 38 | 31 | | 0 | | 0 | 99 | | 16 | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 361 | | 0 | 79 | | 0 | 0 | | 0 | | 38 | 31 | | 0 | | 0 | 99 | | 16 | |
| Added Vol: | 0 | | 0 | 79 | | 0 | 0 | | 0 | | 0 | 29 | | 0 | | 0 | 79 | | 18 | |
| PasserByVol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| Initial Fut: | 361 | | 0 | 158 | | 0 | 0 | | 0 | | 38 | 60 | | 0 | | 0 | 178 | | 34 | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 361 | | 0 | 158 | | 0 | 0 | | 0 | | 38 | 60 | | 0 | | 0 | 178 | | 34 | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| FinalVolume: | 361 | | 0 | 158 | | 0 | 0 | | 0 | | 38 | 60 | | 0 | | 0 | 178 | | 34 | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 225 | 348 | | 30 | xxxx | xxxx | xxxxx | | 212 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 749 | 579 | | 1044 | xxxx | xxxx | xxxxx | | 1370 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 733 | 563 | | 1044 | xxxx | xxxx | xxxxx | | 1370 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.49 | 0.00 | | 0.15 | xxxx | xxxx | xxxx | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.5 | xxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 9.1 | xxxxx | xxxx | xxxxx | | 7.7 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 733 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | 2.7 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shrd ConDel: | 14.6 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shared LOS: | B | * | | * | * | * | * | | * | * | * | | * | * | * | | | | | |
| ApproachDel: | 12.9 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 5.7 Worst Case Level Of Service: B[ 10.5]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 187 | | 0 | 42 | | 0 | 0 | | 0 | | 33 | 30 | | 0 | | 0 | 82 | | 16 | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 187 | | 0 | 42 | | 0 | 0 | | 0 | | 33 | 30 | | 0 | | 0 | 82 | | 16 | |
| Added Vol: | 0 | | 0 | 121 | | 0 | 0 | | 0 | | 0 | 45 | | 0 | | 0 | 106 | | 25 | |
| PasserByVol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| Initial Fut: | 187 | | 0 | 163 | | 0 | 0 | | 0 | | 33 | 75 | | 0 | | 0 | 188 | | 41 | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 187 | | 0 | 163 | | 0 | 0 | | 0 | | 33 | 75 | | 0 | | 0 | 188 | | 41 | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | |
| FinalVolume: | 187 | | 0 | 163 | | 0 | 0 | | 0 | | 33 | 75 | | 0 | | 0 | 188 | | 41 | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 235 | 370 | | 38 | xxxx | xxxx | xxxxx | | 229 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 738 | 563 | | 1033 | xxxx | xxxx | xxxxx | | 1351 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 724 | 549 | | 1033 | xxxx | xxxx | xxxxx | | 1351 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.26 | 0.00 | | 0.16 | xxxx | xxxx | xxxx | | 0.02 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.6 | xxxx | xxxx | xxxxx | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 9.1 | xxxxx | xxxx | xxxxx | | 7.7 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 724 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | 1.0 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shrd ConDel: | 11.7 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shared LOS: | B | * | | * | * | * | * | | * | * | * | | * | * | * | | | | | |
| ApproachDel: | 10.5 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | B | | | * | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.6 Worst Case Level Of Service: B[ 10.8]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 |
| Added Vol: | 97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 108 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 166 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 134 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 166 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 134 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 166 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 134 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 93 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 460 | xxxx | 52 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 563 | xxxx | 1021 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 516 | xxxx | 1021 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.11 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.17 | xxxx | 0.13 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.6 | xxxx | 0.5 | xxxx | xxxx | xxxxx |
| Control Del: | 7.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 13.4 | xxxx | 9.1 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | B | * | A | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 10.8 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative D
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City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.8 Worst Case Level Of Service: A[ 9.8]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 |
| Added Vol: | 131 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 166 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 176 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 193 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 176 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 193 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 176 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 193 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 77 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 445 | xxxx | 43 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 574 | xxxx | 1033 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 524 | xxxx | 1033 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.11 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.08 | xxxx | 0.19 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | 0.7 | xxxx | xxxx | xxxxx |
| Control Del: | 7.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 12.5 | xxxx | 9.3 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | B | * | A | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 9.8 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | A | | | * | | |

Note: Queue reported is the number of cars per lane.

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Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 6.8 Worst Case Level Of Service: C[ 16.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 183 | 108 | 0 | 0 | 0 | 0 | 0 | 165 | 0 | 97 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 119 | 183 | 108 | 72 | 0 | 0 | 0 | 0 | 165 | 0 | 97 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 119 | 183 | 108 | 72 | 0 | 0 | 0 | 0 | 165 | 0 | 97 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 119 | 183 | 108 | 72 | 0 | 0 | 0 | 0 | 165 | 0 | 97 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 302 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 499 | 499 | 211 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1270 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 535 | 477 | 835 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1270 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 498 | 433 | 835 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.09 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.33 | 0.00 | 0.12 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 585 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 2.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 16.0 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 16.0 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 11.9 Worst Case Level Of Service: D[ 27.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 282 | 166 | 0 | 0 | 0 | 0 | 0 | 223 | 0 | 131 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 77 | 282 | 166 | 60 | 0 | 0 | 0 | 0 | 223 | 0 | 131 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 77 | 282 | 166 | 60 | 0 | 0 | 0 | 0 | 223 | 0 | 131 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 77 | 282 | 166 | 60 | 0 | 0 | 0 | 0 | 223 | 0 | 131 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 359 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 610 | 610 | 218 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1211 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 461 | 412 | 827 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1211 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 408 | 350 | 827 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.14 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.55 | 0.00 | 0.16 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 502 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 5.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 27.6 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | D | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 27.6 | | |
| ApproachLOS: | * | | | * | | | * | | | D | | |

Note: Queue reported is the number of cars per lane.

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City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[ 12.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 183 | 0 | 0 | 165 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 289 | 16 | 5 | 251 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 289 | 16 | 5 | 251 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 289 | 16 | 5 | 251 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 305 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 558 | 558 | 297 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1267 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 494 | 441 | 747 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1267 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 493 | 439 | 747 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.05 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 7.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 510 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.2 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 7.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 12.5 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 12.5 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[ 10.2]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Added Vol: | 0 | 282 | 0 | 0 | 223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 347 | 1 | 4 | 298 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 347 | 1 | 4 | 298 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 347 | 1 | 4 | 298 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 348 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 348 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1222 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 700 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1222 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 700 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.2 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 10.2 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[ 12.3]

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Rights: | Include | | | | | | Include | | | | | | Include | | | | | | Include | | | | | |
| Lanes: | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 1 | 0 | 1 | | 0 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | |
| Volume Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 199 | 444 | 0 | 0 | 214 | 50 | | | | | | | 36 | 0 | 91 | 0 | 0 | 0 | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| Initial Bse: | 199 | 444 | 0 | 0 | 214 | 50 | | | | | | | 36 | 0 | 91 | 0 | 0 | 0 | | | | | | |
| Added Vol: | 7 | 2 | 0 | 0 | 2 | 0 | | | | | | | 0 | 0 | 7 | 0 | 0 | 0 | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Initial Fut: | 206 | 446 | 0 | 0 | 216 | 50 | | | | | | | 36 | 0 | 98 | 0 | 0 | 0 | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Volume: | 206 | 446 | 0 | 0 | 216 | 50 | | | | | | | 36 | 0 | 98 | 0 | 0 | 0 | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| FinalVolume: | 206 | 446 | 0 | 0 | 216 | 50 | | | | | | | 36 | 0 | 98 | 0 | 0 | 0 | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 266 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 1074 | 1074 | 216 | xxxx | xxxx | xxxxx | | | | | | |
| Potent Cap.: | 1310 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 246 | 222 | 829 | xxxx | xxxx | xxxxx | | | | | | |
| Move Cap.: | 1310 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 216 | 187 | 829 | xxxx | xxxx | xxxxx | | | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 299 | 266 | xxxxx | 220 | 249 | xxxxx | | | | | | |
| Volume/Cap: | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx | | | | | | | 0.12 | 0.00 | 0.12 | xxxx | xxxx | xxxx | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | xxxxx | xxxx | 9.9 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | * | * | * | * | | | | | | | * | * | A | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | | | | | | | | | | LT - LTR - RT | | | | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 299 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 18.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shared LOS: | * | * | * | * | * | * | | | | | | | C | * | * | * | * | * | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | | | | | | 12.3 | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | * | | | | | | | | | B | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.5 Worst Case Level Of Service: B[ 12.4]

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Rights: | Include | | | | | | Include | | | | | | Include | | | | | | Include | | | | | |
| Lanes: | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 1 | 0 | 1 | | 0 | 1 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 0 | |
| Volume Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 146 | 340 | 0 | 0 | 318 | 43 | | | | | | | 43 | 0 | 144 | 0 | 0 | 0 | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| Initial Bse: | 146 | 340 | 0 | 0 | 318 | 43 | | | | | | | 43 | 0 | 144 | 0 | 0 | 0 | | | | | | |
| Added Vol: | 10 | 3 | 0 | 0 | 3 | 0 | | | | | | | 0 | 0 | 10 | 0 | 0 | 0 | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Initial Fut: | 156 | 343 | 0 | 0 | 321 | 43 | | | | | | | 43 | 0 | 154 | 0 | 0 | 0 | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| PHF Volume: | 156 | 343 | 0 | 0 | 321 | 43 | | | | | | | 43 | 0 | 154 | 0 | 0 | 0 | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| FinalVolume: | 156 | 343 | 0 | 0 | 321 | 43 | | | | | | | 43 | 0 | 154 | 0 | 0 | 0 | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 364 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 976 | 976 | 321 | xxxx | xxxx | xxxxx | | | | | | |
| Potent Cap.: | 1206 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 281 | 253 | 724 | xxxx | xxxx | xxxxx | | | | | | |
| Move Cap.: | 1206 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 253 | 220 | 724 | xxxx | xxxx | xxxxx | | | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 360 | 320 | xxxxx | 228 | 293 | xxxxx | | | | | | |
| Volume/Cap: | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx | | | | | | | 0.12 | 0.00 | 0.21 | xxxx | xxxx | xxxx | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | xxxx | xxxx | 0.8 | xxxx | xxxx | xxxxx | | | | | | |
| Control Del: | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | xxxxx | xxxx | 11.3 | xxxxx | xxxx | xxxxx | | | | | | |
| LOS by Move: | A | * | * | * | * | * | | | | | | | * | * | B | * | * | * | | | | | | |
| Movement: | LT - LTR - RT | | | | | | | | | | | | LT - LTR - RT | | | | | | | | | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | 360 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | 16.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Shared LOS: | * | * | * | * | * | * | | | | | | | C | * | * | * | * | * | | | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | | | | | | | 12.4 | | | xxxxxx | | | | | | | | |
| ApproachLOS: | * | | | * | | | | | | | | | B | | | * | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 10.9 Worst Case Level Of Service: C[ 16.4]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 1 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Added Vol: | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 110 | 68 | 295 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 588 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 110 | 68 | 295 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 588 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 110 | 68 | 295 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 588 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 178 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 810 | xxxx | 144 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 352 | xxxx | 909 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 295 | xxxx | 909 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.21 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.23 | xxxx | 0.65 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.9 | xxxx | 4.9 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 20.7 | xxxx | 15.9 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | C |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 16.4 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 7.8 Worst Case Level Of Service: B[ 11.3]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 1 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Added Vol: | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 54 | 56 | 283 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 345 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 54 | 56 | 283 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 345 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 54 | 56 | 283 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 345 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 110 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 712 | xxxx | 82 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 402 | xxxx | 983 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 343 | xxxx | 983 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.12 | xxxx | 0.35 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.4 | xxxx | 1.6 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 16.9 | xxxx | 10.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.3 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: D[ 25.7]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 0 | 1 0 | 0 1 | 0 0 | 0 | 1 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 156 | 9 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 217 | 269 | 588 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 217 | 269 | 588 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 217 | 269 | 588 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1382 | 1490 | 588 | xxxx | xxxx | xxxxx | 364 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 160 | 125 | 513 | xxxx | xxxx | xxxxx | 1206 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 133 | 97 | 513 | xxxx | xxxx | xxxxx | 1206 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.33 | 0.00 | 0.13 | xxxx | xxxx | xxxx | 0.22 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | 0.9 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 13.1 | xxxxx | xxxx | xxxxx | 8.8 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 133 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 45.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | E | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 25.7 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | D | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: C[ 19.6]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 0 | 1 0 | 0 1 | 0 0 | 0 | 1 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 210 | 13 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 245 | 307 | 337 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 245 | 307 | 337 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 245 | 307 | 337 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1199 | 1321 | 337 | xxxx | xxxx | xxxxx | 370 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 207 | 158 | 710 | xxxx | xxxx | xxxxx | 1200 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 166 | 118 | 710 | xxxx | xxxx | xxxxx | 1200 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.23 | 0.00 | 0.08 | xxxx | xxxx | xxxx | 0.26 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 1.0 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.5 | xxxxx | xxxx | xxxxx | 9.0 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 166 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 33.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | D | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 19.6 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 54.7  Worst Case Level Of Service: F[ 96.8]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Added Vol: | 0 | 0 | 183 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 165 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 489 | 0 | 282 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 368 | 49 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Volume: | 489 | 0 | 282 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 368 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 489 | 0 | 282 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 368 | 49 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 668 | 692 | 107 | xxxx | xxxx | xxxxx | 417 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 427 | 370 | 953 | xxxx | xxxx | xxxxx | 1153 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 403 | 343 | 953 | xxxx | xxxx | xxxxx | 1153 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 1.21 | 0.00 | 0.30 | xxxx | xxxx | xxxx | 0.07 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 1.2 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 10.4 | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 403 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 19.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 146.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 96.8 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 9.6  Worst Case Level Of Service: C[ 17.6]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 1 0 1 | 0 | 0 | 0 0 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Added Vol: | 0 | 0 | 282 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 223 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 4 | 369 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 386 | 44 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Volume: | 262 | 4 | 369 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 386 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 262 | 4 | 369 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 386 | 44 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 636 | 658 | 90 | xxxx | xxxx | xxxxx | 430 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 445 | 387 | 973 | xxxx | xxxx | xxxxx | 1140 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 425 | 363 | 973 | xxxx | xxxx | xxxxx | 1140 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.62 | 0.01 | 0.38 | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 1.8 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 10.9 | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 424 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 4.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 26.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | D | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 17.6 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | C | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.674 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 24.1 |
| Optimal Cycle: | 39 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Added Vol: | 0 | 0 | 183 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 165 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 489 | 0 | 282 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 368 | 49 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 489 | 0 | 282 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 368 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 489 | 0 | 282 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 368 | 49 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 489 | 0 | 282 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 368 | 49 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.88 | 0.12 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1650 | 220 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.36 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.05 | 0.06 | 0.00 | 0.00 | 0.22 | 0.22 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.54 | 0.00 | 0.54 | 0.00 | 0.00 | 0.00 | 0.07 | 0.40 | 0.00 | 0.00 | 0.33 | 0.33 |
| Volume/Cap: | 0.67 | 0.00 | 0.33 | 0.00 | 0.00 | 0.00 | 0.67 | 0.14 | 0.00 | 0.00 | 0.67 | 0.67 |
| Delay/Veh: | 19.1 | 0.0 | 13.1 | 0.0 | 0.0 | 0.0 | 59.1 | 19.2 | 0.0 | 0.0 | 31.8 | 31.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 19.1 | 0.0 | 13.1 | 0.0 | 0.0 | 0.0 | 59.1 | 19.2 | 0.0 | 0.0 | 31.8 | 31.8 |
| LOS by Move: | B | A | B | A | A | A | E | B | A | A | C | C |
| HCM2k95thQ: | 21 | 0 | 10 | 0 | 0 | 0 | 5 | 4 | 0 | 0 | 20 | 20 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.530 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 21.9 |
| Optimal Cycle: | 29 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Added Vol: | 0 | 0 | 282 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 223 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 4 | 369 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 386 | 44 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 4 | 369 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 386 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 262 | 4 | 369 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 386 | 44 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 262 | 4 | 369 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 386 | 44 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.93 | 0.93 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 0.98 | 0.02 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.90 | 0.10 |
| Final Sat.: | 1738 | 27 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1682 | 192 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.23 | 0.00 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.00 | 0.23 | 0.23 |
| Crit Moves: | | | **** | | | | **** | | | | **** | |
| Green/Cycle: | 0.44 | 0.44 | 0.44 | 0.00 | 0.00 | 0.00 | 0.07 | 0.50 | 0.00 | 0.00 | 0.43 | 0.43 |
| Volume/Cap: | 0.35 | 0.35 | 0.53 | 0.00 | 0.00 | 0.00 | 0.53 | 0.09 | 0.00 | 0.00 | 0.53 | 0.53 |
| Delay/Veh: | 19.1 | 19.1 | 21.5 | 0.0 | 0.0 | 0.0 | 48.9 | 12.9 | 0.0 | 0.0 | 21.6 | 21.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 19.1 | 19.1 | 21.5 | 0.0 | 0.0 | 0.0 | 48.9 | 12.9 | 0.0 | 0.0 | 21.6 | 21.6 |
| LOS by Move: | B | B | C | A | A | A | D | B | A | A | C | C |
| HCM2k95thQ: | 11 | 11 | 16 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 17 | 17 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 17.9 Worst Case Level Of Service: E[ 37.2]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 165 | 183 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 256 | 262 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 256 | 262 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 256 | 262 | 43 | 81 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 287 | xxxx | xxxxx | 52 | xxxx | xxxxx | 475 | 447 | 159 | 509 | 575 | 52 |
| Potent Cap.: | 1287 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 503 | 509 | 892 | 478 | 432 | 1022 |
| Move Cap.: | 1287 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 420 | 461 | 892 | 375 | 390 | 1022 |
| Volume/Cap: | 0.08 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.62 | 0.09 | 0.09 | 0.00 | 0.12 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.1 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 478 | xxxxx | xxxx | 437 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 7.6 | xxxxx | xxxxx | 0.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 37.2 | xxxxx | xxxxx | 14.5 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | E | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 37.2 | | | 14.5 | | |
| ApproachLOS: | * | | | * | | | E | | | B | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 27.5 Worst Case Level Of Service: F[ 55.1]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 223 | 282 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 296 | 337 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 296 | 337 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 296 | 337 | 43 | 77 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 324 | xxxx | xxxxx | 32 | xxxx | xxxxx | 444 | 416 | 176 | 476 | 564 | 32 |
| Potent Cap.: | 1247 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 528 | 530 | 872 | 503 | 438 | 1048 |
| Move Cap.: | 1247 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 445 | 485 | 872 | 400 | 400 | 1048 |
| Volume/Cap: | 0.08 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.76 | 0.09 | 0.09 | 0.00 | 0.12 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.2 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.1 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 489 | xxxxx | xxxx | 448 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 11.2 | xxxxx | xxxxx | 0.4 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 55.1 | xxxxx | xxxxx | 14.2 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 55.1 | | | 14.2 | | |
| ApproachLOS: | * | | | * | | | F | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.544
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 30.4
Optimal Cycle: 29 Level Of Service: C

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 165 | 183 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 256 | 262 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 256 | 262 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 108 | 51 | 1 | 10 | 31 | 256 | 262 | 43 | 81 | 1 | 47 | 10 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 256 | 262 | 43 | 81 | 1 | 47 | 10 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.97 | 0.97 | 0.97 | 0.88 | 0.88 | 0.88 | 0.94 | 0.94 | 0.94 | 0.98 | 0.98 | 0.98 |
| Lanes: | 0.67 | 0.32 | 0.01 | 0.03 | 0.10 | 0.87 | 0.68 | 0.11 | 0.21 | 0.02 | 0.81 | 0.17 |
| Final Sat.: | 1239 | 585 | 11 | 56 | 175 | 1445 | 1212 | 199 | 375 | 32 | 1503 | 320 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.09 | 0.09 | 0.09 | 0.18 | 0.18 | 0.18 | 0.22 | 0.22 | 0.22 | 0.03 | 0.03 | 0.03 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.16 | 0.16 | 0.16 | 0.33 | 0.33 | 0.33 | 0.40 | 0.40 | 0.40 | 0.06 | 0.06 | 0.06 |
| Volume/Cap: | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 |
| Delay/Veh: | 40.7 | 40.7 | 40.7 | 28.8 | 28.8 | 28.8 | 24.1 | 24.1 | 24.1 | 51.6 | 51.6 | 51.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 40.7 | 40.7 | 40.7 | 28.8 | 28.8 | 28.8 | 24.1 | 24.1 | 24.1 | 51.6 | 51.6 | 51.6 |
| LOS by Move: | D | D | D | C | C | C | C | C | C | D | D | D |
| HCM2k95thQ: | 10 | 10 | 10 | 15 | 15 | 15 | 17 | 17 | 17 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.591
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 29.9
Optimal Cycle: 32 Level Of Service: C

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 | 0 | 0 | 1! 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 223 | 282 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 296 | 337 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 296 | 337 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 94 | 31 | 1 | 10 | 28 | 296 | 337 | 43 | 77 | 1 | 47 | 10 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 296 | 337 | 43 | 77 | 1 | 47 | 10 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.96 | 0.96 | 0.96 | 0.88 | 0.88 | 0.88 | 0.94 | 0.94 | 0.94 | 0.98 | 0.98 | 0.98 |
| Lanes: | 0.75 | 0.24 | 0.01 | 0.03 | 0.08 | 0.89 | 0.74 | 0.09 | 0.17 | 0.02 | 0.81 | 0.17 |
| Final Sat.: | 1365 | 450 | 15 | 50 | 140 | 1480 | 1320 | 168 | 302 | 32 | 1503 | 320 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.07 | 0.07 | 0.07 | 0.20 | 0.20 | 0.20 | 0.26 | 0.26 | 0.26 | 0.03 | 0.03 | 0.03 |
| Crit Moves: | | **** | | **** | | | | | **** | | | **** |
| Green/Cycle: | 0.12 | 0.12 | 0.12 | 0.34 | 0.34 | 0.34 | 0.43 | 0.43 | 0.43 | 0.05 | 0.05 | 0.05 |
| Volume/Cap: | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 |
| Delay/Veh: | 46.3 | 46.3 | 46.3 | 29.0 | 29.0 | 29.0 | 22.9 | 22.9 | 22.9 | 55.5 | 55.5 | 55.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 46.3 | 46.3 | 46.3 | 29.0 | 29.0 | 29.0 | 22.9 | 22.9 | 22.9 | 55.5 | 55.5 | 55.5 |
| LOS by Move: | D | D | D | C | C | C | C | C | C | E | E | E |
| HCM2k95thQ: | 9 | 9 | 9 | 17 | 17 | 17 | 19 | 19 | 19 | 6 | 6 | 6 |

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Short-term+ Project D Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 22 | 4.3 | 0.225 | 12.0 | LOS B | 31 | 0.62 | 0.83 | 23.6 |
| 16T | T | 92 | 2.2 | 0.225 | 4.9 | LOS A | 31 | 0.62 | 0.52 | 27.1 |
| 16R | R | 55 | 1.8 | 0.225 | 6.4 | LOS A | 31 | 0.62 | 0.64 | 26.0 |
| **Approach** | | **170** | **2.4** | **0.225** | **6.3** | **LOS A** | **31** | **0.62** | **0.60** | **26.1** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.091 | 14.7 | LOS B | 12 | 0.61 | 0.87 | 23.0 |
| 6T | T | 40 | 2.5 | 0.090 | 5.2 | LOS A | 12 | 0.61 | 0.55 | 27.1 |
| 6R | R | 20 | 4.8 | 0.091 | 6.5 | LOS A | 12 | 0.61 | 0.64 | 26.2 |
| **Approach** | | **63** | **4.8** | **0.090** | **5.9** | **LOS A** | **12** | **0.61** | **0.59** | **26.6** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 43 | 2.3 | 0.391 | 14.1 | LOS B | 65 | 0.66 | 0.90 | 23.1 |
| 14T | T | 251 | 2.0 | 0.392 | 5.4 | LOS A | 65 | 0.66 | 0.60 | 26.7 |
| 14R | R | 19 | 5.0 | 0.392 | 7.0 | LOS A | 65 | 0.66 | 0.71 | 25.8 |
| **Approach** | | **314** | **2.2** | **0.392** | **6.7** | **LOS A** | **65** | **0.66** | **0.65** | **26.0** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 133 | 2.3 | 0.136 | 10.8 | LOS B | 25 | 0.17 | 0.60 | 24.7 |
| 2T | T | 24 | 4.0 | 0.136 | 1.8 | LOS A | 25 | 0.17 | 0.20 | 30.9 |
| 2R | R | 45 | 2.2 | 0.136 | 1.8 | LOS A | 25 | 0.17 | 0.20 | 30.9 |
| **Approach** | | **203** | **2.5** | **0.136** | **7.7** | **LOS A** | **25** | **0.17** | **0.46** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 515 | 1.9 | 0.344 | 12.6 | LOS B | 62 | 0.42 | 0.68 | 23.6 |
| 18T | T | 234 | 2.1 | 0.344 | 2.9 | LOS A | 62 | 0.42 | 0.31 | 28.6 |
| 18R | R | 64 | 1.6 | 0.344 | 4.1 | LOS A | 62 | 0.42 | 0.41 | 27.6 |
| **Approach** | | **812** | **2.0** | **0.344** | **9.2** | **LOS A** | **62** | **0.42** | **0.55** | **24.9** |
| **All Vehicles** | | **1562** | **2.2** | **0.392** | **8.0** | **LOS A** | **65** | **0.46** | **0.57** | **25.4** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Short-term+ Project D Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 21 | 4.5 | 0.162 | 11.4 | LOS B | 21 | 0.55 | 0.79 | 23.9 |
| 16T | T | 78 | 2.6 | 0.162 | 4.3 | LOS A | 21 | 0.55 | 0.46 | 27.6 |
| 16R | R | 34 | 2.9 | 0.162 | 5.9 | LOS A | 21 | 0.55 | 0.58 | 26.5 |
| **Approach** | | **134** | **3.0** | **0.162** | **5.8** | **LOS A** | **21** | **0.55** | **0.54** | **26.5** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.080 | 14.0 | LOS B | 11 | 0.55 | 0.83 | 23.2 |
| 6T | T | 39 | 2.6 | 0.081 | 4.5 | LOS A | 11 | 0.55 | 0.48 | 27.5 |
| 6R | R | 21 | 4.5 | 0.081 | 5.8 | LOS A | 11 | 0.55 | 0.58 | 26.6 |
| **Approach** | | **63** | **4.8** | **0.081** | **5.2** | **LOS A** | **11** | **0.55** | **0.52** | **27.0** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 40 | 2.5 | 0.377 | 12.7 | LOS B | 57 | 0.54 | 0.79 | 23.5 |
| 14T | T | 295 | 2.0 | 0.376 | 4.0 | LOS A | 57 | 0.54 | 0.43 | 27.6 |
| 14R | R | 17 | 5.6 | 0.375 | 5.6 | LOS A | 57 | 0.54 | 0.55 | 26.5 |
| **Approach** | | **353** | **2.3** | **0.376** | **5.1** | **LOS A** | **57** | **0.54** | **0.48** | **26.9** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 102 | 2.0 | 0.113 | 10.9 | LOS B | 20 | 0.15 | 0.61 | 24.7 |
| 2T | T | 23 | 4.2 | 0.113 | 1.8 | LOS A | 20 | 0.15 | 0.19 | 31.0 |
| 2R | R | 42 | 2.4 | 0.113 | 1.8 | LOS A | 20 | 0.15 | 0.19 | 31.0 |
| **Approach** | | **168** | **2.4** | **0.113** | **7.3** | **LOS A** | **20** | **0.15** | **0.44** | **26.5** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 276 | 2.2 | 0.265 | 12.4 | LOS B | 38 | 0.37 | 0.66 | 23.8 |
| 18T | T | 329 | 2.1 | 0.295 | 2.7 | LOS A | 50 | 0.37 | 0.29 | 28.9 |
| 18R | R | 62 | 1.6 | 0.295 | 3.8 | LOS A | 50 | 0.37 | 0.38 | 28.0 |
| **Approach** | | **668** | **2.1** | **0.295** | **6.8** | **LOS A** | **50** | **0.37** | **0.45** | **26.2** |
| **All Vehicles** | | **1386** | **2.4** | **0.377** | **6.3** | **LOS A** | **57** | **0.41** | **0.47** | **26.4** |

Symbols which may appear in this table:

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt E

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 281.00 | 474.00 | 281 | 474 | 755 | 100.0 |
| | Zone 38 Subtotal | | | | | 281 | 474 | 755 | 100.0 |
| TOTAL | | | | | | 281 | 474 | 755 | 100.0 |





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt E

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 374.00 | 358.00 | 374 | 358 | 732 | 100.0 |
| | Zone 38 Subtotal | | | | | 374 | 358 | 732 | 100.0 |
| TOTAL | | | | | | 374 | 358 | 732 | 100.0 |

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.386 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 11.8 |
| Optimal Cycle: | 18 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 1 | 0 1 | 0 | 1 0 | 1 0 | 0 | 0 1! | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 76 | 380 | 100 | 44 | 257 | 17 | 18 | 43 | 98 | 147 | 44 | 51 |
| Added Vol: | 24 | 47 | 24 | 0 | 28 | 0 | 0 | 0 | 14 | 14 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 100 | 427 | 124 | 44 | 285 | 17 | 18 | 43 | 112 | 161 | 44 | 51 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 100 | 427 | 124 | 44 | 285 | 17 | 18 | 43 | 112 | 161 | 44 | 51 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 100 | 427 | 124 | 44 | 285 | 17 | 18 | 43 | 112 | 161 | 44 | 51 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 100 | 427 | 124 | 44 | 285 | 17 | 18 | 43 | 112 | 161 | 44 | 51 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.78 | 0.78 | 0.85 | 0.81 | 0.81 | 0.81 | 0.88 | 0.88 | 0.88 | 0.72 | 0.72 | 0.72 |
| Lanes: | 0.38 | 1.62 | 1.00 | 0.25 | 1.65 | 0.10 | 0.10 | 0.25 | 0.65 | 0.63 | 0.17 | 0.20 |
| Final Sat.: | 562 | 2401 | 1615 | 393 | 2548 | 152 | 174 | 416 | 1083 | 864 | 236 | 274 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.18 | 0.18 | 0.08 | 0.11 | 0.11 | 0.11 | 0.10 | 0.10 | 0.10 | 0.19 | 0.19 | 0.19 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| Volume/Cap: | 0.39 | 0.39 | 0.17 | 0.24 | 0.24 | 0.24 | 0.21 | 0.21 | 0.21 | 0.39 | 0.39 | 0.39 |
| Delay/Veh: | 12.6 | 12.6 | 11.1 | 11.6 | 11.6 | 11.6 | 10.6 | 10.6 | 10.6 | 11.9 | 11.9 | 11.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 12.6 | 12.6 | 11.1 | 11.6 | 11.6 | 11.6 | 10.6 | 10.6 | 10.6 | 11.9 | 11.9 | 11.9 |
| LOS by Move: | B | B | B | B | B | B | B | B | B | B | B | B |
| HCM2kAvgQ: | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.355 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 11.8 |
| Optimal Cycle: | 17 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 1 | 0 1 | 0 | 1 0 | 1 0 | 0 | 0 1! | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 88 | 322 | 121 | 46 | 315 | 17 | 18 | 43 | 86 | 126 | 44 | 48 |
| Added Vol: | 18 | 36 | 18 | 0 | 37 | 0 | 0 | 0 | 19 | 19 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 106 | 358 | 139 | 46 | 352 | 17 | 18 | 43 | 105 | 145 | 44 | 48 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 106 | 358 | 139 | 46 | 352 | 17 | 18 | 43 | 105 | 145 | 44 | 48 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 106 | 358 | 139 | 46 | 352 | 17 | 18 | 43 | 105 | 145 | 44 | 48 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 106 | 358 | 139 | 46 | 352 | 17 | 18 | 43 | 105 | 145 | 44 | 48 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.75 | 0.75 | 0.85 | 0.83 | 0.83 | 0.83 | 0.88 | 0.88 | 0.88 | 0.73 | 0.73 | 0.73 |
| Lanes: | 0.46 | 1.54 | 1.00 | 0.22 | 1.70 | 0.08 | 0.11 | 0.26 | 0.63 | 0.61 | 0.19 | 0.20 |
| Final Sat.: | 647 | 2186 | 1615 | 348 | 2660 | 128 | 182 | 435 | 1061 | 848 | 257 | 281 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.16 | 0.16 | 0.09 | 0.13 | 0.13 | 0.13 | 0.10 | 0.10 | 0.10 | 0.17 | 0.17 | 0.17 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| Volume/Cap: | 0.35 | 0.35 | 0.19 | 0.29 | 0.29 | 0.29 | 0.21 | 0.21 | 0.21 | 0.35 | 0.35 | 0.35 |
| Delay/Veh: | 12.3 | 12.3 | 11.2 | 11.8 | 11.8 | 11.8 | 10.6 | 10.6 | 10.6 | 11.7 | 11.7 | 11.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 12.3 | 12.3 | 11.2 | 11.8 | 11.8 | 11.8 | 10.6 | 10.6 | 10.6 | 11.7 | 11.7 | 11.7 |
| LOS by Move: | B | B | B | B | B | B | B | B | B | B | B | B |
| HCM2kAvgQ: | 4 | 4 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: C[ 24.4]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1 | 1 0 | 0 | 1 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 542 | 113 | 46 | 472 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 542 | 113 | 46 | 472 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| Added Vol: | 0 | 95 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 637 | 113 | 46 | 528 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 637 | 113 | 46 | 528 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 637 | 113 | 46 | 528 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 750 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1050 | xxxx | 375 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 868 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 226 | xxxx | 628 |
| Move Cap.: | xxxx | xxxx | xxxxx | 868 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 217 | xxxx | 628 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.35 | xxxx | 0.05 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.5 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 30.3 | xxxx | 11.1 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | D | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 24.4 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: C[ 15.8]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1 | 1 0 | 0 | 1 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 371 | 71 | 28 | 367 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 371 | 71 | 28 | 367 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| Added Vol: | 0 | 72 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 443 | 71 | 28 | 442 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 443 | 71 | 28 | 442 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 443 | 71 | 28 | 442 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 756 | xxxx | 257 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1062 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 349 | xxxx | 748 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1062 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 341 | xxxx | 748 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.03 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.20 | xxxx | 0.04 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.7 | xxxx | 0.1 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 18.1 | xxxx | 10.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | A |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 15.8 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.448 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 15.4 |
| Optimal Cycle: | 24 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 15 | 465 | 133 | 152 | 446 | 6 | 5 | 14 | 25 | 194 | 25 | 241 |
| Added Vol: | 0 | 0 | 14 | 56 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 95 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 15 | 465 | 147 | 208 | 446 | 6 | 5 | 14 | 25 | 218 | 25 | 336 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 15 | 465 | 147 | 208 | 446 | 6 | 5 | 14 | 25 | 218 | 25 | 336 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 15 | 465 | 147 | 208 | 446 | 6 | 5 | 14 | 25 | 218 | 25 | 336 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 15 | 465 | 147 | 208 | 446 | 6 | 5 | 14 | 25 | 218 | 25 | 336 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.92 | 0.92 | 0.95 | 0.95 | 0.95 | 0.92 | 0.92 | 0.92 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.52 | 0.48 | 1.00 | 1.97 | 0.03 | 0.11 | 0.32 | 0.57 | 1.79 | 0.21 | 1.00 |
| Final Sat.: | 1805 | 2644 | 836 | 1805 | 3555 | 48 | 198 | 555 | 990 | 3262 | 374 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.01 | 0.18 | 0.18 | 0.12 | 0.13 | 0.13 | 0.03 | 0.03 | 0.03 | 0.07 | 0.07 | 0.21 |
| Crit Moves: | | **** | | **** | | | | **** | | | | **** |
| Green/Cycle: | 0.04 | 0.39 | 0.39 | 0.26 | 0.61 | 0.61 | 0.06 | 0.06 | 0.06 | 0.21 | 0.21 | 0.46 |
| Volume/Cap: | 0.21 | 0.45 | 0.45 | 0.45 | 0.21 | 0.21 | 0.45 | 0.45 | 0.45 | 0.32 | 0.32 | 0.45 |
| Delay/Veh: | 33.9 | 15.9 | 15.9 | 22.5 | 6.1 | 6.1 | 35.2 | 35.2 | 35.2 | 23.8 | 23.8 | 13.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.9 | 15.9 | 15.9 | 22.5 | 6.1 | 6.1 | 35.2 | 35.2 | 35.2 | 23.8 | 23.8 | 13.1 |
| LOS by Move: | C | B | B | C | A | A | D | D | D | C | C | B |
| HCM2kAvgQ: | 1 | 5 | 5 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 5 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.405 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 22.2 |
| Optimal Cycle: | 23 | Level Of Service: | C |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 53 | 50 | 136 | 45 | 44 | 10 | 8 | 175 | 42 | 135 | 158 | 45 |
| Added Vol: | 0 | 0 | 19 | 75 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 72 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 53 | 50 | 155 | 120 | 44 | 10 | 8 | 175 | 42 | 153 | 158 | 117 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 53 | 50 | 155 | 120 | 44 | 10 | 8 | 175 | 42 | 153 | 158 | 117 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 53 | 50 | 155 | 120 | 44 | 10 | 8 | 175 | 42 | 153 | 158 | 117 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 53 | 50 | 155 | 120 | 44 | 10 | 8 | 175 | 42 | 153 | 158 | 117 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.84 | 0.84 | 0.95 | 0.92 | 0.92 | 0.97 | 0.97 | 0.97 | 0.98 | 0.98 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.63 | 0.37 | 0.03 | 0.78 | 0.19 | 1.00 | 1.00 | 1.00 |
| Final Sat.: | 1805 | 1601 | 1601 | 1805 | 2859 | 650 | 66 | 1438 | 345 | 1854 | 1854 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.03 | 0.03 | 0.10 | 0.07 | 0.02 | 0.02 | 0.12 | 0.12 | 0.12 | 0.08 | 0.09 | 0.07 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.26 | 0.24 | 0.24 | 0.16 | 0.14 | 0.14 | 0.30 | 0.30 | 0.30 | 0.21 | 0.21 | 0.37 |
| Volume/Cap: | 0.11 | 0.13 | 0.40 | 0.40 | 0.11 | 0.11 | 0.40 | 0.40 | 0.40 | 0.39 | 0.40 | 0.19 |
| Delay/Veh: | 19.6 | 21.0 | 23.0 | 27.1 | 26.5 | 26.5 | 20.0 | 20.0 | 20.0 | 24.1 | 24.2 | 14.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 19.6 | 21.0 | 23.0 | 27.1 | 26.5 | 26.5 | 20.0 | 20.0 | 20.0 | 24.1 | 24.2 | 14.9 |
| LOS by Move: | B | C | C | C | C | C | B | B | B | C | C | B |
| HCM2kAvgQ: | 1 | 1 | 3 | 3 | 1 | 1 | 4 | 4 | 4 | 3 | 3 | 2 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: B[ 14.8]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 8 | 0 | 41 | 0 | 70 | 192 | 46 | 455 | 0 | | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 70 | 0 | 0 | 119 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 64 | 0 | 41 | 0 | 140 | 192 | 46 | 574 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 64 | 0 | 41 | 0 | 140 | 192 | 46 | 574 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 64 | 0 | 41 | 0 | 140 | 192 | 46 | 574 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 736 | 998 | 287 | xxxx | xxxx | xxxxx | 332 | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 359 | 246 | 716 | xxxx | xxxx | xxxxx | 1239 | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 348 | 237 | 716 | xxxx | xxxx | xxxxx | 1239 | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.18 | 0.00 | 0.06 | xxxx | xxxx | xxxx | 0.04 | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 17.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | * | * | * | C | * | * | * | * | * | A | * | * | | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 716 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.2 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.3 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | 14.8 | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: B[ 12.1]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 6 | 0 | 33 | 0 | 56 | 175 | 34 | 230 | 0 | | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 75 | 0 | 0 | 0 | 94 | 0 | 0 | 90 | 0 | | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 81 | 0 | 33 | 0 | 150 | 175 | 34 | 320 | 0 | | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 81 | 0 | 33 | 0 | 150 | 175 | 34 | 320 | 0 | | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 81 | 0 | 33 | 0 | 150 | 175 | 34 | 320 | 0 | | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 463 | 713 | 160 | xxxx | xxxx | xxxxx | 325 | xxxx | xxxxx | | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 533 | 360 | 863 | xxxx | xxxx | xxxxx | 1246 | xxxx | xxxxx | | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 522 | 350 | 863 | xxxx | xxxx | xxxxx | 1246 | xxxx | xxxxx | | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.16 | 0.00 | 0.04 | xxxx | xxxx | xxxx | 0.03 | xxxx | xxxx | | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 13.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | | | | | | | | |
| LOS by Move: | * | * | * | B | * | * | * | * | * | A | * | * | | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 863 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.1 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.3 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | | | |
| Shared LOS: | * | * | * | * | * | A | * | * | * | * | * | * | | | | | | | | |
| ApproachDel: | xxxxxx | | | 12.1 | | | xxxxxx | | | xxxxxx | | | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | * | | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: C[ 16.9]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 31 | | 0 | 0 | | 99 | | 16 |
| Growth Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Initial Bse: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 31 | | 0 | 0 | | 99 | | 16 |
| Added Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 126 | | 0 | 0 | | 119 | | 95 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 157 | | 0 | 0 | | 218 | | 111 |
| User Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| PHF Volume: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 157 | | 0 | 0 | | 218 | | 111 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 361 | | 0 | | 79 | 0 | | 0 | | 0 | 38 | | 157 | | 0 | 0 | | 218 | | 111 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 342 | 562 | | 79 | xxxx | xxxx | xxxxx | | | | 329 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Potent Cap.: | 634 | 439 | | 973 | xxxx | xxxx | xxxxx | | | | 1242 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Move Cap.: | 619 | 425 | | 973 | xxxx | xxxx | xxxxx | | | | 1242 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Volume/Cap: | 0.58 | 0.00 | | 0.08 | xxxx | xxxx | xxxx | | | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.3 | xxxx | xxxx | xxxxx | | | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Control Del: | xxxxx | xxxx | | 9.0 | xxxxx | xxxx | xxxxx | | | | 8.0 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | |
| LOS by Move: | * | * | | A | * | * | * | | | | A | * | * | | * | * | * | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 619 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | |
| SharedQueue: | 3.8 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | |
| Shrd ConDel: | 18.6 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | |
| Shared LOS: | C | * | | | * | * | | * | * | | * | * | | * | * | | * | * | | * |
| ApproachDel: | 16.9 | | | | xxxxxx | | | xxxxxx | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | C | | | | * | | | * | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 4.4 Worst Case Level Of Service: B[ 12.6]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 30 | | 0 | 0 | | 82 | | 16 |
| Growth Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Initial Bse: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 30 | | 0 | 0 | | 82 | | 16 |
| Added Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 168 | | 0 | 0 | | 90 | | 72 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 198 | | 0 | 0 | | 172 | | 88 |
| User Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| PHF Volume: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 198 | | 0 | 0 | | 172 | | 88 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 187 | | 0 | | 42 | 0 | | 0 | | 0 | 33 | | 198 | | 0 | 0 | | 172 | | 88 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 350 | 524 | | 99 | xxxx | xxxx | xxxxx | | | | 260 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Potent Cap.: | 626 | 461 | | 944 | xxxx | xxxx | xxxxx | | | | 1316 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Move Cap.: | 615 | 449 | | 944 | xxxx | xxxx | xxxxx | | | | 1316 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Volume/Cap: | 0.30 | 0.00 | | 0.04 | xxxx | xxxx | xxxx | | | | 0.03 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.1 | xxxx | xxxx | xxxxx | | | | 0.1 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | |
| Control Del: | xxxxx | xxxx | | 9.0 | xxxxx | xxxx | xxxxx | | | | 7.8 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | |
| LOS by Move: | * | * | | A | * | * | * | | | | A | * | * | | * | * | * | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 615 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | |
| SharedQueue: | 1.3 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | |
| Shrd ConDel: | 13.4 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | |
| Shared LOS: | B | * | | | * | * | | * | * | | * | * | | * | * | | * | * | | * |
| ApproachDel: | 12.6 | | | | xxxxxx | | | xxxxxx | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | B | | | | * | | | * | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.6 Worst Case Level Of Service: B[ 12.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 69 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 26 | 0 | 0 | 0 |
| Added Vol: | 213 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 126 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 282 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 152 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 282 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 152 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 282 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 152 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 93 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 692 | xxxx | 52 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 413 | xxxx | 1021 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 354 | xxxx | 1021 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.25 | xxxx | 0.15 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.0 | xxxx | 0.5 | xxxx | xxxx | xxxxx |
| Control Del: | 7.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 18.5 | xxxx | 9.1 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 12.6 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 6.9 Worst Case Level Of Service: A[ 10.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 45 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 27 | 0 | 0 | 0 |
| Added Vol: | 161 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 168 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 206 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 195 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 206 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 195 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 206 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 195 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 77 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 505 | xxxx | 43 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 530 | xxxx | 1033 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1535 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 476 | xxxx | 1033 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.09 | xxxx | 0.19 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.3 | xxxx | 0.7 | xxxx | xxxx | xxxxx |
| Control Del: | 7.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 13.3 | xxxx | 9.3 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | B | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 10.0 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | A | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 16.4 Worst Case Level Of Service: D[ 30.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 119 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 155 | 126 | 0 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 119 | 155 | 126 | 72 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 119 | 155 | 126 | 72 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 119 | 155 | 126 | 72 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 274 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 521 | 521 | 197 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1301 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 520 | 463 | 850 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1301 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 478 | 415 | 850 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.10 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.55 | 0.00 | 0.25 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 595 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 7.8 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 30.6 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | D | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 30.6 | | |
| ApproachLOS: | * | | | * | | | * | | | D | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 10.8 Worst Case Level Of Service: C[ 22.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 77 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 0 | 206 | 168 | 0 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 77 | 206 | 168 | 60 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 77 | 206 | 168 | 60 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 77 | 206 | 168 | 60 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 283 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 576 | 576 | 180 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1291 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 482 | 431 | 868 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1291 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 429 | 369 | 868 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.46 | 0.00 | 0.19 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 556 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 4.6 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 22.5 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 22.5 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[ 13.2]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 106 | 16 | 5 | 86 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 155 | 0 | 0 | 261 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 261 | 16 | 5 | 347 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 261 | 16 | 5 | 347 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 261 | 16 | 5 | 347 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 277 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 626 | 626 | 269 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1298 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 451 | 403 | 775 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1298 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 450 | 402 | 775 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.06 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 470 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.2 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 13.2 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 13.2 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: A[ 9.7]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 65 | 1 | 4 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Added Vol: | 0 | 206 | 0 | 0 | 197 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 271 | 1 | 4 | 272 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 271 | 1 | 4 | 272 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 271 | 1 | 4 | 272 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 272 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 272 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1303 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 772 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1303 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 772 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | A |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 9.7 | | |
| ApproachLOS: | * | | | * | | | * | | | A | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[ 12.8]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 199 | 444 | 0 | 0 | 214 | 50 | 36 | 0 | 91 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 199 | 444 | 0 | 0 | 214 | 50 | 36 | 0 | 91 | 0 | 0 | 0 |
| Added Vol: | 24 | 47 | 0 | 0 | 28 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 223 | 491 | 0 | 0 | 242 | 50 | 36 | 0 | 105 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 223 | 491 | 0 | 0 | 242 | 50 | 36 | 0 | 105 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 223 | 491 | 0 | 0 | 242 | 50 | 36 | 0 | 105 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 292 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1179 | 1179 | 242 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1281 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 212 | 192 | 802 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1281 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 184 | 159 | 802 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 268 | 239 | xxxxx | 191 | 222 | xxxxx |
| Volume/Cap: | 0.17 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.13 | 0.00 | 0.13 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx |
| Control Del: | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.2 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 268 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 20.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | C | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 12.8 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.6 Worst Case Level Of Service: B[ 12.9]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 146 | 340 | 0 | 0 | 318 | 43 | 43 | 0 | 144 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 146 | 340 | 0 | 0 | 318 | 43 | 43 | 0 | 144 | 0 | 0 | 0 |
| Added Vol: | 18 | 36 | 0 | 0 | 37 | 0 | 0 | 0 | 19 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 164 | 376 | 0 | 0 | 355 | 43 | 43 | 0 | 163 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 164 | 376 | 0 | 0 | 355 | 43 | 43 | 0 | 163 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 164 | 376 | 0 | 0 | 355 | 43 | 43 | 0 | 163 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 398 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1059 | 1059 | 355 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1172 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 251 | 226 | 693 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1172 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 224 | 195 | 693 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 334 | 297 | xxxxx | 200 | 270 | xxxxx |
| Volume/Cap: | 0.14 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.13 | 0.00 | 0.24 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.9 | xxxx | xxxx | xxxxx |
| Control Del: | 8.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.8 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 334 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 17.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | C | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 12.9 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 12.4 Worst Case Level Of Service: C[ 18.7]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 1 0 | 1 | 0 | 0 0 0 | 0 | 0 | 1 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |
| Added Vol: | 0 | 0 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 110 | 68 | 328 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 650 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 110 | 68 | 328 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 650 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 110 | 68 | 328 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 650 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 178 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 876 | xxxx | 144 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 322 | xxxx | 909 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1410 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 264 | xxxx | 909 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.23 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.25 | xxxx | 0.72 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.9 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.0 | xxxx | 6.3 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 23.2 | xxxx | 18.2 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | C |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 18.7 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Short Term plus Alternative E
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City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 8.3 Worst Case Level Of Service: B[ 11.8]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 1 0 | 1 | 0 | 0 0 0 | 0 | 0 | 1 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |
| Added Vol: | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 54 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 54 | 56 | 326 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 386 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 54 | 56 | 326 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 386 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 54 | 56 | 326 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 386 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 110 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 798 | xxxx | 82 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 358 | xxxx | 983 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1493 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 298 | xxxx | 983 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.22 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.13 | xxxx | 0.39 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.5 | xxxx | 1.9 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 19.0 | xxxx | 11.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | C | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.8 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 4.5 Worst Case Level Of Service: D[ 34.2]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 1 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 113 | 579 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 190 | 71 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 189 | 208 | 303 | 650 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 189 | 208 | 303 | 650 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 189 | 208 | 303 | 650 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1549 | 1653 | 650 | xxxx | xxxx | xxxxx | 397 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 127 | 99 | 473 | xxxx | xxxx | xxxxx | 1173 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 101 | 74 | 473 | xxxx | xxxx | xxxxx | 1173 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.43 | 0.00 | 0.14 | xxxx | xxxx | xxxx | 0.26 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.5 | xxxx | xxxx | xxxxx | 1.0 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 13.9 | xxxxx | xxxx | xxxxx | 9.1 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 101 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 65.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 34.2 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | D | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 3.4 Worst Case Level Of Service: C[ 18.4]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 0 | 1 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 97 | 324 | 0 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 0 | 143 | 54 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 181 | 232 | 240 | 378 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 181 | 232 | 240 | 378 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 181 | 232 | 240 | 378 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1155 | 1271 | 378 | xxxx | xxxx | xxxxx | 413 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 220 | 169 | 673 | xxxx | xxxx | xxxxx | 1157 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 185 | 134 | 673 | xxxx | xxxx | xxxxx | 1157 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.21 | 0.00 | 0.08 | xxxx | xxxx | xxxx | 0.21 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.8 | xxxxx | xxxx | xxxxx | 8.9 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | B | * | * | * | A | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 185 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 29.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | D | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 18.4 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 88.8 Worst Case Level Of Service: F[182.3]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Added Vol: | 0 | 0 | 112 | 0 | 0 | 0 | 0 | 42 | 0 | 0 | 261 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 489 | 0 | 211 | 0 | 0 | 0 | 84 | 149 | 0 | 0 | 464 | 49 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 489 | 0 | 211 | 0 | 0 | 0 | 84 | 149 | 0 | 0 | 464 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 489 | 0 | 211 | 0 | 0 | 0 | 84 | 149 | 0 | 0 | 464 | 49 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 806 | 830 | 149 | xxxx | xxxx | xxxxx | 513 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 354 | 308 | 903 | xxxx | xxxx | xxxxx | 1063 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 333 | 284 | 903 | xxxx | xxxx | xxxxx | 1063 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 1.47 | 0.00 | 0.23 | xxxx | xxxx | xxxx | 0.08 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.9 | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 10.2 | xxxxx | xxxx | xxxxx | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 333 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 26.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 256.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 182.3 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 9.6 Worst Case Level Of Service: C[ 20.2]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Added Vol: | 0 | 0 | 150 | 0 | 0 | 0 | 0 | 56 | 0 | 0 | 197 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 4 | 237 | 0 | 0 | 0 | 69 | 146 | 0 | 0 | 360 | 44 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 4 | 237 | 0 | 0 | 0 | 69 | 146 | 0 | 0 | 360 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 262 | 4 | 237 | 0 | 0 | 0 | 69 | 146 | 0 | 0 | 360 | 44 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 666 | 688 | 146 | xxxx | xxxx | xxxxx | 404 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 428 | 372 | 906 | xxxx | xxxx | xxxxx | 1166 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 408 | 350 | 906 | xxxx | xxxx | xxxxx | 1166 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.64 | 0.01 | 0.26 | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 10.4 | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 4.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 29.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | D | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 20.2 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | C | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.728 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 26.6 |
| Optimal Cycle: | 46 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 489 | 0 | 99 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 203 | 49 |
| Added Vol: | 0 | 0 | 112 | 0 | 0 | 0 | 0 | 42 | 0 | 0 | 261 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 489 | 0 | 211 | 0 | 0 | 0 | 84 | 149 | 0 | 0 | 464 | 49 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 489 | 0 | 211 | 0 | 0 | 0 | 84 | 149 | 0 | 0 | 464 | 49 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 489 | 0 | 211 | 0 | 0 | 0 | 84 | 149 | 0 | 0 | 464 | 49 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 489 | 0 | 211 | 0 | 0 | 0 | 84 | 149 | 0 | 0 | 464 | 49 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.90 | 0.10 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1696 | 179 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.36 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.05 | 0.08 | 0.00 | 0.00 | 0.27 | 0.27 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.50 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 | 0.06 | 0.44 | 0.00 | 0.00 | 0.38 | 0.38 |
| Volume/Cap: | 0.73 | 0.00 | 0.26 | 0.00 | 0.00 | 0.00 | 0.73 | 0.18 | 0.00 | 0.00 | 0.73 | 0.73 |
| Delay/Veh: | 23.7 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 66.6 | 17.1 | 0.0 | 0.0 | 30.6 | 30.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 23.7 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 66.6 | 17.1 | 0.0 | 0.0 | 30.6 | 30.6 |
| LOS by Move: | C | A | B | A | A | A | E | B | A | A | C | C |
| HCM2k95thQ: | 23 | 0 | 7 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 24 | 24 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.433 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 21.1 |
| Optimal Cycle: | 24 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 262 | 4 | 87 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 163 | 44 |
| Added Vol: | 0 | 0 | 150 | 0 | 0 | 0 | 0 | 56 | 0 | 0 | 197 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 4 | 237 | 0 | 0 | 0 | 69 | 146 | 0 | 0 | 360 | 44 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 4 | 237 | 0 | 0 | 0 | 69 | 146 | 0 | 0 | 360 | 44 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 262 | 4 | 237 | 0 | 0 | 0 | 69 | 146 | 0 | 0 | 360 | 44 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 262 | 4 | 237 | 0 | 0 | 0 | 69 | 146 | 0 | 0 | 360 | 44 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.91 | 0.91 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 |
| Lanes: | 0.98 | 0.02 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.89 | 0.11 |
| Final Sat.: | 1708 | 26 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1668 | 204 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.15 | 0.15 | 0.00 | 0.00 | 0.00 | 0.04 | 0.08 | 0.00 | 0.00 | 0.22 | 0.22 |
| Crit Moves: | | **** | | | | | | **** | | | | **** |
| Green/Cycle: | 0.35 | 0.35 | 0.35 | 0.00 | 0.00 | 0.00 | 0.09 | 0.59 | 0.00 | 0.00 | 0.50 | 0.50 |
| Volume/Cap: | 0.43 | 0.43 | 0.42 | 0.00 | 0.00 | 0.00 | 0.43 | 0.13 | 0.00 | 0.00 | 0.43 | 0.43 |
| Delay/Veh: | 25.2 | 25.2 | 25.0 | 0.0 | 0.0 | 0.0 | 45.1 | 9.3 | 0.0 | 0.0 | 16.4 | 16.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 25.2 | 25.2 | 25.0 | 0.0 | 0.0 | 0.0 | 45.1 | 9.3 | 0.0 | 0.0 | 16.4 | 16.4 |
| LOS by Move: | C | C | C | A | A | A | D | A | A | A | B | B |
| HCM2k95thQ: | 12 | 12 | 11 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 14 | 14 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 16.5 Worst Case Level Of Service: E[ 39.4]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 108 | 51 | 1 | 10 | 31 | 91 | 79 | 43 | 81 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 261 | 155 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 108 | 51 | 1 | 10 | 31 | 352 | 234 | 43 | 81 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 108 | 51 | 1 | 10 | 31 | 352 | 234 | 43 | 81 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 108 | 51 | 1 | 10 | 31 | 352 | 234 | 43 | 81 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 383 | xxxx | xxxxx | 52 | xxxx | xxxxx | 523 | 495 | 207 | 557 | 671 | 52 |
| Potent Cap.: | 1187 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 468 | 479 | 839 | 444 | 380 | 1022 |
| Move Cap.: | 1187 | xxxx | xxxxx | 1567 | xxxx | xxxxx | 382 | 430 | 839 | 342 | 341 | 1022 |
| Volume/Cap: | 0.09 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.61 | 0.10 | 0.10 | 0.00 | 0.14 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.3 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 443 | xxxxx | xxxx | 386 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 7.4 | xxxxx | xxxxx | 0.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 39.4 | xxxxx | xxxxx | 16.0 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | E | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 39.4 | | | 16.0 | | |
| ApproachLOS: | * | | | * | | | E | | | C | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 14.9 Worst Case Level Of Service: D[ 29.9]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 94 | 31 | 1 | 10 | 28 | 73 | 55 | 43 | 77 | 1 | 47 | 10 |
| Added Vol: | 0 | 0 | 0 | 0 | 0 | 197 | 206 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 94 | 31 | 1 | 10 | 28 | 270 | 261 | 43 | 77 | 1 | 47 | 10 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 94 | 31 | 1 | 10 | 28 | 270 | 261 | 43 | 77 | 1 | 47 | 10 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 94 | 31 | 1 | 10 | 28 | 270 | 261 | 43 | 77 | 1 | 47 | 10 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 298 | xxxx | xxxxx | 32 | xxxx | xxxxx | 431 | 403 | 163 | 463 | 538 | 32 |
| Potent Cap.: | 1275 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 538 | 539 | 887 | 513 | 453 | 1048 |
| Move Cap.: | 1275 | xxxx | xxxxx | 1593 | xxxx | xxxxx | 456 | 494 | 887 | 410 | 415 | 1048 |
| Volume/Cap: | 0.07 | xxxx | xxxx | 0.01 | xxxx | xxxx | 0.57 | 0.09 | 0.09 | 0.00 | 0.11 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.2 | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.0 | xxxx | xxxxx | 7.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 511 | xxxxx | xxxx | 463 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 6.3 | xxxxx | xxxxx | 0.4 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 29.9 | xxxxx | xxxxx | 13.9 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | D | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 29.9 | | | 13.9 | | |
| ApproachLOS: | * | | | * | | | D | | | B | | |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Short-term+ Project E Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 22 | 4.3 | 0.228 | 12.1 | LOS B | 32 | 0.63 | 0.84 | 23.6 |
| 16T | T | 92 | 2.2 | 0.228 | 5.0 | LOS A | 32 | 0.63 | 0.53 | 27.0 |
| 16R | R | 55 | 1.8 | 0.228 | 6.5 | LOS A | 32 | 0.63 | 0.65 | 26.0 |
| **Approach** | | **170** | **2.4** | **0.228** | **6.4** | **LOS A** | **32** | **0.63** | **0.61** | **26.1** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.091 | 14.9 | LOS B | 13 | 0.62 | 0.88 | 23.0 |
| 6T | T | 40 | 2.5 | 0.092 | 5.3 | LOS A | 13 | 0.62 | 0.57 | 27.0 |
| 6R | R | 20 | 4.8 | 0.092 | 6.7 | LOS A | 13 | 0.62 | 0.64 | 26.1 |
| **Approach** | | **63** | **4.8** | **0.092** | **6.0** | **LOS A** | **13** | **0.62** | **0.60** | **26.5** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 43 | 2.3 | 0.518 | 15.2 | LOS B | 104 | 0.72 | 0.96 | 22.5 |
| 14T | T | 352 | 2.0 | 0.520 | 6.6 | LOS A | 104 | 0.72 | 0.76 | 26.3 |
| 14R | R | 19 | 5.0 | 0.526 | 8.1 | LOS A | 104 | 0.72 | 0.83 | 25.5 |
| **Approach** | | **415** | **2.2** | **0.520** | **7.5** | **LOS A** | **104** | **0.72** | **0.79** | **25.8** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 177 | 2.3 | 0.164 | 10.3 | LOS B | 31 | 0.17 | 0.59 | 24.8 |
| 2T | T | 24 | 4.0 | 0.164 | 1.8 | LOS A | 31 | 0.17 | 0.20 | 30.8 |
| 2R | R | 45 | 2.2 | 0.164 | 1.8 | LOS A | 31 | 0.17 | 0.20 | 30.8 |
| **Approach** | | **247** | **2.4** | **0.164** | **7.9** | **LOS A** | **31** | **0.17** | **0.48** | **26.0** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 515 | 1.9 | 0.337 | 12.8 | LOS B | 60 | 0.46 | 0.70 | 23.5 |
| 18T | T | 199 | 2.0 | 0.337 | 3.1 | LOS A | 60 | 0.45 | 0.33 | 28.3 |
| 18R | R | 64 | 1.6 | 0.337 | 4.3 | LOS A | 60 | 0.45 | 0.43 | 27.4 |
| **Approach** | | **777** | **1.9** | **0.337** | **9.7** | **LOS A** | **60** | **0.46** | **0.58** | **24.6** |
| **All Vehicles** | | **1672** | **2.2** | **0.526** | **8.4** | **LOS A** | **104** | **0.50** | **0.62** | **25.3** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Short-term+ Project E Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 21 | 4.5 | 0.154 | 11.0 | LOS B | 20 | 0.51 | 0.75 | 24.0 |
| 16T | T | 78 | 2.6 | 0.154 | 3.9 | LOS A | 20 | 0.51 | 0.42 | 27.8 |
| 16R | R | 34 | 2.9 | 0.153 | 5.5 | LOS A | 20 | 0.51 | 0.55 | 26.7 |
| **Approach** | | **134** | **3.0** | **0.153** | **5.5** | **LOS A** | **20** | **0.51** | **0.51** | **26.7** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 1 | 50.0 | 0.077 | 13.8 | LOS B | 10 | 0.52 | 0.82 | 23.3 |
| 6T | T | 39 | 2.6 | 0.077 | 4.2 | LOS A | 10 | 0.52 | 0.45 | 27.8 |
| 6R | R | 21 | 4.5 | 0.077 | 5.5 | LOS A | 10 | 0.52 | 0.55 | 26.8 |
| **Approach** | | **63** | **4.8** | **0.077** | **4.9** | **LOS A** | **10** | **0.52** | **0.49** | **27.2** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 40 | 2.5 | 0.348 | 12.6 | LOS B | 51 | 0.53 | 0.78 | 23.5 |
| 14T | T | 267 | 1.9 | 0.346 | 3.9 | LOS A | 51 | 0.53 | 0.42 | 27.7 |
| 14R | R | 17 | 5.6 | 0.346 | 5.5 | LOS A | 51 | 0.53 | 0.54 | 26.6 |
| **Approach** | | **325** | **2.2** | **0.346** | **5.1** | **LOS A** | **51** | **0.53** | **0.47** | **26.9** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 161 | 1.9 | 0.150 | 10.2 | LOS B | 27 | 0.16 | 0.59 | 24.9 |
| 2T | T | 23 | 4.2 | 0.150 | 1.8 | LOS A | 27 | 0.16 | 0.20 | 31.0 |
| 2R | R | 42 | 2.4 | 0.151 | 1.8 | LOS A | 27 | 0.16 | 0.19 | 31.0 |
| **Approach** | | **227** | **2.2** | **0.150** | **7.8** | **LOS A** | **27** | **0.16** | **0.48** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 276 | 2.2 | 0.211 | 12.6 | LOS B | 34 | 0.40 | 0.68 | 23.7 |
| 18T | T | 151 | 2.0 | 0.211 | 3.0 | LOS A | 34 | 0.39 | 0.32 | 28.7 |
| 18R | R | 62 | 1.6 | 0.212 | 4.0 | LOS A | 34 | 0.39 | 0.40 | 27.8 |
| **Approach** | | **489** | **2.0** | **0.211** | **8.5** | **LOS A** | **34** | **0.39** | **0.53** | **25.3** |
| **All Vehicles** | | **1238** | **2.3** | **0.348** | **7.0** | **LOS A** | **51** | **0.41** | **0.50** | **26.1** |

Symbols which may appear in this table:

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.477 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.9 |
| Optimal Cycle: | 21 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 1 | 0 1 | 0 | 1 0 | 1 0 | 0 | 0 1! | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 47 | 317 | 71 | 34 | 212 | 15 | 16 | 35 | 69 | 109 | 36 | 38 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 52 | 349 | 78 | 37 | 233 | 17 | 18 | 39 | 76 | 120 | 40 | 42 |
| Added Vol: | 74 | 98 | 68 | 21 | 74 | 0 | 0 | 14 | 69 | 86 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 126 | 447 | 146 | 58 | 307 | 17 | 18 | 53 | 145 | 206 | 54 | 70 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 126 | 447 | 146 | 58 | 307 | 17 | 18 | 53 | 145 | 206 | 54 | 70 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 126 | 447 | 146 | 58 | 307 | 17 | 18 | 53 | 145 | 206 | 54 | 70 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 126 | 447 | 146 | 58 | 307 | 17 | 18 | 53 | 145 | 206 | 54 | 70 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.75 | 0.75 | 0.85 | 0.78 | 0.78 | 0.78 | 0.88 | 0.88 | 0.88 | 0.70 | 0.70 | 0.70 |
| Lanes: | 0.44 | 1.56 | 1.00 | 0.30 | 1.61 | 0.09 | 0.08 | 0.24 | 0.68 | 0.63 | 0.16 | 0.21 |
| Final Sat.: | 623 | 2214 | 1615 | 454 | 2389 | 128 | 137 | 408 | 1127 | 832 | 217 | 282 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.09 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.25 | 0.25 | 0.25 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 |
| Volume/Cap: | 0.48 | 0.48 | 0.21 | 0.30 | 0.30 | 0.30 | 0.25 | 0.25 | 0.25 | 0.48 | 0.48 | 0.48 |
| Delay/Veh: | 14.9 | 14.9 | 13.0 | 13.5 | 13.5 | 13.5 | 9.4 | 9.4 | 9.4 | 11.3 | 11.3 | 11.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.9 | 14.9 | 13.0 | 13.5 | 13.5 | 13.5 | 9.4 | 9.4 | 9.4 | 11.3 | 11.3 | 11.3 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.447 |
| Loss Time (sec): | 4 (Y+R=4.0 sec) | Average Delay (sec/veh): | 12.6 |
| Optimal Cycle: | 20 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 1 | 0 1 | 0 | 1 0 | 1 0 | 0 | 0 1! | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Added Vol: | 74 | 98 | 68 | 21 | 74 | 0 | 0 | 14 | 69 | 86 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 138 | 389 | 167 | 60 | 365 | 17 | 18 | 53 | 133 | 185 | 54 | 67 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 138 | 389 | 167 | 60 | 365 | 17 | 18 | 53 | 133 | 185 | 54 | 67 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 138 | 389 | 167 | 60 | 365 | 17 | 18 | 53 | 133 | 185 | 54 | 67 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 138 | 389 | 167 | 60 | 365 | 17 | 18 | 53 | 133 | 185 | 54 | 67 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.70 | 0.70 | 0.85 | 0.79 | 0.79 | 0.79 | 0.88 | 0.88 | 0.88 | 0.72 | 0.72 | 0.72 |
| Lanes: | 0.52 | 1.48 | 1.00 | 0.27 | 1.65 | 0.08 | 0.09 | 0.26 | 0.65 | 0.60 | 0.18 | 0.22 |
| Final Sat.: | 700 | 1972 | 1615 | 410 | 2492 | 116 | 148 | 435 | 1091 | 826 | 241 | 299 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.10 | 0.15 | 0.15 | 0.15 | 0.12 | 0.12 | 0.12 | 0.22 | 0.22 | 0.22 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Volume/Cap: | 0.45 | 0.45 | 0.23 | 0.33 | 0.33 | 0.33 | 0.24 | 0.24 | 0.24 | 0.45 | 0.45 | 0.45 |
| Delay/Veh: | 13.9 | 13.9 | 12.3 | 12.9 | 12.9 | 12.9 | 10.1 | 10.1 | 10.1 | 11.7 | 11.7 | 11.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 13.9 | 13.9 | 12.3 | 12.9 | 12.9 | 12.9 | 10.1 | 10.1 | 10.1 | 11.7 | 11.7 | 11.7 |
| LOS by Move: | B | B | B | B | B | B | B | B | B | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: E[ 43.3]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 0 | | 0 1 | 1 0 | 0 | 0 0 | 0 0 | 0 | 1 0 | 0 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Added Vol: | 0 | 239 | 57 | 1 | 229 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 705 | 152 | 47 | 628 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 705 | 152 | 47 | 628 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 705 | 152 | 47 | 628 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 857 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1189 | xxxx | 429 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 792 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 184 | xxxx | 580 |
| Move Cap.: | xxxx | xxxx | xxxxx | 792 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 175 | xxxx | 580 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.61 | xxxx | 0.06 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 3.4 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 53.4 | xxxx | 11.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 43.3 | | |
| ApproachLOS: | * | | | * | | | * | | | E | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.6 Worst Case Level Of Service: E[ 44.9]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 0 | | 0 1 | 1 0 | 0 | 0 0 | 0 0 | 0 | 1 0 | 0 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Added Vol: | 0 | 239 | 57 | 1 | 229 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 671 | 135 | 41 | 661 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 671 | 135 | 41 | 661 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 671 | 135 | 41 | 661 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 806 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1151 | xxxx | 403 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 828 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 194 | xxxx | 603 |
| Move Cap.: | xxxx | xxxx | xxxxx | 828 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 187 | xxxx | 603 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.66 | xxxx | 0.07 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 3.9 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 55.8 | xxxx | 11.4 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 44.9 | | |
| ApproachLOS: | * | | | * | | | * | | | E | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.590 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 17.7 |
| Optimal Cycle: | 31 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 7 | 382 | 52 | 97 | 370 | 2 | 1 | 12 | 15 | 104 | 21 | 178 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 8 | 420 | 57 | 107 | 407 | 2 | 1 | 13 | 17 | 114 | 23 | 196 |
| Added Vol: | 22 | 143 | 239 | 141 | 122 | 12 | 14 | 3 | 26 | 253 | 5 | 140 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 30 | 563 | 296 | 248 | 529 | 14 | 15 | 16 | 43 | 367 | 28 | 336 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 30 | 563 | 296 | 248 | 529 | 14 | 15 | 16 | 43 | 367 | 28 | 336 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 30 | 563 | 296 | 248 | 529 | 14 | 15 | 16 | 43 | 367 | 28 | 336 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 30 | 563 | 296 | 248 | 529 | 14 | 15 | 16 | 43 | 367 | 28 | 336 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.90 | 0.90 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.31 | 0.69 | 1.00 | 1.95 | 0.05 | 0.20 | 0.22 | 0.58 | 1.86 | 0.14 | 1.00 |
| Final Sat.: | 1805 | 2243 | 1180 | 1805 | 3502 | 94 | 355 | 381 | 999 | 3375 | 258 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.25 | 0.25 | 0.14 | 0.15 | 0.15 | 0.04 | 0.04 | 0.04 | 0.11 | 0.11 | 0.21 |
| Crit Moves: | | **** | | **** | | | | | **** | | **** | |
| Green/Cycle: | 0.06 | 0.43 | 0.43 | 0.23 | 0.59 | 0.59 | 0.07 | 0.07 | 0.07 | 0.18 | 0.18 | 0.42 |
| Volume/Cap: | 0.25 | 0.59 | 0.59 | 0.59 | 0.25 | 0.25 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.50 |
| Delay/Veh: | 32.3 | 16.1 | 16.1 | 26.1 | 6.9 | 6.9 | 38.8 | 38.8 | 38.8 | 27.5 | 27.5 | 15.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 32.3 | 16.1 | 16.1 | 26.1 | 6.9 | 6.9 | 38.8 | 38.8 | 38.8 | 27.5 | 27.5 | 15.6 |
| LOS by Move: | C | B | B | C | A | A | D | D | D | C | C | B |
| HCM2kAvgQ: | 1 | 8 | 8 | 6 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 6 |

Note: Queue reported is the number of cars per lane.

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.684 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 25.7 |
| Optimal Cycle: | 38 | Level Of Service: | C |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Added Vol: | 22 | 143 | 239 | 141 | 122 | 12 | 14 | 3 | 26 | 253 | 5 | 140 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 90 | 149 | 327 | 141 | 130 | 21 | 19 | 258 | 76 | 333 | 235 | 140 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 90 | 149 | 327 | 141 | 130 | 21 | 19 | 258 | 76 | 333 | 235 | 140 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 90 | 149 | 327 | 141 | 130 | 21 | 19 | 258 | 76 | 333 | 235 | 140 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 90 | 149 | 327 | 141 | 130 | 21 | 19 | 258 | 76 | 333 | 235 | 140 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.85 | 0.85 | 0.95 | 0.93 | 0.93 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.72 | 0.28 | 0.05 | 0.73 | 0.22 | 1.17 | 0.83 | 1.00 |
| Final Sat.: | 1805 | 1619 | 1619 | 1805 | 3043 | 492 | 99 | 1344 | 396 | 2165 | 1528 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.05 | 0.09 | 0.20 | 0.08 | 0.04 | 0.04 | 0.19 | 0.19 | 0.19 | 0.15 | 0.15 | 0.09 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.22 | 0.30 | 0.30 | 0.11 | 0.19 | 0.19 | 0.28 | 0.28 | 0.28 | 0.22 | 0.22 | 0.34 |
| Volume/Cap: | 0.23 | 0.31 | 0.68 | 0.68 | 0.23 | 0.23 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.26 |
| Delay/Veh: | 22.7 | 19.3 | 24.6 | 39.0 | 24.2 | 24.2 | 26.2 | 26.2 | 26.2 | 27.2 | 27.2 | 17.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 22.7 | 19.3 | 24.6 | 39.0 | 24.2 | 24.2 | 26.2 | 26.2 | 26.2 | 27.2 | 27.2 | 17.0 |
| LOS by Move: | C | B | C | D | C | C | C | C | C | C | C | B |
| HCM2kAvgQ: | 2 | 3 | 8 | 4 | 2 | 2 | 8 | 8 | 8 | 7 | 7 | 2 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: B[ 12.8]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | 0 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | 0 | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 12 | 0 | 53 | 0 | 85 | 298 | | 67 | 345 | 0 | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 16 | 0 | 77 | 0 | 128 | 395 | | 92 | 690 | 0 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 16 | 0 | 77 | 0 | 128 | 395 | | 92 | 690 | 0 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 16 | 0 | 77 | 0 | 128 | 395 | | 92 | 690 | 0 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 938 | 1397 | 345 | xxxx | xxxx | xxxxx | | 523 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 267 | 142 | 657 | xxxx | xxxx | xxxxx | | 1054 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 249 | 130 | 657 | xxxx | xxxx | xxxxx | | 1054 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.06 | 0.00 | 0.12 | xxxx | xxxx | xxxx | | 0.09 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.3 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 20.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 8.7 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | C | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 657 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.2 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 12.8 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: B[ 11.4]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | 0 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | 0 | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 12 | 0 | 53 | 0 | 85 | 298 | | 67 | 345 | 0 | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 15 | 0 | 76 | 0 | 127 | 415 | | 86 | 521 | 0 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 15 | 0 | 76 | 0 | 127 | 415 | | 86 | 521 | 0 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 15 | 0 | 76 | 0 | 127 | 415 | | 86 | 521 | 0 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 757 | 1235 | 261 | xxxx | xxxx | xxxxx | | 542 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 348 | 178 | 744 | xxxx | xxxx | xxxxx | | 1037 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 326 | 163 | 744 | xxxx | xxxx | xxxxx | | 1037 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | 0.00 | 0.10 | xxxx | xxxx | xxxx | | 0.08 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.3 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 16.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 8.8 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | C | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 744 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.3 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.4 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 11.4 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | B | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 19.8 Worst Case Level Of Service: D[ 29.6]

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 2 | 0 0 | | 0 0 1 | 1 0 | |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | |
| Base Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Added Vol: | 280 | 0 | 74 | 0 | 0 | 0 | 47 | 50 | 0 | 0 | 132 | 32 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 65 | 0 | 0 | 189 | 38 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 65 | 0 | 0 | 189 | 38 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 65 | 0 | 0 | 189 | 38 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 300 | 432 | 33 | xxxx | xxxx | xxxxx | 227 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 673 | 519 | 1040 | xxxx | xxxx | xxxxx | 1353 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 647 | 493 | 1040 | xxxx | xxxx | xxxxx | 1353 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.85 | 0.00 | 0.12 | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 8.9 | xxxxx | xxxx | xxxxx | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | 647 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 9.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 34.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | D | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 29.6 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | D | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 11.7 Worst Case Level Of Service: C[ 18.9]

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 2 | 0 0 | | 0 0 1 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Added Vol: | 280 | 0 | 74 | 0 | 0 | 0 | 47 | 50 | 0 | 0 | 132 | 32 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 70 | 0 | 0 | 190 | 40 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 70 | 0 | 0 | 190 | 40 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 70 | 0 | 0 | 190 | 40 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 311 | 446 | 35 | xxxx | xxxx | xxxxx | 230 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 662 | 510 | 1037 | xxxx | xxxx | xxxxx | 1350 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 635 | 483 | 1037 | xxxx | xxxx | xxxxx | 1350 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.67 | 0.00 | 0.10 | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.3 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 8.8 | xxxxx | xxxx | xxxxx | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | 635 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 5.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 21.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | C | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 18.9 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | C | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 5.7 Worst Case Level Of Service: B[ 13.4]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Added Vol: | 117 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 64 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 149 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 70 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 149 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 70 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 149 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 70 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 180 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 546 | xxxx | 107 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 502 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 461 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.11 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.28 | xxxx | 0.07 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.1 | xxxx | 0.2 | xxxx | xxxx | xxxxx |
| Control Del: | 7.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 15.8 | xxxx | 9.1 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 13.4 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 4.9 Worst Case Level Of Service: B[ 11.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Added Vol: | 117 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 64 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 128 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 74 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 128 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 74 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 128 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 74 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 181 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 486 | xxxx | 106 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 544 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 506 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.09 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.18 | xxxx | 0.08 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.7 | xxxx | 0.3 | xxxx | xxxx | xxxxx |
| Control Del: | 7.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 13.7 | xxxx | 9.1 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | B | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 11.6 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[ 0.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 0 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 225 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 372 | 372 | 225 |
| Potent Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 633 | 561 | 819 |
| Move Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 633 | 561 | 819 |
| Volume/Cap: | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[ 0.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 0 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 196 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 343 | 343 | 196 |
| Potent Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 657 | 583 | 850 |
| Move Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 657 | 583 | 850 |
| Volume/Cap: | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: B[ 11.1]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 | 1 0 | 0 0 | 0 0 | 0 | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 130 | 0 | 0 | 165 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 16 | 2 | 200 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 16 | 2 | 200 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 196 | 16 | 2 | 200 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 212 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 408 | 408 | 204 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1370 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 603 | 536 | 842 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1370 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 603 | 535 | 842 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.04 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 7.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 620 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.2 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 7.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 11.1 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.1 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: A[ 9.1]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 | 1 0 | 0 0 | 0 0 | 0 | 0 0 | 0 | 0 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Added Vol: | 0 | 130 | 0 | 0 | 165 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 167 | 2 | 1 | 201 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 167 | 2 | 1 | 201 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 167 | 2 | 1 | 201 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 169 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 168 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1421 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 881 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1421 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 881 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 7.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 9.1 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | A |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 7.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 9.1 | | |
| ApproachLOS: | * | | | * | | | * | | | A | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.7 Worst Case Level Of Service: C[ 18.3]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 |
| Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm | | | | | | | | | | | | |
| Base Vol: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 |
| Added Vol: | 70 | 319 | 0 | 0 | 249 | 9 | 10 | 0 | 64 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 247 | 662 | 0 | 0 | 384 | 56 | 43 | 0 | 135 | 0 | 0 | 0 |
| User Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 272 | 728 | 0 | 0 | 422 | 62 | 47 | 0 | 149 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 272 | 728 | 0 | 0 | 422 | 62 | 47 | 0 | 149 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 484 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1708 | 1708 | 422 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1089 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 94 | 86 | 636 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1089 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 76 | 64 | 636 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 159 | 143 | xxxxx | 83 | 124 | xxxxx |
| Volume/Cap: | 0.25 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.30 | 0.00 | 0.23 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.9 | xxxx | xxxx | xxxxx |
| Control Del: | 9.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 12.4 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 159 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 36.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | E | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 18.3 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.7 Worst Case Level Of Service: C[ 16.2]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 |
| Added Vol: | 70 | 319 | 0 | 0 | 249 | 9 | 10 | 0 | 64 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 194 | 558 | 0 | 0 | 488 | 49 | 50 | 0 | 188 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 194 | 558 | 0 | 0 | 488 | 49 | 50 | 0 | 188 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 194 | 558 | 0 | 0 | 488 | 49 | 50 | 0 | 188 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 537 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1434 | 1434 | 488 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1041 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 149 | 135 | 584 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1041 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 128 | 110 | 584 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 238 | 212 | xxxxx | 103 | 185 | xxxxx |
| Volume/Cap: | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.21 | 0.00 | 0.32 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.4 | xxxx | xxxx | xxxxx |
| Control Del: | 9.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 14.1 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 238 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 24.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | C | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 16.2 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 33.3 Worst Case Level Of Service: F[ 61.8]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 249 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 303 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 443 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 755 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 443 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 755 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 159 | 187 | 443 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 755 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 295 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1243 | xxxx | 197 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 186 | xxxx | 813 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 134 | xxxx | 813 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.36 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.11 | xxxx | 0.93 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.5 | xxxx | 13.6 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 176.0 | xxxx | 39.3 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | E |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 61.8 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 27.2 Worst Case Level Of Service: F[ 53.9]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 249 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 303 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 529 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 648 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 529 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 648 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 122 | 175 | 529 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 648 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 297 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1395 | xxxx | 210 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 157 | xxxx | 836 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 106 | xxxx | 836 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.41 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.17 | xxxx | 0.78 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.1 | xxxx | 7.8 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 217.1 | xxxx | 22.5 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | C |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 53.9 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.967
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 55.2
Optimal Cycle: 159 Level Of Service: E

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 0 | 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 249 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 303 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 443 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 755 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 443 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 755 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 159 | 187 | 443 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 755 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 159 | 187 | 443 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 755 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.93 | 0.93 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.46 | 0.54 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 809 | 952 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1480 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.20 | 0.20 | 0.25 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.47 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.20 | 0.20 | 0.25 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.48 | 0.00 | 0.48 |
| Volume/Cap: | 0.00 | 0.97 | 0.97 | 0.97 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.97 |
| Delay/Veh: | 0.0 | 78.3 | 78.3 | 70.5 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 49.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 78.3 | 78.3 | 70.5 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 49.5 |
| LOS by Move: | A | E | E | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 27 | 27 | 32 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 46 |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.919
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 46.9
Optimal Cycle: 106 Level Of Service: D

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 0 | 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 249 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 303 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 529 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 648 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 529 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 648 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 122 | 175 | 529 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 648 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 122 | 175 | 529 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 648 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.92 | 0.92 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.41 | 0.59 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 718 | 1030 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1490 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.17 | 0.17 | 0.29 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.40 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.18 | 0.18 | 0.32 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.44 | 0.00 | 0.44 |
| Volume/Cap: | 0.00 | 0.92 | 0.92 | 0.92 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.92 |
| Delay/Veh: | 0.0 | 70.2 | 70.2 | 52.8 | 13.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.5 | 0.0 | 43.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 70.2 | 70.2 | 52.8 | 13.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.5 | 0.0 | 43.7 |
| LOS by Move: | A | E | E | D | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 23 | 23 | 34 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 38 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 44.8 Worst Case Level Of Service: F[385.6]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 298 | 302 | 379 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 318 | 808 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 318 | 808 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 318 | 808 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1872 | 2074 | 808 | xxxx | xxxx | xxxxx | 630 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 80 | 54 | 384 | xxxx | xxxx | xxxxx | 962 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 60 | 36 | 384 | xxxx | xxxx | xxxxx | 962 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 2.11 | 0.00 | 0.25 | xxxx | xxxx | xxxx | 0.33 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx | 1.5 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 17.4 | xxxxx | xxxx | xxxxx | 10.6 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | B | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 60 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 12.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 663.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 385.6 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 35.1 Worst Case Level Of Service: F[287.6]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 298 | 302 | 379 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 303 | 678 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 303 | 678 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 303 | 678 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1784 | 2033 | 678 | xxxx | xxxx | xxxxx | 749 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 91 | 58 | 456 | xxxx | xxxx | xxxxx | 869 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 66 | 38 | 456 | xxxx | xxxx | xxxxx | 869 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 1.83 | 0.00 | 0.23 | xxxx | xxxx | xxxx | 0.35 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.9 | xxxx | xxxx | xxxxx | 1.6 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 15.3 | xxxxx | xxxx | xxxxx | 11.3 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | B | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 66 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 11.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 526.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 287.6 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.674
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 18.6
Optimal Cycle: 39 Level Of Service: B

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 298 | 302 | 379 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 318 | 808 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 318 | 808 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 318 | 808 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 318 | 808 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.36 | 0.64 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 622 | 1112 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.06 | 0.00 | 0.36 | 0.36 | 0.18 | 0.43 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.14 | 0.00 | 0.54 | 0.54 | 0.26 | 0.80 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.67 | 0.00 | 0.43 | 0.00 | 0.67 | 0.67 | 0.67 | 0.53 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 50.2 | 0.0 | 40.7 | 0.0 | 18.6 | 18.6 | 36.9 | 3.8 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 50.2 | 0.0 | 40.7 | 0.0 | 18.6 | 18.6 | 36.9 | 3.8 | 0.0 |
| LOS by Move: | A | A | A | D | A | D | A | B | B | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 10 | 0 | 6 | 0 | 26 | 26 | 15 | 15 | 0 |

Note: Queue reported is the number of cars per lane.

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Weekend Midday Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.735
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 20.3
Optimal Cycle: 47 Level Of Service: C

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 298 | 302 | 379 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 303 | 678 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 303 | 678 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 303 | 678 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 303 | 678 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.33 | 0.67 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 577 | 1152 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.07 | 0.00 | 0.43 | 0.43 | 0.17 | 0.36 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.12 | 0.00 | 0.59 | 0.59 | 0.23 | 0.82 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.74 | 0.00 | 0.54 | 0.00 | 0.74 | 0.74 | 0.74 | 0.44 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 58.1 | 0.0 | 44.3 | 0.0 | 17.7 | 17.7 | 42.5 | 2.8 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 58.1 | 0.0 | 44.3 | 0.0 | 17.7 | 17.7 | 42.5 | 2.8 | 0.0 |
| LOS by Move: | A | A | A | E | A | D | A | B | B | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 10 | 0 | 8 | 0 | 30 | 30 | 16 | 11 | 0 |

Note: Queue reported is the number of cars per lane.

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SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### PM General Plan Buildout

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 475 | 1.9 | 0.374 | 11.7 | LOS B | 89 | 0.47 | 0.63 | 23.7 |
| 6T | T | 711 | 2.0 | 0.456 | 2.5 | LOS A | 122 | 0.48 | 0.26 | 28.2 |
| **Approach** | | **1184** | **1.9** | **0.456** | **6.1** | **LOS A** | **122** | **0.47** | **0.41** | **25.9** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 134 | 2.2 | 0.399 | 17.4 | LOS B | 68 | 0.77 | 0.97 | 21.7 |
| 14T | T | 17 | 5.6 | 0.400 | 7.6 | LOS A | 68 | 0.77 | 0.85 | 26.0 |
| 14R | R | 83 | 2.4 | 0.399 | 9.3 | LOS A | 68 | 0.77 | 0.89 | 24.5 |
| **Approach** | | **235** | **2.6** | **0.399** | **13.8** | **LOS B** | **68** | **0.77** | **0.93** | **22.8** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 167 | 1.8 | 0.261 | 12.7 | LOS B | 41 | 0.70 | 0.77 | 23.4 |
| 12T | T | 299 | 2.0 | 0.371 | 4.8 | LOS A | 90 | 0.76 | 0.52 | 26.2 |
| 12R | R | 121 | 1.7 | 0.371 | 6.7 | LOS A | 90 | 0.76 | 0.66 | 25.2 |
| **Approach** | | **587** | **1.9** | **0.371** | **7.5** | **LOS A** | **90** | **0.74** | **0.62** | **25.0** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 167 | 1.8 | 0.528 | 16.7 | LOS B | 113 | 0.80 | 1.01 | 21.6 |
| 18T | T | 71 | 1.4 | 0.530 | 8.4 | LOS A | 113 | 0.80 | 0.91 | 25.3 |
| 18R | R | 126 | 2.4 | 0.529 | 9.9 | LOS A | 113 | 0.80 | 0.91 | 24.1 |
| **Approach** | | **364** | **1.9** | **0.529** | **12.7** | **LOS B** | **113** | **0.80** | **0.95** | **22.9** |
| **All Vehicles** | | **2370** | **2.0** | **0.530** | **8.2** | **LOS A** | **122** | **0.62** | **0.60** | **24.9** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### WKD General Plan Buildout

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 435 | 2.1 | 0.328 | 11.5 | LOS B | 76 | 0.39 | 0.61 | 23.9 |
| 6T | T | 598 | 2.0 | 0.371 | 2.2 | LOS A | 93 | 0.39 | 0.24 | 29.0 |
| **Approach** | | **1033** | **2.0** | **0.371** | **6.1** | **LOS A** | **93** | **0.39** | **0.40** | **26.3** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 128 | 2.3 | 0.355 | 15.8 | LOS B | 55 | 0.70 | 0.92 | 22.5 |
| 14T | T | 18 | 5.3 | 0.352 | 6.0 | LOS A | 55 | 0.70 | 0.67 | 26.5 |
| 14R | R | 94 | 2.1 | 0.355 | 7.7 | LOS A | 55 | 0.70 | 0.78 | 25.5 |
| **Approach** | | **242** | **2.5** | **0.355** | **11.9** | **LOS B** | **55** | **0.70** | **0.85** | **23.7** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 186 | 2.1 | 0.282 | 12.5 | LOS B | 43 | 0.68 | 0.76 | 23.4 |
| 12T | T | 371 | 1.9 | 0.425 | 4.7 | LOS A | 104 | 0.75 | 0.51 | 26.2 |
| 12R | R | 134 | 2.2 | 0.425 | 6.5 | LOS A | 104 | 0.75 | 0.64 | 25.3 |
| **Approach** | | **691** | **2.0** | **0.425** | **7.2** | **LOS A** | **104** | **0.73** | **0.60** | **25.2** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 128 | 2.3 | 0.480 | 16.6 | LOS B | 96 | 0.79 | 0.99 | 21.7 |
| 18T | T | 61 | 1.6 | 0.480 | 8.2 | LOS A | 96 | 0.79 | 0.90 | 25.5 |
| 18R | R | 123 | 1.6 | 0.479 | 9.8 | LOS A | 96 | 0.79 | 0.89 | 24.2 |
| **Approach** | | **313** | **1.9** | **0.479** | **12.3** | **LOS B** | **96** | **0.79** | **0.93** | **23.2** |
| **All Vehicles** | | **2279** | **2.1** | **0.480** | **7.9** | **LOS A** | **104** | **0.58** | **0.58** | **25.2** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 283.3 Worst Case Level Of Service: F[573.3]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 251 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 390 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 269 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 464 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 269 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 464 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 663 | 0 | 269 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 464 | 142 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1002 | 1073 | 237 | xxxx | xxxx | xxxxx | 606 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 271 | 222 | 807 | xxxx | xxxx | xxxxx | 982 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 247 | 196 | 807 | xxxx | xxxx | xxxxx | 982 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 2.69 | 0.00 | 0.33 | xxxx | xxxx | xxxx | 0.12 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 1.5 | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 11.7 | xxxxx | xxxx | xxxxx | 9.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | 247 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 56.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 801.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 573.3 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 193.5 Worst Case Level Of Service: F[419.6]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 251 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 390 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 262 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 447 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 262 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 447 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 540 | 6 | 262 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 447 | 138 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1010 | 1079 | 236 | xxxx | xxxx | xxxxx | 585 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 268 | 220 | 808 | xxxx | xxxx | xxxxx | 1000 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 242 | 192 | 808 | xxxx | xxxx | xxxxx | 1000 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 2.24 | 0.03 | 0.32 | xxxx | xxxx | xxxx | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 1.4 | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 11.6 | xxxxx | xxxx | xxxxx | 9.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | 241 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 42.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 615.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 419.6 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.943 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 43.8 |
| Optimal Cycle: | 127 | Level Of Service: | D |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 251 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 390 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 269 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 464 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 269 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 464 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 663 | 0 | 269 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 464 | 142 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 663 | 0 | 269 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 464 | 142 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.97 | 0.97 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.77 | 0.23 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1408 | 431 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.49 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.06 | 0.12 | 0.00 | 0.00 | 0.33 | 0.33 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.52 | 0.00 | 0.52 | 0.00 | 0.00 | 0.00 | 0.07 | 0.42 | 0.00 | 0.00 | 0.35 | 0.35 |
| Volume/Cap: | 0.94 | 0.00 | 0.32 | 0.00 | 0.00 | 0.00 | 0.94 | 0.30 | 0.00 | 0.00 | 0.94 | 0.94 |
| Delay/Veh: | 43.7 | 0.0 | 13.9 | 0.0 | 0.0 | 0.0 | 110.3 | 19.6 | 0.0 | 0.0 | 54.1 | 54.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 43.7 | 0.0 | 13.9 | 0.0 | 0.0 | 0.0 | 110.3 | 19.6 | 0.0 | 0.0 | 54.1 | 54.1 |
| LOS by Move: | D | A | B | A | A | A | F | B | A | A | D | D |
| HCM2k95thQ: | 40 | 0 | 9 | 0 | 0 | 0 | 8 | 9 | 0 | 0 | 34 | 34 |

Note: Queue reported is the number of cars per lane.





Weekend Midday Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.758 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 28.0 |
| Optimal Cycle: | 50 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 251 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 390 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 262 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 447 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 262 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 447 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 540 | 6 | 262 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 447 | 138 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 540 | 6 | 262 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 447 | 138 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.89 | 0.89 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.97 | 0.97 |
| Lanes: | 0.99 | 0.01 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.76 | 0.24 |
| Final Sat.: | 1674 | 19 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1405 | 434 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.32 | 0.32 | 0.16 | 0.00 | 0.00 | 0.00 | 0.07 | 0.12 | 0.00 | 0.00 | 0.32 | 0.32 |
| Crit Moves: | | **** | | | | | **** | | | | **** | |
| Green/Cycle: | 0.43 | 0.43 | 0.43 | 0.00 | 0.00 | 0.00 | 0.09 | 0.51 | 0.00 | 0.00 | 0.42 | 0.42 |
| Volume/Cap: | 0.76 | 0.76 | 0.38 | 0.00 | 0.00 | 0.00 | 0.76 | 0.24 | 0.00 | 0.00 | 0.76 | 0.76 |
| Delay/Veh: | 29.0 | 29.0 | 20.1 | 0.0 | 0.0 | 0.0 | 61.8 | 13.6 | 0.0 | 0.0 | 29.0 | 29.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 29.0 | 29.0 | 20.1 | 0.0 | 0.0 | 0.0 | 61.8 | 13.6 | 0.0 | 0.0 | 29.0 | 29.0 |
| LOS by Move: | C | C | C | A | A | A | E | B | A | A | C | C |
| HCM2k95thQ: | 27 | 27 | 11 | 0 | 0 | 0 | 8 | 7 | 0 | 0 | 27 | 27 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 328.1 Worst Case Level Of Service: F[834.1]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 139 | 93 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 186 | 142 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 186 | 142 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 186 | 142 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 251 | xxxx | xxxxx | 92 | xxxx | xxxxx | 941 | 852 | 158 | 1033 | 944 | 91 |
| Potent Cap.: | 1326 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 245 | 299 | 893 | 213 | 264 | 973 |
| Move Cap.: | 1326 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 76 | 222 | 893 | 68 | 197 | 973 |
| Volume/Cap: | 0.20 | xxxx | xxxx | 0.02 | xxxx | xxxx | 1.87 | 0.60 | 0.26 | 0.06 | 0.75 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.8 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.4 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 185 | xxxxx | xxxx | 219 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 44.4 | xxxxx | xxxxx | 6.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 834 | xxxxx | xxxxx | 73.0 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 834.1 | | | 73.0 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 260.6 Worst Case Level Of Service: F[657.5]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 139 | 93 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 181 | 130 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 181 | 130 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 181 | 130 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 249 | xxxx | xxxxx | 78 | xxxx | xxxxx | 916 | 827 | 159 | 1007 | 916 | 77 |
| Potent Cap.: | 1328 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 255 | 309 | 892 | 221 | 275 | 990 |
| Move Cap.: | 1328 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 86 | 232 | 892 | 74 | 206 | 990 |
| Volume/Cap: | 0.20 | xxxx | xxxx | 0.02 | xxxx | xxxx | 1.51 | 0.58 | 0.26 | 0.05 | 0.72 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 8.4 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 210 | xxxxx | xxxx | 230 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 40.1 | xxxxx | xxxxx | 6.0 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 657 | xxxxx | xxxxx | 64.1 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 657.5 | | | 64.1 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.663
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 35.9
Optimal Cycle: 44 Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 139 | 93 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 186 | 142 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 186 | 142 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 271 | 89 | 3 | 30 | 65 | 186 | 142 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 186 | 142 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 1.00 | 1.00 | 0.95 | 0.89 | 0.89 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.97 | 0.03 | 1.00 | 0.26 | 0.74 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1829 | 62 | 1805 | 437 | 1252 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.05 | 0.05 | 0.02 | 0.15 | 0.15 | 0.08 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.23 | 0.34 | 0.34 | 0.11 | 0.22 | 0.22 | 0.32 | 0.32 | 0.32 | 0.15 | 0.15 | 0.15 |
| Volume/Cap: | 0.66 | 0.14 | 0.14 | 0.14 | 0.66 | 0.66 | 0.25 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 |
| Delay/Veh: | 39.3 | 23.3 | 23.3 | 40.2 | 39.7 | 39.7 | 25.4 | 32.5 | 32.5 | 46.0 | 46.0 | 46.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 39.3 | 23.3 | 23.3 | 40.2 | 39.7 | 39.7 | 25.4 | 32.5 | 32.5 | 46.0 | 46.0 | 46.0 |
| LOS by Move: | D | C | C | D | D | D | C | C | C | D | D | D |
| HCM2k95thQ: | 16 | 4 | 4 | 2 | 15 | 15 | 6 | 18 | 18 | 13 | 13 | 13 |

Note: Queue reported is the number of cars per lane.

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Weekend Midday Peak Hour - Buildout Conditions (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.658
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 35.9
Optimal Cycle: 44 Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 139 | 93 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 181 | 130 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 181 | 130 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 265 | 75 | 3 | 30 | 68 | 181 | 130 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 181 | 130 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.99 | 0.99 | 0.95 | 0.89 | 0.89 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.96 | 0.04 | 1.00 | 0.27 | 0.73 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1816 | 73 | 1805 | 462 | 1231 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.04 | 0.04 | 0.02 | 0.15 | 0.15 | 0.07 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.22 | 0.32 | 0.32 | 0.13 | 0.22 | 0.22 | 0.32 | 0.32 | 0.32 | 0.15 | 0.15 | 0.15 |
| Volume/Cap: | 0.66 | 0.13 | 0.13 | 0.13 | 0.66 | 0.66 | 0.22 | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 |
| Delay/Veh: | 39.3 | 24.3 | 24.3 | 38.9 | 39.6 | 39.6 | 25.0 | 32.1 | 32.1 | 45.6 | 45.6 | 45.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 39.3 | 24.3 | 24.3 | 38.9 | 39.6 | 39.6 | 25.0 | 32.1 | 32.1 | 45.6 | 45.6 | 45.6 |
| LOS by Move: | D | C | C | D | D | D | C | C | C | D | D | D |
| HCM2k95thQ: | 16 | 3 | 3 | 2 | 15 | 15 | 6 | 18 | 18 | 13 | 13 | 13 |

Note: Queue reported is the number of cars per lane.

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SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Buildout

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 67 | 1.5 | 0.604 | 16.1 | LOS B | 127 | 0.83 | 1.04 | 21.5 |
| 16T | T | 218 | 1.8 | 0.604 | 9.0 | LOS A | 127 | 0.83 | 0.96 | 24.8 |
| 16R | R | 97 | 2.1 | 0.602 | 10.6 | LOS B | 127 | 0.83 | 0.99 | 23.6 |
| **Approach** | | **382** | **1.8** | **0.604** | **10.7** | **LOS B** | **127** | **0.83** | **0.98** | **23.8** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.385 | 19.4 | LOS B | 69 | 0.83 | 0.98 | 20.8 |
| 6T | T | 119 | 1.7 | 0.377 | 9.9 | LOS A | 69 | 0.83 | 0.90 | 24.1 |
| 6R | R | 72 | 1.4 | 0.376 | 11.1 | LOS B | 69 | 0.83 | 0.88 | 23.2 |
| **Approach** | | **195** | **2.1** | **0.376** | **10.6** | **LOS B** | **69** | **0.83** | **0.89** | **23.7** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 100 | 2.0 | 0.532 | 20.4 | LOS C | 115 | 0.86 | 1.06 | 20.1 |
| 14T | T | 149 | 2.0 | 0.532 | 11.6 | LOS B | 115 | 0.86 | 0.99 | 22.9 |
| 14R | R | 46 | 2.2 | 0.535 | 13.2 | LOS B | 115 | 0.86 | 1.00 | 21.8 |
| **Approach** | | **295** | **2.0** | **0.532** | **14.8** | **LOS B** | **115** | **0.86** | **1.01** | **21.6** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 192 | 2.1 | 0.267 | 11.0 | LOS B | 56 | 0.32 | 0.60 | 24.2 |
| 2T | T | 66 | 1.5 | 0.267 | 2.1 | LOS A | 56 | 0.32 | 0.23 | 29.5 |
| 2R | R | 114 | 1.8 | 0.267 | 2.1 | LOS A | 56 | 0.32 | 0.23 | 29.5 |
| **Approach** | | **371** | **1.9** | **0.267** | **6.7** | **LOS A** | **56** | **0.32** | **0.42** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 698 | 2.0 | 0.476 | 14.4 | LOS B | 101 | 0.66 | 0.81 | 22.9 |
| 18T | T | 80 | 2.5 | 0.476 | 4.5 | LOS A | 101 | 0.66 | 0.48 | 26.7 |
| 18R | R | 203 | 2.0 | 0.477 | 5.6 | LOS A | 101 | 0.66 | 0.56 | 26.1 |
| **Approach** | | **981** | **2.0** | **0.476** | **11.8** | **LOS B** | **101** | **0.66** | **0.73** | **23.6** |
| **All Vehicles** | | **2224** | **2.0** | **0.604** | **11.0** | **LOS B** | **127** | **0.67** | **0.77** | **23.7** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Buildout

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 66 | 1.5 | 0.528 | 14.6 | LOS B | 103 | 0.78 | 0.99 | 22.3 |
| 16T | T | 213 | 1.9 | 0.527 | 7.5 | LOS A | 103 | 0.78 | 0.87 | 25.9 |
| 16R | R | 82 | 2.4 | 0.529 | 9.1 | LOS A | 103 | 0.78 | 0.92 | 24.7 |
| **Approach** | | **360** | **1.9** | **0.528** | **9.2** | **LOS A** | **103** | **0.78** | **0.90** | **24.8** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.333 | 17.8 | LOS B | 59 | 0.79 | 0.94 | 21.5 |
| 6T | T | 119 | 1.7 | 0.340 | 8.3 | LOS A | 59 | 0.79 | 0.84 | 25.4 |
| 6R | R | 72 | 1.4 | 0.340 | 9.5 | LOS A | 59 | 0.79 | 0.82 | 24.4 |
| **Approach** | | **195** | **2.1** | **0.340** | **9.0** | **LOS A** | **59** | **0.79** | **0.84** | **24.9** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 103 | 1.9 | 0.488 | 18.8 | LOS B | 101 | 0.82 | 1.02 | 20.8 |
| 14T | T | 145 | 2.1 | 0.488 | 10.0 | LOS B | 101 | 0.82 | 0.94 | 24.0 |
| 14R | R | 45 | 2.2 | 0.489 | 11.6 | LOS B | 101 | 0.82 | 0.94 | 22.9 |
| **Approach** | | **293** | **2.0** | **0.488** | **13.3** | **LOS B** | **101** | **0.82** | **0.97** | **22.5** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 201 | 2.0 | 0.276 | 11.1 | LOS B | 58 | 0.32 | 0.61 | 24.1 |
| 2T | T | 67 | 1.5 | 0.276 | 2.1 | LOS A | 58 | 0.32 | 0.23 | 29.5 |
| 2R | R | 116 | 1.7 | 0.276 | 2.1 | LOS A | 58 | 0.32 | 0.23 | 29.5 |
| **Approach** | | **383** | **1.8** | **0.276** | **6.8** | **LOS A** | **58** | **0.32** | **0.43** | **26.1** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 568 | 1.9 | 0.418 | 14.2 | LOS B | 84 | 0.64 | 0.79 | 22.9 |
| 18T | T | 79 | 2.5 | 0.418 | 4.7 | LOS A | 84 | 0.64 | 0.49 | 26.8 |
| 18R | R | 203 | 2.0 | 0.418 | 5.5 | LOS A | 84 | 0.64 | 0.55 | 26.2 |
| **Approach** | | **850** | **2.0** | **0.418** | **11.2** | **LOS B** | **84** | **0.64** | **0.71** | **23.8** |
| **All Vehicles** | | **2081** | **2.0** | **0.529** | **10.2** | **LOS B** | **103** | **0.65** | **0.74** | **24.3** |

Symbols which may appear in this table:

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.1 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.1 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.9 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.9 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.7 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.7 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.4 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.4 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 0.9 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 0.9 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.3 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.3 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.0 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.0 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.8 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.8 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.6 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.6 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.8 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.8 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.4 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.4 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 0.8 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 0.8 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.4 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.4 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.5 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.5 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.2 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.2 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 4.8 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 4.8 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.5 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.5 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.4 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.4 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 0.9 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 0.9 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 0.9 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 0.9 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.1 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.1 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.8 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.8 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.2 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.2 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.6 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.6 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.1 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.1 |

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 4.4 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 4.4 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.4 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.4 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.5 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.5 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.5 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.5 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.3 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.3 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 0.9 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 0.9 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.5 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.5 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 0.8 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 0.8 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 1.9 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 1.9 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.6 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.6 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 2.9 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 2.9 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.5 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.5 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.0 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.0 |

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.6 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.6 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 7.7 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 7.7 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.0 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.0 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.3 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.3 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.1 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.1 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.3 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.3 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 4.8 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 4.8 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.5 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.5 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.7 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.7 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.1 |





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.4 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.4 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 7.0 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 7.0 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 0.9 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 0.9 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.1 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.1 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.2 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.2 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.0 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.0 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.1 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.1 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.1 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.1 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.2 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.2 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 4.4 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 4.4 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.4 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.4 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.6 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.6 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 2.9 |

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.1 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.1 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.1 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.6 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.6 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.2 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.2 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.6 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.6 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 7.7 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 7.7 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.3 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.3 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 80.2 |





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 2.9 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 2.9 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 2.9 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.5 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.5 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.0 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.0 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.4 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.4 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 7.0 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 7.0 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.1 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.1 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.2 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.2 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 73.6 |

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt A

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 489.00 | 419.00 | 489 | 419 | 908 | 19.8 |
| | Zone 38 Subtotal | | | | | 489 | 419 | 908 | 19.8 |
| TOTAL | | | | | | 489 | 419 | 908 | 19.8 |





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt A

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 732.00 | 585.00 | 732 | 585 | 1317 | 26.4 |
| | Zone 38 Subtotal | | | | | 732 | 585 | 1317 | 26.4 |
| TOTAL | | | | | | 732 | 585 | 1317 | 26.4 |

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 Critical Vol./Cap.(X): 0.507
Loss Time (sec): 4 (Y+R=4.0 sec) Average Delay (sec/veh): 13.5
Optimal Cycle: 22 Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 47 | 317 | 71 | 34 | 212 | 15 | 16 | 35 | 69 | 109 | 36 | 38 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 52 | 349 | 78 | 37 | 233 | 17 | 18 | 39 | 76 | 120 | 40 | 42 |
| Added Vol: | 74 | 102 | 95 | 21 | 79 | 0 | 0 | 14 | 69 | 114 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 126 | 451 | 173 | 58 | 312 | 17 | 18 | 53 | 145 | 234 | 54 | 70 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 126 | 451 | 173 | 58 | 312 | 17 | 18 | 53 | 145 | 234 | 54 | 70 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 126 | 451 | 173 | 58 | 312 | 17 | 18 | 53 | 145 | 234 | 54 | 70 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 126 | 451 | 173 | 58 | 312 | 17 | 18 | 53 | 145 | 234 | 54 | 70 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.74 | 0.74 | 0.85 | 0.78 | 0.78 | 0.78 | 0.88 | 0.88 | 0.88 | 0.69 | 0.69 | 0.69 |
| Lanes: | 0.44 | 1.56 | 1.00 | 0.30 | 1.61 | 0.09 | 0.08 | 0.24 | 0.68 | 0.65 | 0.15 | 0.20 |
| Final Sat.: | 616 | 2207 | 1615 | 448 | 2396 | 127 | 137 | 407 | 1124 | 853 | 195 | 255 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.11 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.27 | 0.27 | 0.27 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 |
| Volume/Cap: | 0.51 | 0.51 | 0.27 | 0.32 | 0.32 | 0.32 | 0.24 | 0.24 | 0.24 | 0.51 | 0.51 | 0.51 |
| Delay/Veh: | 16.1 | 16.1 | 14.2 | 14.5 | 14.5 | 14.5 | 8.6 | 8.6 | 8.6 | 10.8 | 10.8 | 10.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 16.1 | 16.1 | 14.2 | 14.5 | 14.5 | 14.5 | 8.6 | 8.6 | 8.6 | 10.8 | 10.8 | 10.8 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 Critical Vol./Cap.(X): 0.493
Loss Time (sec): 4 (Y+R=4.0 sec) Average Delay (sec/veh): 13.4
Optimal Cycle: 22 Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Added Vol: | 74 | 104 | 106 | 21 | 82 | 0 | 0 | 14 | 69 | 127 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 138 | 395 | 205 | 60 | 373 | 17 | 18 | 53 | 133 | 226 | 54 | 67 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 138 | 395 | 205 | 60 | 373 | 17 | 18 | 53 | 133 | 226 | 54 | 67 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 138 | 395 | 205 | 60 | 373 | 17 | 18 | 53 | 133 | 226 | 54 | 67 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 138 | 395 | 205 | 60 | 373 | 17 | 18 | 53 | 133 | 226 | 54 | 67 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.69 | 0.69 | 0.85 | 0.80 | 0.80 | 0.80 | 0.88 | 0.88 | 0.88 | 0.70 | 0.70 | 0.70 |
| Lanes: | 0.52 | 1.48 | 1.00 | 0.27 | 1.66 | 0.07 | 0.09 | 0.26 | 0.65 | 0.65 | 0.16 | 0.19 |
| Final Sat.: | 680 | 1948 | 1615 | 403 | 2504 | 114 | 147 | 434 | 1089 | 862 | 206 | 255 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.13 | 0.15 | 0.15 | 0.15 | 0.12 | 0.12 | 0.12 | 0.26 | 0.26 | 0.26 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| Volume/Cap: | 0.49 | 0.49 | 0.31 | 0.36 | 0.36 | 0.36 | 0.23 | 0.23 | 0.23 | 0.49 | 0.49 | 0.49 |
| Delay/Veh: | 15.6 | 15.6 | 14.2 | 14.4 | 14.4 | 14.4 | 8.9 | 8.9 | 8.9 | 11.0 | 11.0 | 11.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 15.6 | 15.6 | 14.2 | 14.4 | 14.4 | 14.4 | 8.9 | 8.9 | 8.9 | 11.0 | 11.0 | 11.0 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 3 | 4 | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: E[ 49.8]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Added Vol: | 0 | 271 | 57 | 1 | 262 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 737 | 152 | 47 | 661 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 737 | 152 | 47 | 661 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 737 | 152 | 47 | 661 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 889 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1238 | xxxx | 445 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 771 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 171 | xxxx | 567 |
| Move Cap.: | xxxx | xxxx | xxxxx | 771 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 163 | xxxx | 567 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.66 | xxxx | 0.06 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 3.7 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 10.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 61.9 | xxxx | 11.8 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 10.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 49.8 | | |
| ApproachLOS: | * | | | * | | | * | | | E | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.4 Worst Case Level Of Service: F[ 55.7]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Added Vol: | 0 | 283 | 57 | 1 | 277 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 715 | 135 | 41 | 709 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 715 | 135 | 41 | 709 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 715 | 135 | 41 | 709 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 850 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1219 | xxxx | 425 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 797 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 176 | xxxx | 583 |
| Move Cap.: | xxxx | xxxx | xxxxx | 797 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 169 | xxxx | 583 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.74 | xxxx | 0.07 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 4.6 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 69.9 | xxxx | 11.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 55.7 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.613
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 18.1
Optimal Cycle: 33 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 7 | 382 | 52 | 97 | 370 | 2 | 1 | 12 | 15 | 104 | 21 | 178 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 8 | 420 | 57 | 107 | 407 | 2 | 1 | 13 | 17 | 114 | 23 | 196 |
| Added Vol: | 22 | 143 | 242 | 174 | 122 | 12 | 14 | 3 | 26 | 257 | 5 | 172 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 30 | 563 | 299 | 281 | 529 | 14 | 15 | 16 | 43 | 371 | 28 | 368 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 30 | 563 | 299 | 281 | 529 | 14 | 15 | 16 | 43 | 371 | 28 | 368 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 30 | 563 | 299 | 281 | 529 | 14 | 15 | 16 | 43 | 371 | 28 | 368 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 30 | 563 | 299 | 281 | 529 | 14 | 15 | 16 | 43 | 371 | 28 | 368 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.90 | 0.90 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.31 | 0.69 | 1.00 | 1.95 | 0.05 | 0.20 | 0.22 | 0.58 | 1.86 | 0.14 | 1.00 |
| Final Sat.: | 1805 | 2235 | 1187 | 1805 | 3502 | 94 | 355 | 381 | 999 | 3377 | 256 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.25 | 0.25 | 0.16 | 0.15 | 0.15 | 0.04 | 0.04 | 0.04 | 0.11 | 0.11 | 0.23 |
| Crit Moves: | | **** | | **** | | | | | **** | | **** | |
| Green/Cycle: | 0.07 | 0.41 | 0.41 | 0.25 | 0.60 | 0.60 | 0.07 | 0.07 | 0.07 | 0.18 | 0.18 | 0.43 |
| Volume/Cap: | 0.25 | 0.61 | 0.61 | 0.61 | 0.25 | 0.25 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.53 |
| Delay/Veh: | 32.2 | 17.0 | 17.0 | 25.5 | 6.7 | 6.7 | 40.6 | 40.6 | 40.6 | 28.2 | 28.2 | 15.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 32.2 | 17.0 | 17.0 | 25.5 | 6.7 | 6.7 | 40.6 | 40.6 | 40.6 | 28.2 | 28.2 | 15.3 |
| LOS by Move: | C | B | B | C | A | A | D | D | D | C | C | B |
| HCM2kAvgQ: | 1 | 8 | 8 | 6 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 6 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.719
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 26.6
Optimal Cycle: 42 | Level Of Service: C

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Added Vol: | 22 | 143 | 244 | 189 | 122 | 12 | 14 | 3 | 26 | 258 | 5 | 184 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 90 | 149 | 332 | 189 | 130 | 21 | 19 | 258 | 76 | 338 | 235 | 184 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 90 | 149 | 332 | 189 | 130 | 21 | 19 | 258 | 76 | 338 | 235 | 184 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 90 | 149 | 332 | 189 | 130 | 21 | 19 | 258 | 76 | 338 | 235 | 184 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 90 | 149 | 332 | 189 | 130 | 21 | 19 | 258 | 76 | 338 | 235 | 184 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.85 | 0.85 | 0.95 | 0.93 | 0.93 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.72 | 0.28 | 0.05 | 0.73 | 0.22 | 1.18 | 0.82 | 1.00 |
| Final Sat.: | 1805 | 1619 | 1619 | 1805 | 3043 | 492 | 99 | 1344 | 396 | 2177 | 1513 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.05 | 0.09 | 0.21 | 0.10 | 0.04 | 0.04 | 0.19 | 0.19 | 0.19 | 0.16 | 0.16 | 0.11 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.23 | 0.29 | 0.29 | 0.15 | 0.20 | 0.20 | 0.27 | 0.27 | 0.27 | 0.22 | 0.22 | 0.36 |
| Volume/Cap: | 0.21 | 0.32 | 0.72 | 0.72 | 0.21 | 0.21 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.31 |
| Delay/Veh: | 22.0 | 19.8 | 26.3 | 37.7 | 23.6 | 23.6 | 28.4 | 28.4 | 28.4 | 28.6 | 28.6 | 16.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 22.0 | 19.8 | 26.3 | 37.7 | 23.6 | 23.6 | 28.4 | 28.4 | 28.4 | 28.6 | 28.6 | 16.4 |
| LOS by Move: | C | B | C | D | C | C | C | C | C | C | C | B |
| HCM2kAvgQ: | 2 | 3 | 8 | 6 | 2 | 2 | 8 | 8 | 8 | 7 | 7 | 3 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.7 Worst Case Level Of Service: C[ 21.1]

| Street Name: | US 101 South Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | 25 | 345 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | 25 | 345 | 0 |
| Added Vol: | 0 | 0 | 0 | 46 | 0 | 53 | 0 | 100 | 320 | 157 | 380 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 50 | 0 | 77 | 0 | 143 | 417 | 182 | 725 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 50 | 0 | 77 | 0 | 143 | 417 | 182 | 725 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 50 | 0 | 77 | 0 | 143 | 417 | 182 | 725 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1161 | 1649 | 363 | xxxx | xxxx | xxxxx | 560 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 192 | 100 | 640 | xxxx | xxxx | xxxxx | 1021 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 165 | 82 | 640 | xxxx | xxxx | xxxxx | 1021 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.30 | 0.00 | 0.12 | xxxx | xxxx | xxxx | 0.18 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 35.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.3 | xxxx | xxxxx |
| LOS by Move: | * | * | * | E | * | * | * | * | * | A | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 640 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.4 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | B | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 21.1 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 3.4 Worst Case Level Of Service: C[ 22.1]

| Street Name: | US 101 South Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | 19 | 176 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | 19 | 176 | 0 |
| Added Vol: | 0 | 0 | 0 | 63 | 0 | 53 | 0 | 107 | 329 | 193 | 394 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 66 | 0 | 76 | 0 | 149 | 446 | 212 | 570 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 66 | 0 | 76 | 0 | 149 | 446 | 212 | 570 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 66 | 0 | 76 | 0 | 149 | 446 | 212 | 570 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1069 | 1589 | 285 | xxxx | xxxx | xxxxx | 595 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 220 | 109 | 718 | xxxx | xxxx | xxxxx | 991 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 184 | 86 | 718 | xxxx | xxxx | xxxxx | 991 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.36 | 0.00 | 0.11 | xxxx | xxxx | xxxx | 0.21 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 35.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.6 | xxxx | xxxxx |
| LOS by Move: | * | * | * | E | * | * | * | * | * | A | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 718 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.6 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | B | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 22.1 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 29.4  Worst Case Level Of Service: E[ 49.3]

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | - T | - R | L | - T | - R | L | - T | - R | L | - T | - R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 2 | 0 0 | 0 0 | 1 | 1 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | |
| Base Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Added Vol: | 280 | 0 | 206 | 0 | 0 | 0 | 47 | 99 | 0 | 0 | 258 | 62 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 552 | 0 | 261 | 0 | 0 | 0 | 70 | 114 | 0 | 0 | 315 | 68 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Volume: | 552 | 0 | 261 | 0 | 0 | 0 | 70 | 114 | 0 | 0 | 315 | 68 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 552 | 0 | 261 | 0 | 0 | 0 | 70 | 114 | 0 | 0 | 315 | 68 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.8 6.5 | | 6.9 | xxxxx xxxx | | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 4.0 | | 3.3 | xxxxx xxxx | | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 412 637 | | 57 | xxxx xxxx | | xxxxx | 383 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 574 398 | | 1004 | xxxx xxxx | | xxxxx | 1187 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 548 374 | | 1004 | xxxx xxxx | | xxxxx | 1187 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 1.01 0.00 | | 0.26 | xxxx xxxx | | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx xxxx | | 1.0 | xxxx xxxx | | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx xxxx | | 9.8 | xxxxx xxxx | | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 548 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 14.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 67.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 49.3 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | E | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 15.1  Worst Case Level Of Service: D[ 28.1]

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | - T | - R | L | - T | - R | L | - T | - R | L | - T | - R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 2 | 0 0 | 0 0 | 1 | 1 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Growth Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| Initial Bse: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Added Vol: | 280 | 0 | 272 | 0 | 0 | 0 | 47 | 124 | 0 | 0 | 307 | 73 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 424 | 0 | 299 | 0 | 0 | 0 | 73 | 144 | 0 | 0 | 365 | 81 |
| User Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Adj: | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | | 1.00 1.00 | 1.00 | |
| PHF Volume: | 424 | 0 | 299 | 0 | 0 | 0 | 73 | 144 | 0 | 0 | 365 | 81 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 424 | 0 | 299 | 0 | 0 | 0 | 73 | 144 | 0 | 0 | 365 | 81 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.8 6.5 | | 6.9 | xxxxx xxxx | | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 4.0 | | 3.3 | xxxxx xxxx | | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 473 736 | | 72 | xxxx xxxx | | xxxxx | 446 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 525 349 | | 982 | xxxx xxxx | | xxxxx | 1125 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 499 326 | | 982 | xxxx xxxx | | xxxxx | 1125 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.85 0.00 | | 0.30 | xxxx xxxx | | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx xxxx | | 1.3 | xxxx xxxx | | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx xxxx | | 10.3 | xxxxx xxxx | | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 499 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 40.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | E | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 28.1 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | D | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.590
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 21.1
Optimal Cycle: 32 | Level Of Service: C

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Protected | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | |
| Base Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Added Vol: | 280 | 0 | 206 | 0 | 0 | 0 | 47 | 99 | 0 | 0 | 258 | 62 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 552 | 0 | 261 | 0 | 0 | 0 | 70 | 114 | 0 | 0 | 315 | 68 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 552 | 0 | 261 | 0 | 0 | 0 | 70 | 114 | 0 | 0 | 315 | 68 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 552 | 0 | 261 | 0 | 0 | 0 | 70 | 114 | 0 | 0 | 315 | 68 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 552 | 0 | 261 | 0 | 0 | 0 | 70 | 114 | 0 | 0 | 315 | 68 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 0.92 | 0.92 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 1.64 | 0.36 |
| Final Sat.: | 1357 | 0 | 1615 | 0 | 0 | 0 | 1805 | 3610 | 0 | 0 | 2889 | 624 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.41 | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.04 | 0.03 | 0.00 | 0.00 | 0.11 | 0.11 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.69 | 0.00 | 1.38 | 0.00 | 0.00 | 0.00 | 0.07 | 0.25 | 0.00 | 0.00 | 0.18 | 0.18 |
| Volume/Cap: | 0.59 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.59 | 0.13 | 0.00 | 0.00 | 0.59 | 0.59 |
| Delay/Veh: | 9.1 | 0.0 | 8.6 | 0.0 | 0.0 | 0.0 | 53.1 | 29.1 | 0.0 | 0.0 | 38.7 | 38.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 9.1 | 0.0 | 8.6 | 0.0 | 0.0 | 0.0 | 53.1 | 29.1 | 0.0 | 0.0 | 38.7 | 38.7 |
| LOS by Move: | A | A | A | A | A | A | D | C | A | A | D | D |
| HCM2k95thQ: | 17 | 0 | 6 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 12 | 12 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.511
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 19.7
Optimal Cycle: 28 | Level Of Service: B

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Protected | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Added Vol: | 280 | 0 | 272 | 0 | 0 | 0 | 47 | 124 | 0 | 0 | 307 | 73 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 424 | 0 | 299 | 0 | 0 | 0 | 73 | 144 | 0 | 0 | 365 | 81 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 424 | 0 | 299 | 0 | 0 | 0 | 73 | 144 | 0 | 0 | 365 | 81 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 424 | 0 | 299 | 0 | 0 | 0 | 73 | 144 | 0 | 0 | 365 | 81 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 424 | 0 | 299 | 0 | 0 | 0 | 73 | 144 | 0 | 0 | 365 | 81 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 0.92 | 0.92 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 1.64 | 0.36 |
| Final Sat.: | 1357 | 0 | 1615 | 0 | 0 | 0 | 1805 | 3610 | 0 | 0 | 2875 | 638 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.31 | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 0.04 | 0.04 | 0.00 | 0.00 | 0.13 | 0.13 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.61 | 0.00 | 1.22 | 0.00 | 0.00 | 0.00 | 0.08 | 0.33 | 0.00 | 0.00 | 0.25 | 0.25 |
| Volume/Cap: | 0.51 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.51 | 0.12 | 0.00 | 0.00 | 0.51 | 0.51 |
| Delay/Veh: | 11.5 | 0.0 | 3.1 | 0.0 | 0.0 | 0.0 | 47.3 | 23.6 | 0.0 | 0.0 | 32.8 | 32.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 11.5 | 0.0 | 3.1 | 0.0 | 0.0 | 0.0 | 47.3 | 23.6 | 0.0 | 0.0 | 32.8 | 32.8 |
| LOS by Move: | B | A | A | A | A | A | D | C | A | A | C | C |
| HCM2k95thQ: | 15 | 0 | 6 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 13 | 13 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 8.8 Worst Case Level Of Service: C[ 16.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Added Vol: | 272 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 245 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 304 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 251 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 304 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 251 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 304 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 251 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 180 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 856 | xxxx | 107 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 331 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 276 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.22 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.47 | xxxx | 0.26 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 2.3 | xxxx | 1.1 | xxxx | xxxx | xxxxx |
| Control Del: | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 29.0 | xxxx | 10.1 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | D | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 16.5 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 8.5 Worst Case Level Of Service: B[ 14.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Added Vol: | 334 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 335 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 345 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 345 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 345 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 345 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 345 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 345 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 181 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 920 | xxxx | 106 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 303 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 246 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.25 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.37 | xxxx | 0.36 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.7 | xxxx | 1.7 | xxxx | xxxx | xxxxx |
| Control Del: | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 28.1 | xxxx | 10.9 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | D | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 14.5 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 50.7 Worst Case Level Of Service: F[151.1]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Project Access | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 308 | 181 | 110 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 308 | 181 | 147 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 308 | 181 | 147 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 225 | 308 | 181 | 147 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 533 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 888 | 888 | 379 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1045 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 317 | 285 | 672 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1045 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 270 | 230 | 672 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.17 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.98 | 0.00 | 0.23 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 9.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 347 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 17.9 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 151 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 151.1 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 255.7 Worst Case Level Of Service: F[720.7]

| Street Name: | Asti (Frontage) Rd | | | | | | | | Project Access | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 461 | 271 | 110 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 461 | 271 | 147 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 461 | 271 | 147 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 196 | 461 | 271 | 147 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 657 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1116 | 1116 | 427 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 940 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 232 | 210 | 632 |
| Move Cap.: | xxxx | xxxx | xxxxx | 940 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 171 | 138 | 632 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.29 | xxxx | xxxx | xxxx | xxxx | xxxx | 2.16 | 0.00 | 0.34 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 10.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | B | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 234 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 48.4 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 10.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 721 | xxxxx |
| Shared LOS: | * | * | * | B | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 720.7 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.502 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 20.3 |
| Optimal Cycle: | 27 | Level Of Service: | C |

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 308 | 181 | 110 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 308 | 181 | 147 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 308 | 181 | 147 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 225 | 308 | 181 | 147 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 225 | 308 | 181 | 147 | 0 | 0 | 0 | 0 | 264 | 0 | 155 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.12 | 0.19 | 0.10 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.10 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.38 | 0.38 | 0.60 | 0.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.36 | 0.00 | 0.36 |
| Volume/Cap: | 0.00 | 0.31 | 0.50 | 0.25 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.27 |
| Delay/Veh: | 0.0 | 22.0 | 24.4 | 9.5 | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 25.8 | 0.0 | 22.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 22.0 | 24.4 | 9.5 | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 25.8 | 0.0 | 22.9 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 9 | 14 | 5 | 4 | 0 | 0 | 0 | 0 | 13 | 0 | 7 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.732 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 24.1 |
| Optimal Cycle: | 46 | Level Of Service: | C |

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 461 | 271 | 110 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 461 | 271 | 147 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 461 | 271 | 147 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 196 | 461 | 271 | 147 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 196 | 461 | 271 | 147 | 0 | 0 | 0 | 0 | 369 | 0 | 216 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.10 | 0.29 | 0.15 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.00 | 0.13 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.39 | 0.39 | 0.62 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.34 | 0.00 | 0.34 |
| Volume/Cap: | 0.00 | 0.26 | 0.73 | 0.35 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.73 | 0.00 | 0.39 |
| Delay/Veh: | 0.0 | 20.9 | 30.5 | 9.4 | 8.9 | 0.0 | 0.0 | 0.0 | 0.0 | 34.2 | 0.0 | 25.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 20.9 | 30.5 | 9.4 | 8.9 | 0.0 | 0.0 | 0.0 | 0.0 | 34.2 | 0.0 | 25.2 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 8 | 24 | 8 | 4 | 0 | 0 | 0 | 0 | 21 | 0 | 10 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[ 18.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 438 | 0 | 0 | 429 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 504 | 16 | 2 | 464 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 504 | 16 | 2 | 464 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 504 | 16 | 2 | 464 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 520 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 980 | 980 | 512 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1056 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 279 | 252 | 566 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1056 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 279 | 251 | 566 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.10 | 0.00 | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 294 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 18.6 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 18.6 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[ 12.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Added Vol: | 0 | 591 | 0 | 0 | 534 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 628 | 2 | 1 | 570 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 628 | 2 | 1 | 570 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 628 | 2 | 1 | 570 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 630 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 629 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 962 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 486 |
| Move Cap.: | xxxx | xxxx | xxxxx | 962 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 486 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 12.5 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 12.5 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[ 18.6]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 | 0 | 0 0 |
| Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm | | | | | | | | | | | | |
| Base Vol: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 |
| Added Vol: | 81 | 323 | 0 | 0 | 253 | 9 | 10 | 0 | 75 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 258 | 666 | 0 | 0 | 388 | 56 | 43 | 0 | 146 | 0 | 0 | 0 |
| User Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 284 | 733 | 0 | 0 | 427 | 62 | 47 | 0 | 161 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 284 | 733 | 0 | 0 | 427 | 62 | 47 | 0 | 161 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 488 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1744 | 1744 | 427 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1085 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 89 | 81 | 632 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1085 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 71 | 60 | 632 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 152 | 136 | xxxxx | 72 | 117 | xxxxx |
| Volume/Cap: | 0.26 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.31 | 0.00 | 0.25 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx |
| Control Del: | 9.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 12.6 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 152 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 39.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | E | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 18.6 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: C[ 16.7]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 | 0 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 |
| Added Vol: | 86 | 324 | 0 | 0 | 254 | 9 | 10 | 0 | 80 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 210 | 563 | 0 | 0 | 493 | 49 | 50 | 0 | 204 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 210 | 563 | 0 | 0 | 493 | 49 | 50 | 0 | 204 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 210 | 563 | 0 | 0 | 493 | 49 | 50 | 0 | 204 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 542 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1476 | 1476 | 493 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1037 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 140 | 127 | 580 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1037 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 119 | 102 | 580 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 226 | 201 | xxxxx | 81 | 173 | xxxxx |
| Volume/Cap: | 0.20 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.22 | 0.00 | 0.35 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.6 | xxxx | xxxx | xxxxx |
| Control Del: | 9.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 14.5 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 226 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 25.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | D | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 16.7 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 36.6 Worst Case Level Of Service: F[ 68.4]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 264 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 318 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 458 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 770 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 458 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 770 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 159 | 187 | 458 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 770 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 292 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1273 | xxxx | 195 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 178 | xxxx | 814 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 126 | xxxx | 814 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.37 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.18 | xxxx | 0.95 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 9.0 | xxxx | 14.5 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 203.5 | xxxx | 42.3 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | E |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 68.4 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 30.5 Worst Case Level Of Service: F[ 61.1]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 270 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 324 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 550 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 669 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 550 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 669 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 122 | 175 | 550 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 669 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 297 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1437 | xxxx | 210 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 148 | xxxx | 836 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 98 | xxxx | 836 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.43 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.27 | xxxx | 0.80 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.7 | xxxx | 8.5 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 259.1 | xxxx | 24.1 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | C |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 61.1 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.986
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 59.4
Optimal Cycle: 180 Level Of Service: E

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 0 | 1 0 | 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 264 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 318 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 458 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 770 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 458 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 770 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 159 | 187 | 458 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 770 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 159 | 187 | 458 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 770 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.93 | 0.93 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.46 | 0.54 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 809 | 952 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1480 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.20 | 0.20 | 0.25 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.48 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.20 | 0.20 | 0.26 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.48 | 0.00 | 0.48 |
| Volume/Cap: | 0.00 | 0.99 | 0.99 | 0.99 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.99 |
| Delay/Veh: | 0.0 | 84.1 | 84.1 | 75.0 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 54.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 84.1 | 84.1 | 75.0 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 54.2 |
| LOS by Move: | A | F | F | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 28 | 28 | 34 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 49 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.946
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 51.4
Optimal Cycle: 130 Level Of Service: D

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 0 | 1 0 | 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 270 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 324 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 550 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 669 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 550 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 669 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 122 | 175 | 550 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 669 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 122 | 175 | 550 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 669 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.92 | 0.92 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.41 | 0.59 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 718 | 1030 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1490 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.17 | 0.17 | 0.30 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.41 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.18 | 0.18 | 0.32 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.44 | 0.00 | 0.44 |
| Volume/Cap: | 0.00 | 0.95 | 0.95 | 0.95 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.95 |
| Delay/Veh: | 0.0 | 77.0 | 77.0 | 57.6 | 13.4 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 48.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 77.0 | 77.0 | 57.6 | 13.4 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 48.4 |
| LOS by Move: | A | E | E | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 24 | 24 | 36 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 41 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 161.0 Worst Case Level Of Service: F[1606.7]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 313 | 551 | 394 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 419 | 567 | 823 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 419 | 567 | 823 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 419 | 567 | 823 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2393 | 2602 | 823 | xxxx | xxxx | xxxxx | 645 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 38 | 25 | 377 | xxxx | xxxx | xxxxx | 950 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 20 | 10 | 377 | xxxx | xxxx | xxxxx | 950 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 6.37 | 0.00 | 0.25 | xxxx | xxxx | xxxx | 0.60 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 17.8 | xxxxx | xxxx | xxxxx | 14.2 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | B | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 20 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 16.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 2805 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 1606.7 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 251.5 Worst Case Level Of Service: F[2538.5]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 319 | 649 | 400 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 520 | 650 | 699 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 520 | 650 | 699 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 520 | 650 | 699 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2509 | 2769 | 699 | xxxx | xxxx | xxxxx | 770 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 32 | 20 | 443 | xxxx | xxxx | xxxxx | 854 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 12 | 5 | 443 | xxxx | xxxx | xxxxx | 854 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 10.17 | 0.00 | 0.24 | xxxx | xxxx | xxxx | 0.76 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.9 | xxxx | xxxx | xxxxx | 7.4 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 15.7 | xxxxx | xxxx | xxxxx | 21.3 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | C | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 12 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 16.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 4749 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 2538.5 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.830
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 25.3
Optimal Cycle: 66 Level Of Service: C

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 0 | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 1 | 0 | 1 | 0 1 | 0 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 313 | 551 | 394 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 419 | 567 | 823 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 419 | 567 | 823 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 419 | 567 | 823 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 419 | 567 | 823 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.35 | 0.65 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 607 | 1126 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.06 | 0.00 | 0.37 | 0.37 | 0.31 | 0.43 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.11 | 0.00 | 0.45 | 0.45 | 0.38 | 0.83 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.83 | 0.00 | 0.53 | 0.00 | 0.83 | 0.83 | 0.83 | 0.52 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 73.6 | 0.0 | 44.7 | 0.0 | 31.7 | 31.7 | 36.6 | 3.0 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 73.6 | 0.0 | 44.7 | 0.0 | 31.7 | 31.7 | 36.6 | 3.0 | 0.0 |
| LOS by Move: | A | A | A | E | A | D | A | C | C | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 12 | 0 | 7 | 0 | 33 | 33 | 26 | 13 | 0 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.953
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 39.1
Optimal Cycle: 139 Level Of Service: D

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 0 | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 1 | 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 319 | 649 | 400 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 520 | 650 | 699 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 520 | 650 | 699 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 520 | 650 | 699 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 520 | 650 | 699 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.32 | 0.68 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 561 | 1166 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.07 | 0.00 | 0.45 | 0.45 | 0.36 | 0.37 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.09 | 0.00 | 0.47 | 0.47 | 0.38 | 0.85 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.95 | 0.00 | 0.70 | 0.00 | 0.95 | 0.95 | 0.95 | 0.44 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 110.3 | 0.0 | 57.7 | 0.0 | 46.6 | 46.6 | 53.8 | 2.1 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 110.3 | 0.0 | 57.7 | 0.0 | 46.6 | 46.6 | 53.8 | 2.1 | 0.0 |
| LOS by Move: | A | A | A | F | A | E | A | D | D | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 13 | 0 | 9 | 0 | 46 | 46 | 32 | 9 | 0 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### PM Buildout + Project A Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 737 | 2.0 | 0.476 | 11.8 | LOS B | 134 | 0.50 | 0.62 | 23.5 |
| 6T | T | 726 | 2.1 | 0.557 | 2.9 | LOS A | 165 | 0.58 | 0.31 | 27.4 |
| **Approach** | | **1464** | **2.0** | **0.557** | **7.3** | **LOS A** | **165** | **0.54** | **0.47** | **25.1** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 134 | 2.2 | 0.450 | 18.5 | LOS B | 77 | 0.81 | 1.00 | 21.2 |
| 14T | T | 17 | 5.6 | 0.450 | 8.7 | LOS A | 77 | 0.81 | 0.90 | 25.0 |
| 14R | R | 83 | 2.4 | 0.449 | 10.4 | LOS B | 77 | 0.81 | 0.93 | 23.7 |
| **Approach** | | **235** | **2.6** | **0.450** | **14.9** | **LOS B** | **77** | **0.81** | **0.97** | **22.1** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 167 | 1.8 | 0.326 | 15.6 | LOS B | 59 | 0.86 | 0.88 | 21.8 |
| 12T | T | 315 | 1.9 | 0.494 | 8.7 | LOS A | 150 | 0.96 | 0.93 | 24.9 |
| 12R | R | 121 | 1.7 | 0.494 | 10.5 | LOS B | 150 | 0.96 | 0.93 | 23.6 |
| **Approach** | | **602** | **1.8** | **0.495** | **11.0** | **LOS B** | **150** | **0.93** | **0.91** | **23.6** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 167 | 1.8 | 0.693 | 26.5 | LOS C | 196 | 0.94 | 1.20 | 17.7 |
| 18T | T | 71 | 1.4 | 0.693 | 18.1 | LOS B | 196 | 0.94 | 1.18 | 19.1 |
| 18R | R | 126 | 2.4 | 0.690 | 19.7 | LOS B | 196 | 0.94 | 1.18 | 18.4 |
| **Approach** | | **364** | **1.9** | **0.692** | **22.5** | **LOS C** | **196** | **0.94** | **1.19** | **18.1** |
| **All Vehicles** | | **2665** | **2.0** | **0.693** | **10.9** | **LOS B** | **196** | **0.71** | **0.71** | **23.3** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### WKD Buildout+Project A Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 800 | 2.0 | 0.498 | 11.7 | LOS B | 148 | 0.46 | 0.60 | 23.6 |
| 6T | T | 620 | 1.9 | 0.465 | 2.5 | LOS A | 128 | 0.47 | 0.27 | 28.3 |
| **Approach** | | **1420** | **2.0** | **0.498** | **7.7** | **LOS A** | **148** | **0.47** | **0.46** | **25.2** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 128 | 2.3 | 0.443 | 18.5 | LOS B | 77 | 0.80 | 1.00 | 21.2 |
| 14T | T | 18 | 5.3 | 0.442 | 8.7 | LOS A | 77 | 0.80 | 0.90 | 25.0 |
| 14R | R | 94 | 2.1 | 0.443 | 10.5 | LOS B | 77 | 0.80 | 0.93 | 23.7 |
| **Approach** | | **242** | **2.5** | **0.443** | **14.6** | **LOS B** | **77** | **0.80** | **0.96** | **22.2** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 186 | 2.1 | 0.382 | 16.7 | LOS B | 72 | 0.90 | 0.91 | 21.2 |
| 12T | T | 393 | 2.0 | 0.631 | 13.8 | LOS B | 246 | 1.00 | 1.12 | 21.5 |
| 12R | R | 134 | 2.2 | 0.632 | 15.6 | LOS B | 246 | 1.00 | 1.12 | 20.4 |
| **Approach** | | **714** | **2.1** | **0.631** | **14.9** | **LOS B** | **246** | **0.97** | **1.07** | **21.2** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 128 | 2.3 | 0.733 | 35.8 | LOS D | 224 | 0.99 | 1.30 | 15.1 |
| 18T | T | 61 | 1.6 | 0.735 | 27.5 | LOS C | 224 | 0.99 | 1.29 | 15.5 |
| 18R | R | 123 | 1.6 | 0.732 | 29.0 | LOS C | 224 | 0.99 | 1.28 | 15.0 |
| **Approach** | | **313** | **1.9** | **0.734** | **31.5** | **LOS C** | **224** | **0.99** | **1.29** | **15.1** |
| **All Vehicles** | | **2689** | **2.0** | **0.735** | **13.0** | **LOS B** | **246** | **0.69** | **0.76** | **22.2** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement

PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 379.4 Worst Case Level Of Service: F[752.3]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 559 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 654 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 577 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 728 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 577 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 728 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 663 | 0 | 577 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 728 | 142 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1266 | 1337 | 237 | xxxx | xxxx | xxxxx | 870 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 188 | 155 | 807 | xxxx | xxxx | xxxxx | 783 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 167 | 132 | 807 | xxxx | xxxx | xxxxx | 783 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.97 | 0.00 | 0.72 | xxxx | xxxx | xxxx | 0.15 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 6.2 | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 19.8 | xxxxx | xxxx | xxxxx | 10.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | C | * | * | * | B | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | 167 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 65.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1390 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 752.3 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 302.3 Worst Case Level Of Service: F[615.0]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 713 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 758 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 724 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 815 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 724 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 815 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 540 | 6 | 724 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 815 | 138 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1378 | 1447 | 236 | xxxx | xxxx | xxxxx | 953 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 161 | 133 | 808 | xxxx | xxxx | xxxxx | 729 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 139 | 109 | 808 | xxxx | xxxx | xxxxx | 729 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.88 | 0.05 | 0.90 | xxxx | xxxx | xxxx | 0.18 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 12.0 | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 34.5 | xxxxx | xxxx | xxxxx | 11.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | D | * | * | * | B | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | 139 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 54.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1385 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 615.0 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 1.091
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 71.6
Optimal Cycle: 180 Level Of Service: E

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 559 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 654 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 577 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 728 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 577 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 728 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 663 | 0 | 577 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 728 | 142 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 663 | 0 | 577 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 728 | 142 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.84 | 0.16 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1555 | 303 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.49 | 0.00 | 0.36 | 0.00 | 0.00 | 0.00 | 0.06 | 0.12 | 0.00 | 0.00 | 0.47 | 0.47 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.45 | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.06 | 0.49 | 0.00 | 0.00 | 0.43 | 0.43 |
| Volume/Cap: | 1.09 | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 1.09 | 0.26 | 0.00 | 0.00 | 1.09 | 1.09 |
| Delay/Veh: | 91.1 | 0.0 | 29.7 | 0.0 | 0.0 | 0.0 | 161.4 | 15.1 | 0.0 | 0.0 | 88.1 | 88.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 91.1 | 0.0 | 29.7 | 0.0 | 0.0 | 0.0 | 161.4 | 15.1 | 0.0 | 0.0 | 88.1 | 88.1 |
| LOS by Move: | F | A | C | A | A | A | F | B | A | A | F | F |
| HCM2k95thQ: | 51 | 0 | 30 | 0 | 0 | 0 | 10 | 8 | 0 | 0 | 56 | 56 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 1.102
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 75.1
Optimal Cycle: 180 Level Of Service: E

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 713 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 758 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 724 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 815 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 724 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 815 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 540 | 6 | 724 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 815 | 138 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 540 | 6 | 724 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 815 | 138 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.93 | 0.93 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 0.99 | 0.01 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.86 | 0.14 |
| Final Sat.: | 1741 | 19 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1592 | 270 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.31 | 0.31 | 0.45 | 0.00 | 0.00 | 0.00 | 0.07 | 0.12 | 0.00 | 0.00 | 0.51 | 0.51 |
| Crit Moves: | | | **** | | | | **** | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.00 | 0.00 | 0.00 | 0.06 | 0.53 | 0.00 | 0.00 | 0.46 | 0.46 |
| Volume/Cap: | 0.75 | 0.75 | 1.10 | 0.00 | 0.00 | 0.00 | 1.10 | 0.23 | 0.00 | 0.00 | 1.10 | 1.10 |
| Delay/Veh: | 29.7 | 29.7 | 95.9 | 0.0 | 0.0 | 0.0 | 160.1 | 12.8 | 0.0 | 0.0 | 89.3 | 89.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 29.7 | 29.7 | 95.9 | 0.0 | 0.0 | 0.0 | 160.1 | 12.8 | 0.0 | 0.0 | 89.3 | 89.3 |
| LOS by Move: | C | C | F | A | A | A | F | B | A | A | F | F |
| HCM2k95thQ: | 27 | 27 | 55 | 0 | 0 | 0 | 11 | 7 | 0 | 0 | 60 | 60 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 403 | 401 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 450 | 450 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 450 | 450 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 450 | 450 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 515 | xxxx | xxxxx | 92 | xxxx | xxxxx | 1073 | 984 | 290 | 1165 | 1208 | 91 |
| Potent Cap.: | 1061 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 200 | 250 | 754 | 173 | 185 | 973 |
| Move Cap.: | 1061 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 0 | 172 | 754 | 34 | 127 | 973 |
| Volume/Cap: | 0.26 | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | 0.78 | 0.31 | 0.12 | 1.17 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.6 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx | xxxx | 140 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 11.6 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 246 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 246.0 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 508 | 555 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 550 | 592 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 550 | 592 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 550 | 592 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 618 | xxxx | xxxxx | 78 | xxxx | xxxxx | 1100 | 1011 | 343 | 1192 | 1285 | 77 |
| Potent Cap.: | 972 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 191 | 241 | 704 | 166 | 166 | 990 |
| Move Cap.: | 972 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 0 | 161 | 704 | 26 | 111 | 990 |
| Volume/Cap: | 0.27 | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | 0.83 | 0.33 | 0.15 | 1.34 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.1 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 10.1 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | B | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx | xxxx | 122 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 13.2 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 336 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 335.7 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.882 |
| Loss Time (sec): | 8 (Y+R=4.0 sec) | Average Delay (sec/veh): | 49.7 |
| Optimal Cycle: | 91 | Level Of Service: | D |

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 403 | 401 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 450 | 450 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 450 | 450 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 271 | 89 | 3 | 30 | 65 | 450 | 450 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 450 | 450 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 1.00 | 1.00 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.97 | 0.03 | 1.00 | 0.13 | 0.87 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1829 | 62 | 1805 | 208 | 1443 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.05 | 0.05 | 0.02 | 0.31 | 0.31 | 0.25 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | **** | | | **** | | |
| Green/Cycle: | 0.17 | 0.39 | 0.39 | 0.13 | 0.35 | 0.35 | 0.28 | 0.28 | 0.28 | 0.11 | 0.11 | 0.11 |
| Volume/Cap: | 0.88 | 0.12 | 0.12 | 0.12 | 0.88 | 0.88 | 0.88 | 0.75 | 0.75 | 0.88 | 0.88 | 0.88 |
| Delay/Veh: | 64.8 | 19.6 | 19.6 | 38.4 | 45.0 | 45.0 | 50.6 | 39.0 | 39.0 | 76.0 | 76.0 | 76.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 64.8 | 19.6 | 19.6 | 38.4 | 45.0 | 45.0 | 50.6 | 39.0 | 39.0 | 76.0 | 76.0 | 76.0 |
| LOS by Move: | E | B | B | D | D | D | D | D | D | E | E | E |
| HCM2k95thQ: | 21 | 4 | 4 | 2 | 31 | 31 | 26 | 19 | 19 | 16 | 16 | 16 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative A (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 1.032 |
| Loss Time (sec): | 8 (Y+R=4.0 sec) | Average Delay (sec/veh): | 75.5 |
| Optimal Cycle: | 180 | Level Of Service: | E |

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 508 | 555 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 550 | 592 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 550 | 592 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 265 | 75 | 3 | 30 | 68 | 550 | 592 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 550 | 592 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.99 | 0.99 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.96 | 0.04 | 1.00 | 0.11 | 0.89 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1816 | 73 | 1805 | 181 | 1466 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.04 | 0.04 | 0.02 | 0.38 | 0.38 | 0.33 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | **** | | | **** | | |
| Green/Cycle: | 0.14 | 0.36 | 0.36 | 0.15 | 0.36 | 0.36 | 0.32 | 0.32 | 0.32 | 0.10 | 0.10 | 0.10 |
| Volume/Cap: | 1.03 | 0.11 | 0.11 | 0.11 | 1.03 | 1.03 | 1.03 | 0.67 | 0.67 | 1.03 | 1.03 | 1.03 |
| Delay/Veh: | 107.7 | 21.4 | 21.4 | 37.4 | 77.2 | 77.2 | 80.3 | 32.7 | 32.7 | 121.2 | 121 | 121.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 107.7 | 21.4 | 21.4 | 37.4 | 77.2 | 77.2 | 80.3 | 32.7 | 32.7 | 121.2 | 121 | 121.2 |
| LOS by Move: | F | C | C | D | E | E | F | C | C | F | F | F |
| HCM2k95thQ: | 24 | 3 | 3 | 2 | 44 | 44 | 40 | 18 | 18 | 19 | 19 | 19 |

Note: Queue reported is the number of cars per lane.

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SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Buildout+ Project A Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 67 | 1.5 | 0.770 | 23.0 | LOS C | 192 | 0.93 | 1.19 | 18.4 |
| 16T | T | 218 | 1.8 | 0.768 | 15.9 | LOS B | 192 | 0.93 | 1.16 | 20.3 |
| 16R | R | 97 | 2.1 | 0.770 | 17.5 | LOS B | 192 | 0.93 | 1.17 | 19.5 |
| **Approach** | | **382** | **1.8** | **0.767** | **17.5** | **LOS B** | **192** | **0.93** | **1.16** | **19.7** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.500 | 25.1 | LOS C | 101 | 0.91 | 1.07 | 18.6 |
| 6T | T | 119 | 1.7 | 0.492 | 15.5 | LOS B | 101 | 0.91 | 1.02 | 20.5 |
| 6R | R | 72 | 1.4 | 0.493 | 16.8 | LOS B | 101 | 0.91 | 1.03 | 19.8 |
| **Approach** | | **195** | **2.1** | **0.493** | **16.2** | **LOS B** | **101** | **0.91** | **1.03** | **20.2** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 100 | 2.0 | 0.990 | 50.7 | LOS D | 554 | 1.00 | 1.84 | 12.3 |
| 14T | T | 427 | 2.1 | 0.993 | 41.9 | LOS D | 554 | 1.00 | 1.84 | 12.0 |
| 14R | R | 46 | 2.2 | 1.000 | 43.5 | LOS D | 554 | 1.00 | 1.84 | 11.7 |
| **Approach** | | **574** | **2.1** | **0.994** | **43.6** | **LOS D** | **554** | **1.00** | **1.84** | **12.0** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 192 | 2.1 | 0.268 | 11.0 | LOS B | 58 | 0.33 | 0.60 | 24.2 |
| 2T | T | 66 | 1.5 | 0.268 | 2.1 | LOS A | 58 | 0.33 | 0.23 | 29.4 |
| 2R | R | 114 | 1.8 | 0.268 | 2.1 | LOS A | 58 | 0.33 | 0.23 | 29.4 |
| **Approach** | | **371** | **1.9** | **0.268** | **6.7** | **LOS A** | **58** | **0.33** | **0.42** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 698 | 2.0 | 0.632 | 16.4 | LOS B | 184 | 0.76 | 0.92 | 22.2 |
| 18T | T | 404 | 2.0 | 0.632 | 6.2 | LOS A | 184 | 0.75 | 0.73 | 26.1 |
| 18R | R | 203 | 2.0 | 0.632 | 7.3 | LOS A | 184 | 0.75 | 0.75 | 25.5 |
| **Approach** | | **1305** | **2.0** | **0.632** | **11.8** | **LOS B** | **184** | **0.76** | **0.83** | **23.6** |
| **All Vehicles** | | **2827** | **2.0** | **1.000** | **18.7** | **LOS B** | **554** | **0.78** | **1.04** | **19.5** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Buildout+ Project A Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 66 | 1.5 | 0.776 | 25.4 | LOS C | 201 | 0.94 | 1.21 | 17.6 |
| 16T | T | 213 | 1.9 | 0.777 | 18.3 | LOS B | 201 | 0.94 | 1.19 | 19.1 |
| 16R | R | 82 | 2.4 | 0.774 | 19.9 | LOS B | 201 | 0.94 | 1.20 | 18.3 |
| **Approach** | | **360** | **1.9** | **0.776** | **19.9** | **LOS B** | **201** | **0.94** | **1.20** | **18.6** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.500 | 23.3 | LOS C | 94 | 0.89 | 1.05 | 19.2 |
| 6T | T | 119 | 1.7 | 0.478 | 13.8 | LOS B | 94 | 0.89 | 1.00 | 21.5 |
| 6R | R | 72 | 1.4 | 0.477 | 15.0 | LOS B | 94 | 0.89 | 1.01 | 20.8 |
| **Approach** | | **195** | **2.1** | **0.478** | **14.5** | **LOS B** | **94** | **0.89** | **1.00** | **21.1** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 103 | 1.9 | 1.073 | 68.8 | LOS E | 838 | 1.00 | 2.32 | 10.0 |
| 14T | T | 534 | 2.1 | 1.070 | 60.0 | LOS E | 838 | 1.00 | 2.32 | 9.3 |
| 14R | R | 45 | 2.2 | 1.071 | 61.6 | LOS E | 838 | 1.00 | 2.32 | 9.2 |
| **Approach** | | **682** | **2.1** | **1.070** | **61.5** | **LOS E** | **838** | **1.00** | **2.32** | **9.4** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 201 | 2.0 | 0.275 | 11.1 | LOS B | 60 | 0.32 | 0.60 | 24.1 |
| 2T | T | 67 | 1.5 | 0.275 | 2.1 | LOS A | 60 | 0.32 | 0.23 | 29.5 |
| 2R | R | 116 | 1.7 | 0.274 | 2.1 | LOS A | 60 | 0.32 | 0.23 | 29.5 |
| **Approach** | | **383** | **1.8** | **0.275** | **6.8** | **LOS A** | **60** | **0.32** | **0.42** | **26.1** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 568 | 1.9 | 0.611 | 16.4 | LOS B | 166 | 0.76 | 0.92 | 22.2 |
| 18T | T | 564 | 2.0 | 0.701 | 7.4 | LOS A | 238 | 0.81 | 0.86 | 25.7 |
| 18R | R | 203 | 2.0 | 0.702 | 8.5 | LOS A | 238 | 0.81 | 0.83 | 25.2 |
| **Approach** | | **1335** | **1.9** | **0.702** | **11.4** | **LOS B** | **238** | **0.79** | **0.88** | **23.8** |
| **All Vehicles** | | **2955** | **2.0** | **1.073** | **23.6** | **LOS C** | **838** | **0.80** | **1.20** | **17.5** |

Symbols which may appear in this table:

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.2 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.2 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.9 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.9 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.7 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.7 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.5 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.5 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 1.0 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 1.0 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.6 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.6 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.1 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.1 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.9 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.9 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.6 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.6 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.4 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.4 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 0.9 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 0.9 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.3 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.3 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 5.1 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 5.1 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.6 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.6 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.6 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.6 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.4 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.4 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 1.0 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 1.0 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 1.0 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 1.0 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.2 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.2 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.9 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.9 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.3 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.3 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.2 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.2 |

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA



Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 4.7 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 4.7 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.5 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.5 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.4 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.4 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 0.9 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 0.9 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 0.9 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 0.9 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.1 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.1 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.7 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.7 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.1 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.1 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.6 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.6 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.1 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.1 |

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.8 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.8 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 8.1 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 8.1 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.0 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.0 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.1 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.1 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 5.1 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 5.1 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.6 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.6 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.8 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.8 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.3 |





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.6 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.6 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 7.6 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 7.6 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.0 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.0 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.3 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.3 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.1 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.1 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.3 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.3 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 4.8 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 4.8 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.5 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.5 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.7 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.7 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.1 |

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.3 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.3 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.3 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.3 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.3 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.7 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.7 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 8.0 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 8.0 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 84.3 |





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.1 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.1 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.1 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.6 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.6 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.1 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.1 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.6 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.6 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 7.5 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 7.5 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.3 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.3 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 78.9 |

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt B

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 363.00 | 323.00 | 363 | 323 | 686 | 15.7 |
| | Zone 38 Subtotal | | | | | 363 | 323 | 686 | 15.7 |
| TOTAL | | | | | | 363 | 323 | 686 | 15.7 |





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt B

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 545.00 | 439.00 | 545 | 439 | 984 | 21.1 |
| | Zone 38 Subtotal | | | | | 545 | 439 | 984 | 21.1 |
| TOTAL | | | | | | 545 | 439 | 984 | 21.1 |

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.499
Loss Time (sec): 4 (Y+R=4.0 sec) | Average Delay (sec/veh): 13.4
Optimal Cycle: 22 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 47 | 317 | 71 | 34 | 212 | 15 | 16 | 35 | 69 | 109 | 36 | 38 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 52 | 349 | 78 | 37 | 233 | 17 | 18 | 39 | 76 | 120 | 40 | 42 |
| Added Vol: | 74 | 101 | 89 | 21 | 78 | 0 | 0 | 14 | 69 | 107 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 126 | 450 | 167 | 58 | 311 | 17 | 18 | 53 | 145 | 227 | 54 | 70 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 126 | 450 | 167 | 58 | 311 | 17 | 18 | 53 | 145 | 227 | 54 | 70 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 126 | 450 | 167 | 58 | 311 | 17 | 18 | 53 | 145 | 227 | 54 | 70 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 126 | 450 | 167 | 58 | 311 | 17 | 18 | 53 | 145 | 227 | 54 | 70 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.74 | 0.74 | 0.85 | 0.78 | 0.78 | 0.78 | 0.88 | 0.88 | 0.88 | 0.69 | 0.69 | 0.69 |
| Lanes: | 0.44 | 1.56 | 1.00 | 0.30 | 1.61 | 0.09 | 0.08 | 0.24 | 0.68 | 0.65 | 0.15 | 0.20 |
| Final Sat.: | 618 | 2212 | 1615 | 450 | 2398 | 127 | 137 | 407 | 1124 | 848 | 200 | 261 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.10 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.27 | 0.27 | 0.27 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 |
| Volume/Cap: | 0.50 | 0.50 | 0.25 | 0.32 | 0.32 | 0.32 | 0.24 | 0.24 | 0.24 | 0.50 | 0.50 | 0.50 |
| Delay/Veh: | 15.8 | 15.8 | 13.9 | 14.3 | 14.3 | 14.3 | 8.8 | 8.8 | 8.8 | 10.9 | 10.9 | 10.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 15.8 | 15.8 | 13.9 | 14.3 | 14.3 | 14.3 | 8.8 | 8.8 | 8.8 | 10.9 | 10.9 | 10.9 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.481
Loss Time (sec): 4 (Y+R=4.0 sec) | Average Delay (sec/veh): 13.2
Optimal Cycle: 21 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Added Vol: | 74 | 103 | 96 | 21 | 80 | 0 | 0 | 14 | 69 | 116 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 138 | 394 | 195 | 60 | 371 | 17 | 18 | 53 | 133 | 215 | 54 | 67 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 138 | 394 | 195 | 60 | 371 | 17 | 18 | 53 | 133 | 215 | 54 | 67 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 138 | 394 | 195 | 60 | 371 | 17 | 18 | 53 | 133 | 215 | 54 | 67 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 138 | 394 | 195 | 60 | 371 | 17 | 18 | 53 | 133 | 215 | 54 | 67 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.69 | 0.69 | 0.85 | 0.80 | 0.80 | 0.80 | 0.88 | 0.88 | 0.88 | 0.70 | 0.70 | 0.70 |
| Lanes: | 0.52 | 1.48 | 1.00 | 0.27 | 1.66 | 0.07 | 0.09 | 0.26 | 0.65 | 0.64 | 0.16 | 0.20 |
| Final Sat.: | 685 | 1954 | 1615 | 405 | 2505 | 115 | 148 | 434 | 1090 | 854 | 215 | 266 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.12 | 0.15 | 0.15 | 0.15 | 0.12 | 0.12 | 0.12 | 0.25 | 0.25 | 0.25 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 |
| Volume/Cap: | 0.48 | 0.48 | 0.29 | 0.35 | 0.35 | 0.35 | 0.23 | 0.23 | 0.23 | 0.48 | 0.48 | 0.48 |
| Delay/Veh: | 15.1 | 15.1 | 13.7 | 14.0 | 14.0 | 14.0 | 9.2 | 9.2 | 9.2 | 11.1 | 11.1 | 11.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 15.1 | 15.1 | 13.7 | 14.0 | 14.0 | 14.0 | 9.2 | 9.2 | 9.2 | 11.1 | 11.1 | 11.1 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 3 | 4 | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: E[ 48.2]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Added Vol: | 0 | 264 | 57 | 1 | 254 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 730 | 152 | 47 | 653 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 730 | 152 | 47 | 653 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 730 | 152 | 47 | 653 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 882 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1227 | xxxx | 441 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 775 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 174 | xxxx | 570 |
| Move Cap.: | xxxx | xxxx | xxxxx | 775 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 165 | xxxx | 570 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.65 | xxxx | 0.06 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 3.7 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 59.8 | xxxx | 11.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 48.2 | | |
| ApproachLOS: | * | | | * | | | * | | | E | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.2 Worst Case Level Of Service: F[ 52.7]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Added Vol: | 0 | 272 | 57 | 1 | 265 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 704 | 135 | 41 | 697 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 704 | 135 | 41 | 697 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 704 | 135 | 41 | 697 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 839 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1202 | xxxx | 420 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 804 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 180 | xxxx | 588 |
| Move Cap.: | xxxx | xxxx | xxxxx | 804 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 173 | xxxx | 588 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.72 | xxxx | 0.07 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 4.4 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 65.9 | xxxx | 11.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 52.7 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.607
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 18.0
Optimal Cycle: 32 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 7 | 382 | 52 | 97 | 370 | 2 | 1 | 12 | 15 | 104 | 21 | 178 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 8 | 420 | 57 | 107 | 407 | 2 | 1 | 13 | 17 | 114 | 23 | 196 |
| Added Vol: | 22 | 143 | 242 | 166 | 122 | 12 | 14 | 3 | 26 | 256 | 5 | 164 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 30 | 563 | 299 | 273 | 529 | 14 | 15 | 16 | 43 | 370 | 28 | 360 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 30 | 563 | 299 | 273 | 529 | 14 | 15 | 16 | 43 | 370 | 28 | 360 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 30 | 563 | 299 | 273 | 529 | 14 | 15 | 16 | 43 | 370 | 28 | 360 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 30 | 563 | 299 | 273 | 529 | 14 | 15 | 16 | 43 | 370 | 28 | 360 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.90 | 0.90 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.31 | 0.69 | 1.00 | 1.95 | 0.05 | 0.20 | 0.22 | 0.58 | 1.86 | 0.14 | 1.00 |
| Final Sat.: | 1805 | 2235 | 1187 | 1805 | 3502 | 94 | 355 | 381 | 999 | 3377 | 256 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.25 | 0.25 | 0.15 | 0.15 | 0.15 | 0.04 | 0.04 | 0.04 | 0.11 | 0.11 | 0.22 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.07 | 0.41 | 0.41 | 0.25 | 0.60 | 0.60 | 0.07 | 0.07 | 0.07 | 0.18 | 0.18 | 0.43 |
| Volume/Cap: | 0.25 | 0.61 | 0.61 | 0.61 | 0.25 | 0.25 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.52 |
| Delay/Veh: | 32.2 | 16.8 | 16.8 | 25.7 | 6.7 | 6.7 | 40.2 | 40.2 | 40.2 | 28.0 | 28.0 | 15.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 32.2 | 16.8 | 16.8 | 25.7 | 6.7 | 6.7 | 40.2 | 40.2 | 40.2 | 28.0 | 28.0 | 15.4 |
| LOS by Move: | C | B | B | C | A | A | D | D | D | C | C | B |
| HCM2kAvgQ: | 1 | 8 | 8 | 6 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 6 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.710
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 26.4
Optimal Cycle: 41 | Level Of Service: C

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Added Vol: | 22 | 143 | 243 | 177 | 122 | 12 | 14 | 3 | 26 | 257 | 5 | 173 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 90 | 149 | 331 | 177 | 130 | 21 | 19 | 258 | 76 | 337 | 235 | 173 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 90 | 149 | 331 | 177 | 130 | 21 | 19 | 258 | 76 | 337 | 235 | 173 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 90 | 149 | 331 | 177 | 130 | 21 | 19 | 258 | 76 | 337 | 235 | 173 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 90 | 149 | 331 | 177 | 130 | 21 | 19 | 258 | 76 | 337 | 235 | 173 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.85 | 0.85 | 0.95 | 0.93 | 0.93 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.72 | 0.28 | 0.05 | 0.73 | 0.22 | 1.18 | 0.82 | 1.00 |
| Final Sat.: | 1805 | 1619 | 1619 | 1805 | 3043 | 492 | 99 | 1344 | 396 | 2174 | 1516 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.05 | 0.09 | 0.20 | 0.10 | 0.04 | 0.04 | 0.19 | 0.19 | 0.19 | 0.16 | 0.16 | 0.11 |
| Crit Moves: | | | **** | **** | | | **** | | | **** | | |
| Green/Cycle: | 0.23 | 0.29 | 0.29 | 0.14 | 0.20 | 0.20 | 0.27 | 0.27 | 0.27 | 0.22 | 0.22 | 0.36 |
| Volume/Cap: | 0.22 | 0.32 | 0.71 | 0.71 | 0.22 | 0.22 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.30 |
| Delay/Veh: | 22.1 | 19.7 | 25.8 | 38.0 | 23.8 | 23.8 | 27.8 | 27.8 | 27.8 | 28.3 | 28.3 | 16.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 22.1 | 19.7 | 25.8 | 38.0 | 23.8 | 23.8 | 27.8 | 27.8 | 27.8 | 28.3 | 28.3 | 16.5 |
| LOS by Move: | C | B | C | D | C | C | C | C | C | C | C | B |
| HCM2kAvgQ: | 2 | 3 | 8 | 5 | 2 | 2 | 8 | 8 | 8 | 7 | 7 | 3 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.4 Worst Case Level Of Service: C[ 18.2]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | | 0 | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | | 0 | | | | | | |
| Added Vol: | 0 | 0 | 0 | 38 | 0 | 53 | 0 | 96 | 315 | | 137 | 372 | | 0 | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 42 | 0 | 77 | 0 | 139 | 412 | | 162 | 717 | | 0 | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 42 | 0 | 77 | 0 | 139 | 412 | | 162 | 717 | | 0 | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 42 | 0 | 77 | 0 | 139 | 412 | | 162 | 717 | | 0 | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1111 | 1592 | 359 | xxxx | xxxx | xxxxx | | 551 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 206 | 108 | 644 | xxxx | xxxx | xxxxx | | 1029 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 181 | 91 | 644 | xxxx | xxxx | xxxxx | | 1029 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.23 | 0.00 | 0.12 | xxxx | xxxx | xxxx | | 0.16 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.9 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.6 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 30.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 9.2 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | D | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 644 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.3 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 18.2 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | C | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.7 Worst Case Level Of Service: C[ 17.5]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | | 0 | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | | 0 | | | | | | |
| Added Vol: | 0 | 0 | 0 | 50 | 0 | 53 | 0 | 101 | 321 | | 162 | 382 | | 0 | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 53 | 0 | 76 | 0 | 143 | 438 | | 181 | 558 | | 0 | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 53 | 0 | 76 | 0 | 143 | 438 | | 181 | 558 | | 0 | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 53 | 0 | 76 | 0 | 143 | 438 | | 181 | 558 | | 0 | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 992 | 1501 | 279 | xxxx | xxxx | xxxxx | | 581 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 246 | 123 | 724 | xxxx | xxxx | xxxxx | | 1003 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 212 | 101 | 724 | xxxx | xxxx | xxxxx | | 1003 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.25 | 0.00 | 0.10 | xxxx | xxxx | xxxx | | 0.18 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.7 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 27.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 9.4 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | D | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 724 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.6 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 17.5 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | C | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 26.5 Worst Case Level Of Service: E[ 43.3]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 272 | | 0 | 55 | | 0 | 0 | | 0 | 23 | 15 | | 0 | 0 | | 57 | 6 | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | | 0 | 55 | | 0 | 0 | | 0 | 23 | 15 | | 0 | 0 | | 57 | 6 | | | |
| Added Vol: | 280 | | 0 | 172 | | 0 | 0 | | 0 | 47 | 87 | | 0 | 0 | | 229 | 55 | | | |
| PasserByVol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | | | |
| Initial Fut: | 552 | | 0 | 227 | | 0 | 0 | | 0 | 70 | 102 | | 0 | 0 | | 286 | 61 | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 552 | | 0 | 227 | | 0 | 0 | | 0 | 70 | 102 | | 0 | 0 | | 286 | 61 | | | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | | | |
| FinalVolume: | 552 | | 0 | 227 | | 0 | 0 | | 0 | 70 | 102 | | 0 | 0 | | 286 | 61 | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 385 | 589 | | 51 | xxxx | xxxx | xxxxx | | 347 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 596 | 423 | | 1013 | xxxx | xxxx | xxxxx | | 1223 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 570 | 399 | | 1013 | xxxx | xxxx | xxxxx | | 1223 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.97 | 0.00 | | 0.22 | xxxx | xxxx | xxxx | | 0.06 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.9 | xxxx | xxxx | xxxxx | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 9.6 | xxxxx | xxxx | xxxxx | | 8.1 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 570 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | 13.3 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shrd ConDel: | 57.2 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shared LOS: | F | * | | * | | * | * | | * | * | * | | * | * | * | | | | | |
| ApproachDel: | 43.3 | | | | xxxxxx | | | | xxxxxx | | | | xxxxxx | | | | | | | |
| ApproachLOS: | E | | | | * | | | | * | | | | * | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 13.7 Worst Case Level Of Service: C[ 24.8]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 144 | | 0 | 27 | | 0 | 0 | | 0 | 26 | 20 | | 0 | 0 | | 58 | 8 | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | | 0 | 27 | | 0 | 0 | | 0 | 26 | 20 | | 0 | 0 | | 58 | 8 | | | |
| Added Vol: | 280 | | 0 | 221 | | 0 | 0 | | 0 | 47 | 105 | | 0 | 0 | | 264 | 63 | | | |
| PasserByVol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | | | |
| Initial Fut: | 424 | | 0 | 248 | | 0 | 0 | | 0 | 73 | 125 | | 0 | 0 | | 322 | 71 | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 424 | | 0 | 248 | | 0 | 0 | | 0 | 73 | 125 | | 0 | 0 | | 322 | 71 | | | |
| Reduct Vol: | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | | | |
| FinalVolume: | 424 | | 0 | 248 | | 0 | 0 | | 0 | 73 | 125 | | 0 | 0 | | 322 | 71 | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 432 | 664 | | 63 | xxxx | xxxx | xxxxx | | 393 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 557 | 384 | | 996 | xxxx | xxxx | xxxxx | | 1177 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 531 | 360 | | 996 | xxxx | xxxx | xxxxx | | 1177 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.80 | 0.00 | | 0.25 | xxxx | xxxx | xxxx | | 0.06 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 1.0 | xxxx | xxxx | xxxxx | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 9.8 | xxxxx | xxxx | xxxxx | | 8.3 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 531 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| SharedQueue: | 7.6 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shrd ConDel: | 33.5 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| Shared LOS: | D | * | | * | | * | * | | * | * | * | | * | * | * | | | | | |
| ApproachDel: | 24.8 | | | | xxxxxx | | | | xxxxxx | | | | xxxxxx | | | | | | | |
| ApproachLOS: | C | | | | * | | | | * | | | | * | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.579
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 21.0
Optimal Cycle: 32 | Level Of Service: C

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Protected | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | |
| Base Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Added Vol: | 280 | 0 | 172 | 0 | 0 | 0 | 47 | 87 | 0 | 0 | 229 | 55 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 552 | 0 | 227 | 0 | 0 | 0 | 70 | 102 | 0 | 0 | 286 | 61 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 552 | 0 | 227 | 0 | 0 | 0 | 70 | 102 | 0 | 0 | 286 | 61 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 552 | 0 | 227 | 0 | 0 | 0 | 70 | 102 | 0 | 0 | 286 | 61 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 552 | 0 | 227 | 0 | 0 | 0 | 70 | 102 | 0 | 0 | 286 | 61 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 0.93 | 0.93 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 1.65 | 0.35 |
| Final Sat.: | 1357 | 0 | 1615 | 0 | 0 | 0 | 1805 | 3610 | 0 | 0 | 2898 | 618 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.41 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.04 | 0.03 | 0.00 | 0.00 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.70 | 0.00 | 1.41 | 0.00 | 0.00 | 0.00 | 0.07 | 0.24 | 0.00 | 0.00 | 0.17 | 0.17 |
| Volume/Cap: | 0.58 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.58 | 0.12 | 0.00 | 0.00 | 0.58 | 0.58 |
| Delay/Veh: | 8.4 | 0.0 | 9.6 | 0.0 | 0.0 | 0.0 | 52.1 | 30.0 | 0.0 | 0.0 | 39.6 | 39.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 8.4 | 0.0 | 9.6 | 0.0 | 0.0 | 0.0 | 52.1 | 30.0 | 0.0 | 0.0 | 39.6 | 39.6 |
| LOS by Move: | A | A | A | A | A | A | D | C | A | A | D | D |
| HCM2k95thQ: | 17 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 11 | 11 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.495
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 20.1
Optimal Cycle: 27 | Level Of Service: C

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Protected | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Added Vol: | 280 | 0 | 221 | 0 | 0 | 0 | 47 | 105 | 0 | 0 | 264 | 63 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 424 | 0 | 248 | 0 | 0 | 0 | 73 | 125 | 0 | 0 | 322 | 71 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 424 | 0 | 248 | 0 | 0 | 0 | 73 | 125 | 0 | 0 | 322 | 71 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 424 | 0 | 248 | 0 | 0 | 0 | 73 | 125 | 0 | 0 | 322 | 71 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 424 | 0 | 248 | 0 | 0 | 0 | 73 | 125 | 0 | 0 | 322 | 71 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 0.92 | 0.92 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 1.64 | 0.36 |
| Final Sat.: | 1357 | 0 | 1615 | 0 | 0 | 0 | 1805 | 3610 | 0 | 0 | 2878 | 635 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.31 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.04 | 0.03 | 0.00 | 0.00 | 0.11 | 0.11 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.63 | 0.00 | 1.26 | 0.00 | 0.00 | 0.00 | 0.08 | 0.31 | 0.00 | 0.00 | 0.23 | 0.23 |
| Volume/Cap: | 0.49 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.49 | 0.11 | 0.00 | 0.00 | 0.49 | 0.49 |
| Delay/Veh: | 10.3 | 0.0 | 4.1 | 0.0 | 0.0 | 0.0 | 46.5 | 24.8 | 0.0 | 0.0 | 34.2 | 34.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 10.3 | 0.0 | 4.1 | 0.0 | 0.0 | 0.0 | 46.5 | 24.8 | 0.0 | 0.0 | 34.2 | 34.2 |
| LOS by Move: | B | A | A | A | A | A | D | C | A | A | C | C |
| HCM2k95thQ: | 14 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 11 | 11 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: C[ 15.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Added Vol: | 237 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 199 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 269 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 205 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 269 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 205 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 269 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 205 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 180 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 786 | xxxx | 107 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 364 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 310 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.42 | xxxx | 0.22 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 2.0 | xxxx | 0.8 | xxxx | xxxx | xxxxx |
| Control Del: | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 24.6 | xxxx | 9.8 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 15.5 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.6 Worst Case Level Of Service: B[ 13.4]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Added Vol: | 280 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 266 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 291 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 276 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 291 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 276 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 291 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 276 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 181 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 812 | xxxx | 106 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 351 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 295 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.21 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.31 | xxxx | 0.29 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.3 | xxxx | 1.2 | xxxx | xxxx | xxxxx |
| Control Del: | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 22.6 | xxxx | 10.3 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 13.4 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 12.1 Worst Case Level Of Service: E[ 36.2]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 229 | 134 | 110 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 229 | 134 | 147 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 229 | 134 | 147 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 225 | 229 | 134 | 147 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp:xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | |
| FollowUpTim:xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 454 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 755 | 755 | 340 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1117 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 380 | 340 | 707 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1117 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 342 | 296 | 707 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.12 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.59 | 0.00 | 0.17 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del:xxxxx | xxxx | xxxxx | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 423 | xxxxx |
| SharedQueue:xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 6.4 | xxxxx | |
| Shrd ConDel:xxxxx | xxxx | xxxxx | 8.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 36.2 | xxxxx | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | E | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 36.2 | | |
| ApproachLOS: | * | | | * | | | * | | | E | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 68.1 Worst Case Level Of Service: F[201.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 343 | 202 | 110 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 343 | 202 | 147 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 343 | 202 | 147 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 196 | 343 | 202 | 147 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp:xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | |
| FollowUpTim:xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 539 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 919 | 919 | 368 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1040 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 304 | 273 | 682 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1040 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 253 | 214 | 682 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.10 | 0.00 | 0.24 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del:xxxxx | xxxx | xxxxx | 9.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 329 | xxxxx |
| SharedQueue:xxxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 21.4 | xxxxx | |
| Shrd ConDel:xxxxx | xxxx | xxxxx | 9.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 202 | xxxxx | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 201.6 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.378 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 19.4 |
| Optimal Cycle: | 22 | Level Of Service: | B |

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1 | 0 1 | 1 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 229 | 134 | 110 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 229 | 134 | 147 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 229 | 134 | 147 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 225 | 229 | 134 | 147 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 225 | 229 | 134 | 147 | 0 | 0 | 0 | 0 | 203 | 0 | 120 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.12 | 0.14 | 0.07 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.07 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.38 | 0.38 | 0.59 | 0.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.37 | 0.00 | 0.37 |
| Volume/Cap: | 0.00 | 0.32 | 0.38 | 0.19 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.38 | 0.00 | 0.20 |
| Delay/Veh: | 0.0 | 22.4 | 23.1 | 9.6 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 23.6 | 0.0 | 21.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 22.4 | 23.1 | 9.6 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 23.6 | 0.0 | 21.7 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 10 | 10 | 4 | 4 | 0 | 0 | 0 | 0 | 9 | 0 | 5 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.547 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 20.6 |
| Optimal Cycle: | 30 | Level Of Service: | C |

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1 | 0 1 | 1 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 343 | 202 | 110 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 343 | 202 | 147 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 343 | 202 | 147 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 196 | 343 | 202 | 147 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 196 | 343 | 202 | 147 | 0 | 0 | 0 | 0 | 277 | 0 | 162 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.10 | 0.21 | 0.11 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.10 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.39 | 0.39 | 0.61 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.35 | 0.00 | 0.35 |
| Volume/Cap: | 0.00 | 0.27 | 0.55 | 0.26 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.55 | 0.00 | 0.29 |
| Delay/Veh: | 0.0 | 21.0 | 24.8 | 8.9 | 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 27.6 | 0.0 | 24.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 21.0 | 24.8 | 8.9 | 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 27.6 | 0.0 | 24.0 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 8 | 16 | 6 | 4 | 0 | 0 | 0 | 0 | 14 | 0 | 7 |

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[ 16.1]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 | 1 | 0 0 0 | 0 | 0 0 0 | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 359 | 0 | 0 | 369 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 425 | 16 | 2 | 404 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 425 | 16 | 2 | 404 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 425 | 16 | 2 | 404 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 441 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 841 | 841 | 433 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1130 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 338 | 303 | 627 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1130 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 337 | 303 | 627 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.08 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 354 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 16.1 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 16.1 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[ 11.4]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 | 1 | 0 0 0 | 0 | 0 0 0 | 0 0 | 0 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Added Vol: | 0 | 473 | 0 | 0 | 442 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 510 | 2 | 1 | 478 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 510 | 2 | 1 | 478 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 510 | 2 | 1 | 478 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 512 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 511 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1064 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 567 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1064 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 567 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.4 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.4 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[ 18.6]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 |
| Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm | | | | | | | | | | | | |
| Base Vol: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 |
| Added Vol: | 79 | 322 | 0 | 0 | 252 | 9 | 10 | 0 | 72 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 256 | 665 | 0 | 0 | 387 | 56 | 43 | 0 | 143 | 0 | 0 | 0 |
| User Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 282 | 732 | 0 | 0 | 426 | 62 | 47 | 0 | 157 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 282 | 732 | 0 | 0 | 426 | 62 | 47 | 0 | 157 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 487 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1737 | 1737 | 426 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1086 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 90 | 82 | 633 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1086 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 72 | 61 | 633 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 153 | 137 | xxxxx | 74 | 118 | xxxxx |
| Volume/Cap: | 0.26 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.31 | 0.00 | 0.25 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx |
| Control Del: | 9.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 12.6 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 153 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 38.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | E | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 18.6 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: C[ 16.6]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 |
| Added Vol: | 82 | 323 | 0 | 0 | 253 | 9 | 10 | 0 | 76 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 206 | 562 | 0 | 0 | 492 | 49 | 50 | 0 | 200 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 206 | 562 | 0 | 0 | 492 | 49 | 50 | 0 | 200 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 206 | 562 | 0 | 0 | 492 | 49 | 50 | 0 | 200 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 541 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1466 | 1466 | 492 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1038 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 142 | 129 | 581 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1038 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 121 | 104 | 581 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 228 | 204 | xxxxx | 87 | 176 | xxxxx |
| Volume/Cap: | 0.20 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.22 | 0.00 | 0.34 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.5 | xxxx | xxxx | xxxxx |
| Control Del: | 9.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 14.4 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 228 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 25.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | D | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 16.6 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 35.9 Worst Case Level Of Service: F[ 67.1]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 261 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 315 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 455 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 767 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 455 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 767 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 159 | 187 | 455 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 767 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 293 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1267 | xxxx | 195 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 180 | xxxx | 814 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 128 | xxxx | 814 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.37 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.17 | xxxx | 0.94 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.9 | xxxx | 14.3 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 197.8 | xxxx | 41.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | E |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 67.1 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 29.7 Worst Case Level Of Service: F[ 59.3]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 265 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 319 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 545 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 664 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 545 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 664 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 122 | 175 | 545 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 664 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 297 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1427 | xxxx | 210 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 151 | xxxx | 836 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 100 | xxxx | 836 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.43 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.25 | xxxx | 0.79 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.6 | xxxx | 8.3 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 248.6 | xxxx | 23.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | C |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 59.3 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.982
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 58.5
Optimal Cycle: 180 Level Of Service: E

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 1 | 0 | 0 | 0 0 | 1 | 0 | 0 1 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 261 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 315 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 455 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 767 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 455 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 767 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 159 | 187 | 455 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 767 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 159 | 187 | 455 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 767 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.93 | 0.93 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.46 | 0.54 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 809 | 952 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1480 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.20 | 0.20 | 0.25 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.47 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.20 | 0.20 | 0.26 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.48 | 0.00 | 0.48 |
| Volume/Cap: | 0.00 | 0.98 | 0.98 | 0.98 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.98 |
| Delay/Veh: | 0.0 | 82.9 | 82.9 | 74.0 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 53.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 82.9 | 82.9 | 74.0 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 53.2 |
| LOS by Move: | A | F | F | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 28 | 28 | 33 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 48 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.939
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 50.2
Optimal Cycle: 123 Level Of Service: D

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 1 | 0 | 0 | 0 0 | 1 | 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 265 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 319 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 545 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 664 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 545 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 664 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 122 | 175 | 545 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 664 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 122 | 175 | 545 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 664 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.92 | 0.92 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.41 | 0.59 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 718 | 1030 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1490 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.17 | 0.17 | 0.30 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.41 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.18 | 0.18 | 0.32 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.44 | 0.00 | 0.44 |
| Volume/Cap: | 0.00 | 0.94 | 0.94 | 0.94 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.94 |
| Delay/Veh: | 0.0 | 75.3 | 75.3 | 56.4 | 13.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 47.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 75.3 | 75.3 | 56.4 | 13.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 47.2 |
| LOS by Move: | A | E | E | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 24 | 24 | 36 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 40 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 121.5 Worst Case Level Of Service: F[1175.3]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 310 | 494 | 391 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 416 | 510 | 820 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 416 | 510 | 820 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 416 | 510 | 820 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2274 | 2482 | 820 | xxxx | xxxx | xxxxx | 642 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 45 | 30 | 378 | xxxx | xxxx | xxxxx | 952 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 26 | 14 | 378 | xxxx | xxxx | xxxxx | 952 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 4.87 | 0.00 | 0.25 | xxxx | xxxx | xxxx | 0.54 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx | 3.3 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 17.7 | xxxxx | xxxx | xxxxx | 13.1 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | B | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 26 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 15.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 2048 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 1175.3 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 152.3 Worst Case Level Of Service: F[1468.0]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 314 | 563 | 395 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 515 | 564 | 694 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 515 | 564 | 694 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 515 | 564 | 694 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2330 | 2587 | 694 | xxxx | xxxx | xxxxx | 765 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 41 | 26 | 446 | xxxx | xxxx | xxxxx | 857 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 19 | 9 | 446 | xxxx | xxxx | xxxxx | 857 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 6.22 | 0.00 | 0.24 | xxxx | xxxx | xxxx | 0.66 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.9 | xxxx | xxxx | xxxxx | 5.1 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 15.6 | xxxxx | xxxx | xxxxx | 16.9 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | C | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | 19 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 15.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 2740 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 1468.0 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.794 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 23.4 |
| Optimal Cycle: | 57 | Level Of Service: | C |

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 310 | 494 | 391 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 416 | 510 | 820 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 416 | 510 | 820 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 416 | 510 | 820 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 416 | 510 | 820 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.35 | 0.65 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 611 | 1124 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.06 | 0.00 | 0.37 | 0.37 | 0.28 | 0.43 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.12 | 0.00 | 0.47 | 0.47 | 0.36 | 0.82 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.79 | 0.00 | 0.50 | 0.00 | 0.79 | 0.79 | 0.79 | 0.53 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 66.4 | 0.0 | 43.5 | 0.0 | 28.1 | 28.1 | 35.7 | 3.1 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 66.4 | 0.0 | 43.5 | 0.0 | 28.1 | 28.1 | 35.7 | 3.1 | 0.0 |
| LOS by Move: | A | A | A | E | A | D | A | C | C | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 11 | 0 | 7 | 0 | 32 | 32 | 23 | 14 | 0 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.899 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 32.0 |
| Optimal Cycle: | 93 | Level Of Service: | C |

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 314 | 563 | 395 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 515 | 564 | 694 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 515 | 564 | 694 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 515 | 564 | 694 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 515 | 564 | 694 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.33 | 0.67 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 564 | 1163 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.07 | 0.00 | 0.44 | 0.44 | 0.31 | 0.37 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.10 | 0.00 | 0.49 | 0.49 | 0.35 | 0.84 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.90 | 0.00 | 0.66 | 0.00 | 0.90 | 0.90 | 0.90 | 0.43 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 93.0 | 0.0 | 53.3 | 0.0 | 35.6 | 35.6 | 46.9 | 2.2 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 93.0 | 0.0 | 53.3 | 0.0 | 35.6 | 35.6 | 46.9 | 2.2 | 0.0 |
| LOS by Move: | A | A | A | F | A | D | A | D | D | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 12 | 0 | 9 | 0 | 41 | 41 | 27 | 10 | 0 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### PM Buildout + Project B Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 677 | 2.1 | 0.521 | 12.0 | LOS B | 147 | 0.55 | 0.64 | 23.3 |
| 6T | T | 726 | 2.1 | 0.469 | 2.5 | LOS A | 131 | 0.50 | 0.27 | 28.1 |
| **Approach** | | **1404** | **2.1** | **0.521** | **7.1** | **LOS A** | **147** | **0.52** | **0.45** | **25.3** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 134 | 2.2 | 0.436 | 18.2 | LOS B | 75 | 0.80 | 0.99 | 21.4 |
| 14T | T | 17 | 5.6 | 0.439 | 8.4 | LOS A | 75 | 0.80 | 0.89 | 25.3 |
| 14R | R | 83 | 2.4 | 0.437 | 10.1 | LOS B | 75 | 0.80 | 0.92 | 23.9 |
| **Approach** | | **235** | **2.6** | **0.437** | **14.6** | **LOS B** | **75** | **0.80** | **0.96** | **22.3** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 167 | 1.8 | 0.313 | 14.8 | LOS B | 55 | 0.84 | 0.86 | 22.2 |
| 12T | T | 315 | 1.9 | 0.471 | 7.3 | LOS A | 135 | 0.93 | 0.82 | 25.1 |
| 12R | R | 121 | 1.7 | 0.471 | 9.2 | LOS A | 135 | 0.93 | 0.88 | 24.3 |
| **Approach** | | **602** | **1.8** | **0.471** | **9.8** | **LOS A** | **135** | **0.90** | **0.84** | **24.0** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 167 | 1.8 | 0.650 | 23.2 | LOS C | 171 | 0.91 | 1.15 | 18.9 |
| 18T | T | 71 | 1.4 | 0.648 | 14.8 | LOS B | 171 | 0.91 | 1.11 | 20.9 |
| 18R | R | 126 | 2.4 | 0.651 | 16.4 | LOS B | 171 | 0.91 | 1.10 | 20.0 |
| **Approach** | | **364** | **1.9** | **0.650** | **19.2** | **LOS B** | **171** | **0.91** | **1.12** | **19.5** |
| **All Vehicles** | | **2605** | **2.0** | **0.651** | **10.1** | **LOS B** | **171** | **0.69** | **0.68** | **23.7** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### WKD Buildout+Project B Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 709 | 2.0 | 0.441 | 11.6 | LOS B | 122 | 0.43 | 0.60 | 23.7 |
| 6T | T | 615 | 2.0 | 0.456 | 2.5 | LOS A | 124 | 0.46 | 0.27 | 28.3 |
| **Approach** | | **1323** | **2.0** | **0.456** | **7.4** | **LOS A** | **124** | **0.44** | **0.45** | **25.4** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 128 | 2.3 | 0.410 | 17.3 | LOS B | 67 | 0.77 | 0.97 | 21.8 |
| 14T | T | 18 | 5.3 | 0.413 | 7.5 | LOS A | 67 | 0.77 | 0.85 | 26.1 |
| 14R | R | 94 | 2.1 | 0.410 | 9.2 | LOS A | 67 | 0.77 | 0.89 | 24.6 |
| **Approach** | | **242** | **2.5** | **0.410** | **13.4** | **LOS B** | **67** | **0.77** | **0.93** | **22.9** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 186 | 2.1 | 0.347 | 15.3 | LOS B | 62 | 0.84 | 0.87 | 21.9 |
| 12T | T | 387 | 2.1 | 0.562 | 9.7 | LOS A | 189 | 0.96 | 0.98 | 24.2 |
| 12R | R | 134 | 2.2 | 0.563 | 11.6 | LOS B | 189 | 0.96 | 0.99 | 22.9 |
| **Approach** | | **709** | **2.1** | **0.563** | **11.5** | **LOS B** | **189** | **0.93** | **0.96** | **23.3** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 128 | 2.3 | 0.648 | 26.7 | LOS C | 173 | 0.94 | 1.18 | 17.6 |
| 18T | T | 61 | 1.6 | 0.649 | 18.4 | LOS B | 173 | 0.94 | 1.15 | 19.0 |
| 18R | R | 123 | 1.6 | 0.651 | 19.9 | LOS B | 173 | 0.94 | 1.14 | 18.3 |
| **Approach** | | **313** | **1.9** | **0.650** | **22.4** | **LOS C** | **173** | **0.94** | **1.16** | **18.1** |
| **All Vehicles** | | **2587** | **2.0** | **0.651** | **10.9** | **LOS B** | **189** | **0.67** | **0.72** | **23.5** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 355.5 Worst Case Level Of Service: F[709.9]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 480 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 593 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 498 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 667 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 498 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 667 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 663 | 0 | 498 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 667 | 142 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1205 | 1276 | 237 | xxxx | xxxx | xxxxx | 809 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 205 | 168 | 807 | xxxx | xxxx | xxxxx | 825 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 183 | 145 | 807 | xxxx | xxxx | xxxxx | 825 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.62 | 0.00 | 0.62 | xxxx | xxxx | xxxx | 0.14 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 4.3 | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 16.4 | xxxxx | xxxx | xxxxx | 10.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | C | * | * | * | B | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | 183 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 63.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1231 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 709.9 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 269.3 Worst Case Level Of Service: F[554.8]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 595 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 666 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 606 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 723 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 606 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 723 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 540 | 6 | 606 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 723 | 138 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1286 | 1355 | 236 | xxxx | xxxx | xxxxx | 861 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 183 | 151 | 808 | xxxx | xxxx | xxxxx | 789 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 160 | 126 | 808 | xxxx | xxxx | xxxxx | 789 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.37 | 0.05 | 0.75 | xxxx | xxxx | xxxx | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 7.0 | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 21.5 | xxxxx | xxxx | xxxxx | 10.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | C | * | * | * | B | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | 160 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 52.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1147 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 554.8 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 1.057 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 63.6 |
| Optimal Cycle: | 180 | Level Of Service: | E |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 480 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 593 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 498 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 667 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 498 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 667 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 663 | 0 | 498 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 667 | 142 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 663 | 0 | 498 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 667 | 142 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.82 | 0.18 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1529 | 325 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.49 | 0.00 | 0.31 | 0.00 | 0.00 | 0.00 | 0.06 | 0.12 | 0.00 | 0.00 | 0.44 | 0.44 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.47 | 0.00 | 0.47 | 0.00 | 0.00 | 0.00 | 0.06 | 0.47 | 0.00 | 0.00 | 0.41 | 0.41 |
| Volume/Cap: | 1.06 | 0.00 | 0.67 | 0.00 | 0.00 | 0.00 | 1.06 | 0.26 | 0.00 | 0.00 | 1.06 | 1.06 |
| Delay/Veh: | 78.6 | 0.0 | 22.9 | 0.0 | 0.0 | 0.0 | 149.5 | 16.0 | 0.0 | 0.0 | 78.0 | 78.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 78.6 | 0.0 | 22.9 | 0.0 | 0.0 | 0.0 | 149.5 | 16.0 | 0.0 | 0.0 | 78.0 | 78.0 |
| LOS by Move: | E | A | C | A | A | A | F | B | A | A | E | E |
| HCM2k95thQ: | 48 | 0 | 23 | 0 | 0 | 0 | 9 | 8 | 0 | 0 | 50 | 50 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.972 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 48.0 |
| Optimal Cycle: | 167 | Level Of Service: | D |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 595 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 666 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 606 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 723 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 606 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 723 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 540 | 6 | 606 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 723 | 138 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 540 | 6 | 606 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 723 | 138 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.92 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 0.99 | 0.01 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.84 | 0.16 |
| Final Sat.: | 1730 | 19 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1560 | 298 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.31 | 0.31 | 0.38 | 0.00 | 0.00 | 0.00 | 0.07 | 0.12 | 0.00 | 0.00 | 0.46 | 0.46 |
| Crit Moves: | | | **** | | | | **** | | | | **** | |
| Green/Cycle: | 0.39 | 0.39 | 0.39 | 0.00 | 0.00 | 0.00 | 0.07 | 0.55 | 0.00 | 0.00 | 0.48 | 0.48 |
| Volume/Cap: | 0.80 | 0.80 | 0.97 | 0.00 | 0.00 | 0.00 | 0.97 | 0.23 | 0.00 | 0.00 | 0.97 | 0.97 |
| Delay/Veh: | 33.8 | 33.8 | 59.0 | 0.0 | 0.0 | 0.0 | 115.5 | 11.7 | 0.0 | 0.0 | 49.1 | 49.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.8 | 33.8 | 59.0 | 0.0 | 0.0 | 0.0 | 115.5 | 11.7 | 0.0 | 0.0 | 49.1 | 49.1 |
| LOS by Move: | C | C | E | A | A | A | F | B | A | A | D | D |
| HCM2k95thQ: | 29 | 29 | 40 | 0 | 0 | 0 | 9 | 7 | 0 | 0 | 44 | 44 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 343 | 322 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 390 | 371 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 390 | 371 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 390 | 371 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 455 | xxxx | xxxxx | 92 | xxxx | xxxxx | 1043 | 954 | 260 | 1135 | 1148 | 91 |
| Potent Cap.: | 1116 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 209 | 261 | 784 | 181 | 201 | 973 |
| Move Cap.: | 1116 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 0 | 182 | 784 | 41 | 140 | 973 |
| Volume/Cap: | 0.24 | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | 0.73 | 0.29 | 0.10 | 1.05 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.3 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx | xxxx | 156 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 188 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 188.4 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 416 | 437 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 458 | 474 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 458 | 474 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 458 | 474 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 526 | xxxx | xxxxx | 78 | xxxx | xxxxx | 1054 | 965 | 297 | 1146 | 1193 | 77 |
| Potent Cap.: | 1051 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 206 | 257 | 747 | 178 | 189 | 990 |
| Move Cap.: | 1051 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 0 | 177 | 747 | 37 | 130 | 990 |
| Volume/Cap: | 0.25 | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | 0.76 | 0.31 | 0.11 | 1.14 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.6 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx | xxxx | 145 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 11.2 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 227 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 227.0 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour- Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.801
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 43.5
Optimal Cycle: 65 Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 | 0 | 1 | 0 0 1 | 0 | 0 | 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 343 | 322 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 390 | 371 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 390 | 371 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 271 | 89 | 3 | 30 | 65 | 390 | 371 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 390 | 371 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 1.00 | 1.00 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.97 | 0.03 | 1.00 | 0.14 | 0.86 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1829 | 62 | 1805 | 236 | 1418 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.05 | 0.05 | 0.02 | 0.27 | 0.27 | 0.21 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.19 | 0.40 | 0.40 | 0.14 | 0.34 | 0.34 | 0.26 | 0.26 | 0.26 | 0.12 | 0.12 | 0.12 |
| Volume/Cap: | 0.80 | 0.12 | 0.12 | 0.12 | 0.80 | 0.80 | 0.78 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Delay/Veh: | 51.6 | 19.3 | 19.3 | 38.3 | 37.7 | 37.7 | 42.0 | 44.1 | 44.1 | 60.3 | 60.3 | 60.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 51.6 | 19.3 | 19.3 | 38.3 | 37.7 | 37.7 | 42.0 | 44.1 | 44.1 | 60.3 | 60.3 | 60.3 |
| LOS by Move: | D | B | B | D | D | D | D | D | D | E | E | E |
| HCM2k95thQ: | 19 | 4 | 4 | 2 | 26 | 26 | 20 | 20 | 20 | 15 | 15 | 15 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative B (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.900
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 51.7
Optimal Cycle: 100 Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 | 0 | 1 | 0 0 1 | 0 | 0 | 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 416 | 437 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 458 | 474 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 458 | 474 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 265 | 75 | 3 | 30 | 68 | 458 | 474 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 458 | 474 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.99 | 0.99 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.96 | 0.04 | 1.00 | 0.13 | 0.87 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1816 | 73 | 1805 | 213 | 1438 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.04 | 0.04 | 0.02 | 0.32 | 0.32 | 0.26 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | **** | | | **** | | |
| Green/Cycle: | 0.16 | 0.37 | 0.37 | 0.15 | 0.35 | 0.35 | 0.29 | 0.29 | 0.29 | 0.11 | 0.11 | 0.11 |
| Volume/Cap: | 0.90 | 0.11 | 0.11 | 0.11 | 0.90 | 0.90 | 0.90 | 0.73 | 0.73 | 0.90 | 0.90 | 0.90 |
| Delay/Veh: | 69.4 | 20.9 | 20.9 | 37.1 | 47.5 | 47.5 | 52.3 | 37.0 | 37.0 | 80.4 | 80.4 | 80.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 69.4 | 20.9 | 20.9 | 37.1 | 47.5 | 47.5 | 52.3 | 37.0 | 37.0 | 80.4 | 80.4 | 80.4 |
| LOS by Move: | E | C | C | D | D | D | D | D | D | F | F | F |
| HCM2k95thQ: | 21 | 3 | 3 | 2 | 33 | 33 | 27 | 19 | 19 | 16 | 16 | 16 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Buildout+ Project B Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 67 | 1.5 | 0.720 | 20.3 | LOS C | 170 | 0.90 | 1.14 | 19.5 |
| 16T | T | 218 | 1.8 | 0.719 | 13.2 | LOS B | 170 | 0.90 | 1.09 | 21.8 |
| 16R | R | 97 | 2.1 | 0.719 | 14.8 | LOS B | 170 | 0.90 | 1.11 | 20.9 |
| **Approach** | | **382** | **1.8** | **0.718** | **14.9** | **LOS B** | **170** | **0.90** | **1.10** | **21.1** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.455 | 23.2 | LOS C | 91 | 0.89 | 1.04 | 19.3 |
| 6T | T | 119 | 1.7 | 0.458 | 13.6 | LOS B | 91 | 0.89 | 0.99 | 21.6 |
| 6R | R | 72 | 1.4 | 0.458 | 14.9 | LOS B | 91 | 0.89 | 0.99 | 20.8 |
| **Approach** | | **195** | **2.1** | **0.457** | **14.3** | **LOS B** | **91** | **0.89** | **0.99** | **21.2** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 100 | 2.0 | 0.926 | 40.5 | LOS D | 402 | 1.00 | 1.58 | 14.1 |
| 14T | T | 363 | 1.9 | 0.924 | 31.7 | LOS C | 402 | 1.00 | 1.58 | 14.3 |
| 14R | R | 46 | 2.2 | 0.920 | 33.3 | LOS C | 402 | 1.00 | 1.58 | 13.9 |
| **Approach** | | **509** | **2.0** | **0.924** | **33.6** | **LOS C** | **402** | **1.00** | **1.58** | **14.2** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 192 | 2.1 | 0.268 | 11.0 | LOS B | 58 | 0.33 | 0.60 | 24.2 |
| 2T | T | 66 | 1.5 | 0.268 | 2.1 | LOS A | 58 | 0.33 | 0.23 | 29.4 |
| 2R | R | 114 | 1.8 | 0.268 | 2.1 | LOS A | 58 | 0.33 | 0.23 | 29.4 |
| **Approach** | | **371** | **1.9** | **0.268** | **6.7** | **LOS A** | **58** | **0.33** | **0.42** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 698 | 2.0 | 0.593 | 15.8 | LOS B | 160 | 0.74 | 0.89 | 22.5 |
| 18T | T | 321 | 1.9 | 0.592 | 5.7 | LOS A | 160 | 0.73 | 0.66 | 26.3 |
| 18R | R | 203 | 2.0 | 0.594 | 6.8 | LOS A | 160 | 0.73 | 0.72 | 25.7 |
| **Approach** | | **1222** | **2.0** | **0.593** | **11.6** | **LOS B** | **160** | **0.73** | **0.80** | **23.7** |
| **All Vehicles** | | **2679** | **1.9** | **0.926** | **15.8** | **LOS B** | **402** | **0.76** | **0.95** | **20.9** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Buildout+ Project B Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 66 | 1.5 | 0.680 | 19.4 | LOS B | 154 | 0.89 | 1.11 | 19.9 |
| 16T | T | 213 | 1.9 | 0.682 | 12.3 | LOS B | 154 | 0.89 | 1.06 | 22.4 |
| 16R | R | 82 | 2.4 | 0.683 | 13.9 | LOS B | 154 | 0.89 | 1.08 | 21.4 |
| **Approach** | | **360** | **1.9** | **0.681** | **14.0** | **LOS B** | **154** | **0.89** | **1.07** | **21.6** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.455 | 22.6 | LOS C | 89 | 0.88 | 1.03 | 19.5 |
| 6T | T | 119 | 1.7 | 0.451 | 13.0 | LOS B | 89 | 0.88 | 0.98 | 22.0 |
| 6R | R | 72 | 1.4 | 0.449 | 14.3 | LOS B | 89 | 0.88 | 0.98 | 21.2 |
| **Approach** | | **195** | **2.1** | **0.450** | **13.7** | **LOS B** | **89** | **0.88** | **0.98** | **21.6** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 103 | 1.9 | 0.981 | 48.2 | LOS D | 546 | 1.00 | 1.80 | 12.7 |
| 14T | T | 437 | 2.1 | 0.980 | 39.4 | LOS D | 546 | 1.00 | 1.80 | 12.5 |
| 14R | R | 45 | 2.2 | 0.978 | 41.0 | LOS D | 546 | 1.00 | 1.80 | 12.2 |
| **Approach** | | **585** | **2.1** | **0.981** | **41.1** | **LOS D** | **546** | **1.00** | **1.80** | **12.5** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 201 | 2.0 | 0.277 | 11.1 | LOS B | 61 | 0.34 | 0.60 | 24.1 |
| 2T | T | 67 | 1.5 | 0.277 | 2.1 | LOS A | 61 | 0.34 | 0.23 | 29.4 |
| 2R | R | 116 | 1.7 | 0.277 | 2.1 | LOS A | 61 | 0.34 | 0.23 | 29.4 |
| **Approach** | | **383** | **1.8** | **0.277** | **6.8** | **LOS A** | **61** | **0.34** | **0.43** | **26.1** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 568 | 1.9 | 0.595 | 16.1 | LOS B | 159 | 0.75 | 0.91 | 22.3 |
| 18T | T | 440 | 2.0 | 0.595 | 5.9 | LOS A | 162 | 0.74 | 0.69 | 26.2 |
| 18R | R | 203 | 2.0 | 0.595 | 7.0 | LOS A | 162 | 0.74 | 0.73 | 25.6 |
| **Approach** | | **1211** | **2.0** | **0.595** | **10.9** | **LOS B** | **162** | **0.74** | **0.80** | **23.9** |
| **All Vehicles** | | **2734** | **2.0** | **0.981** | **17.4** | **LOS B** | **546** | **0.77** | **1.01** | **20.0** |

Symbols which may appear in this table:

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.2 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.2 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.9 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.9 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.7 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.7 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.5 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.5 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 1.0 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 1.0 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.6 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.6 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.1 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.1 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.9 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.9 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.7 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.7 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.4 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.4 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 0.9 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 0.9 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.3 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.3 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 5.1 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 5.1 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.6 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.6 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.6 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.6 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.5 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.5 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 1.0 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 1.0 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 1.0 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 1.0 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.2 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.2 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.9 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.9 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.4 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.4 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.3 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.3 |

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 4.8 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 4.8 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.5 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.5 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.4 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.4 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 0.9 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 0.9 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 0.9 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 0.9 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.1 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.1 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.8 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.8 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.2 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.2 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.6 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.6 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.1 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.1 |

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.8 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.8 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 8.1 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 8.1 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.0 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.0 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.2 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.2 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 5.1 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 5.1 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.6 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.6 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.8 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.8 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.3 |





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.6 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.6 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 7.7 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 7.7 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.0 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.0 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.3 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.3 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.1 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.1 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.3 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.3 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 4.8 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 4.8 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.5 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.5 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.7 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.7 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.1 |

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.3 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.3 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.3 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.3 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.3 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.8 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.8 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 8.1 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 8.1 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 85.0 |





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.1 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.1 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.1 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.6 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.6 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.2 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.2 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.6 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.6 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 7.7 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 7.7 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.3 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.3 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 80.2 |

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt C

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 344.00 | 305.00 | 344 | 305 | 649 | 15.0 |
| | Zone 38 Subtotal | | | | | 344 | 305 | 649 | 15.0 |
| TOTAL | | | | | | 344 | 305 | 649 | 15.0 |





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt C

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 504.00 | 402.00 | 504 | 402 | 906 | 19.8 |
| | Zone 38 Subtotal | | | | | 504 | 402 | 906 | 19.8 |
| TOTAL | | | | | | 504 | 402 | 906 | 19.8 |

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.498
Loss Time (sec): 4 (Y+R=4.0 sec) | Average Delay (sec/veh): 13.3
Optimal Cycle: 22 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 47 | 317 | 71 | 34 | 212 | 15 | 16 | 35 | 69 | 109 | 36 | 38 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 52 | 349 | 78 | 37 | 233 | 17 | 18 | 39 | 76 | 120 | 40 | 42 |
| Added Vol: | 74 | 101 | 88 | 21 | 78 | 0 | 0 | 14 | 69 | 106 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 126 | 450 | 166 | 58 | 311 | 17 | 18 | 53 | 145 | 226 | 54 | 70 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 126 | 450 | 166 | 58 | 311 | 17 | 18 | 53 | 145 | 226 | 54 | 70 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 126 | 450 | 166 | 58 | 311 | 17 | 18 | 53 | 145 | 226 | 54 | 70 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 126 | 450 | 166 | 58 | 311 | 17 | 18 | 53 | 145 | 226 | 54 | 70 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.74 | 0.74 | 0.85 | 0.78 | 0.78 | 0.78 | 0.88 | 0.88 | 0.88 | 0.69 | 0.69 | 0.69 |
| Lanes: | 0.44 | 1.56 | 1.00 | 0.30 | 1.61 | 0.09 | 0.08 | 0.24 | 0.68 | 0.65 | 0.15 | 0.20 |
| Final Sat.: | 618 | 2212 | 1615 | 450 | 2398 | 127 | 137 | 408 | 1126 | 848 | 201 | 262 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.10 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.27 | 0.27 | 0.27 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| Volume/Cap: | 0.50 | 0.50 | 0.25 | 0.32 | 0.32 | 0.32 | 0.24 | 0.24 | 0.24 | 0.50 | 0.50 | 0.50 |
| Delay/Veh: | 15.7 | 15.7 | 13.9 | 14.2 | 14.2 | 14.2 | 8.8 | 8.8 | 8.8 | 10.9 | 10.9 | 10.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 15.7 | 15.7 | 13.9 | 14.2 | 14.2 | 14.2 | 8.8 | 8.8 | 8.8 | 10.9 | 10.9 | 10.9 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.478
Loss Time (sec): 4 (Y+R=4.0 sec) | Average Delay (sec/veh): 13.1
Optimal Cycle: 21 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Added Vol: | 74 | 102 | 94 | 21 | 79 | 0 | 0 | 14 | 69 | 114 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 138 | 393 | 193 | 60 | 370 | 17 | 18 | 53 | 133 | 213 | 54 | 67 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 138 | 393 | 193 | 60 | 370 | 17 | 18 | 53 | 133 | 213 | 54 | 67 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 138 | 393 | 193 | 60 | 370 | 17 | 18 | 53 | 133 | 213 | 54 | 67 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 138 | 393 | 193 | 60 | 370 | 17 | 18 | 53 | 133 | 213 | 54 | 67 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.70 | 0.70 | 0.85 | 0.80 | 0.80 | 0.80 | 0.88 | 0.88 | 0.88 | 0.70 | 0.70 | 0.70 |
| Lanes: | 0.52 | 1.48 | 1.00 | 0.27 | 1.65 | 0.08 | 0.09 | 0.26 | 0.65 | 0.64 | 0.16 | 0.20 |
| Final Sat.: | 687 | 1956 | 1615 | 406 | 2503 | 115 | 148 | 434 | 1090 | 852 | 216 | 268 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.12 | 0.15 | 0.15 | 0.15 | 0.12 | 0.12 | 0.12 | 0.25 | 0.25 | 0.25 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 |
| Volume/Cap: | 0.48 | 0.48 | 0.28 | 0.35 | 0.35 | 0.35 | 0.23 | 0.23 | 0.23 | 0.48 | 0.48 | 0.48 |
| Delay/Veh: | 15.1 | 15.1 | 13.6 | 14.0 | 14.0 | 14.0 | 9.2 | 9.2 | 9.2 | 11.1 | 11.1 | 11.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 15.1 | 15.1 | 13.6 | 14.0 | 14.0 | 14.0 | 9.2 | 9.2 | 9.2 | 11.1 | 11.1 | 11.1 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 3 | 4 | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: E[ 47.9]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Added Vol: | 0 | 262 | 57 | 1 | 253 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 728 | 152 | 47 | 652 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 728 | 152 | 47 | 652 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 728 | 152 | 47 | 652 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 880 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1224 | xxxx | 440 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 777 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 174 | xxxx | 570 |
| Move Cap.: | xxxx | xxxx | xxxxx | 777 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 166 | xxxx | 570 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.64 | xxxx | 0.06 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 3.6 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 59.4 | xxxx | 11.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 47.9 | | |
| ApproachLOS: | * | | | * | | | * | | | E | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.1 Worst Case Level Of Service: F[ 52.1]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Added Vol: | 0 | 270 | 57 | 1 | 262 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 702 | 135 | 41 | 694 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 702 | 135 | 41 | 694 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 702 | 135 | 41 | 694 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 837 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1199 | xxxx | 419 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 806 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 181 | xxxx | 589 |
| Move Cap.: | xxxx | xxxx | xxxxx | 806 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 174 | xxxx | 589 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.71 | xxxx | 0.07 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 4.4 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 65.2 | xxxx | 11.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 52.1 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 Critical Vol./Cap.(X): 0.606
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 18.0
Optimal Cycle: 32 Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 7 | 382 | 52 | 97 | 370 | 2 | 1 | 12 | 15 | 104 | 21 | 178 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 8 | 420 | 57 | 107 | 407 | 2 | 1 | 13 | 17 | 114 | 23 | 196 |
| Added Vol: | 22 | 143 | 241 | 165 | 122 | 12 | 14 | 3 | 26 | 256 | 5 | 163 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 30 | 563 | 298 | 272 | 529 | 14 | 15 | 16 | 43 | 370 | 28 | 359 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 30 | 563 | 298 | 272 | 529 | 14 | 15 | 16 | 43 | 370 | 28 | 359 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 30 | 563 | 298 | 272 | 529 | 14 | 15 | 16 | 43 | 370 | 28 | 359 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 30 | 563 | 298 | 272 | 529 | 14 | 15 | 16 | 43 | 370 | 28 | 359 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.90 | 0.90 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.31 | 0.69 | 1.00 | 1.95 | 0.05 | 0.20 | 0.22 | 0.58 | 1.86 | 0.14 | 1.00 |
| Final Sat.: | 1805 | 2238 | 1185 | 1805 | 3502 | 94 | 355 | 381 | 999 | 3377 | 256 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.25 | 0.25 | 0.15 | 0.15 | 0.15 | 0.04 | 0.04 | 0.04 | 0.11 | 0.11 | 0.22 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.07 | 0.42 | 0.42 | 0.25 | 0.60 | 0.60 | 0.07 | 0.07 | 0.07 | 0.18 | 0.18 | 0.43 |
| Volume/Cap: | 0.25 | 0.61 | 0.61 | 0.61 | 0.25 | 0.25 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.52 |
| Delay/Veh: | 32.2 | 16.8 | 16.8 | 25.7 | 6.7 | 6.7 | 40.1 | 40.1 | 40.1 | 28.0 | 28.0 | 15.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 32.2 | 16.8 | 16.8 | 25.7 | 6.7 | 6.7 | 40.1 | 40.1 | 40.1 | 28.0 | 28.0 | 15.4 |
| LOS by Move: | C | B | B | C | A | A | D | D | D | C | C | B |
| HCM2kAvgQ: | 1 | 8 | 8 | 6 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 6 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 Critical Vol./Cap.(X): 0.708
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 26.3
Optimal Cycle: 41 Level Of Service: C

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Added Vol: | 22 | 143 | 242 | 174 | 122 | 12 | 14 | 3 | 26 | 257 | 5 | 170 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 90 | 149 | 330 | 174 | 130 | 21 | 19 | 258 | 76 | 337 | 235 | 170 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 90 | 149 | 330 | 174 | 130 | 21 | 19 | 258 | 76 | 337 | 235 | 170 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 90 | 149 | 330 | 174 | 130 | 21 | 19 | 258 | 76 | 337 | 235 | 170 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 90 | 149 | 330 | 174 | 130 | 21 | 19 | 258 | 76 | 337 | 235 | 170 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.85 | 0.85 | 0.95 | 0.93 | 0.93 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.72 | 0.28 | 0.05 | 0.73 | 0.22 | 1.18 | 0.82 | 1.00 |
| Final Sat.: | 1805 | 1619 | 1619 | 1805 | 3043 | 492 | 99 | 1344 | 396 | 2174 | 1516 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.05 | 0.09 | 0.20 | 0.10 | 0.04 | 0.04 | 0.19 | 0.19 | 0.19 | 0.16 | 0.16 | 0.11 |
| Crit Moves: | | | **** | **** | | | **** | | | **** | | |
| Green/Cycle: | 0.23 | 0.29 | 0.29 | 0.14 | 0.20 | 0.20 | 0.27 | 0.27 | 0.27 | 0.22 | 0.22 | 0.36 |
| Volume/Cap: | 0.22 | 0.32 | 0.71 | 0.71 | 0.22 | 0.22 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.30 |
| Delay/Veh: | 22.2 | 19.7 | 25.7 | 38.0 | 23.8 | 23.8 | 27.7 | 27.7 | 27.7 | 28.2 | 28.2 | 16.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 22.2 | 19.7 | 25.7 | 38.0 | 23.8 | 23.8 | 27.7 | 27.7 | 27.7 | 28.2 | 28.2 | 16.6 |
| LOS by Move: | C | B | C | D | C | C | C | C | C | C | C | B |
| HCM2kAvgQ: | 2 | 3 | 8 | 5 | 2 | 2 | 8 | 8 | 8 | 7 | 7 | 3 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: C[ 17.7]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | 0 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | 0 | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 36 | 0 | 53 | 0 | 95 | 314 | | 133 | 371 | 0 | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 40 | 0 | 77 | 0 | 138 | 411 | | 158 | 716 | 0 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 40 | 0 | 77 | 0 | 138 | 411 | | 158 | 716 | 0 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 40 | 0 | 77 | 0 | 138 | 411 | | 158 | 716 | 0 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1101 | 1581 | 358 | xxxx | xxxx | xxxxx | | 549 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 209 | 110 | 644 | xxxx | xxxx | xxxxx | | 1031 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 185 | 93 | 644 | xxxx | xxxx | xxxxx | | 1031 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.22 | 0.00 | 0.12 | xxxx | xxxx | xxxx | | 0.15 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.5 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 29.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 9.1 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | D | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 644 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.3 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 17.7 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | C | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.6 Worst Case Level Of Service: C[ 16.7]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | 0 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | 0 | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 47 | 0 | 53 | 0 | 100 | 319 | | 154 | 379 | 0 | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 50 | 0 | 76 | 0 | 142 | 436 | | 173 | 555 | 0 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 50 | 0 | 76 | 0 | 142 | 436 | | 173 | 555 | 0 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 50 | 0 | 76 | 0 | 142 | 436 | | 173 | 555 | 0 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 972 | 1479 | 278 | xxxx | xxxx | xxxxx | | 578 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 254 | 127 | 726 | xxxx | xxxx | xxxxx | | 1006 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 220 | 105 | 726 | xxxx | xxxx | xxxxx | | 1006 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.23 | 0.00 | 0.10 | xxxx | xxxx | xxxx | | 0.17 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.6 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 26.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 9.3 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | D | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 726 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.3 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.5 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 16.7 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | C | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 25.9 Worst Case Level Of Service: E[ 42.3]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 272 | | 0 | | 55 | 0 | | 0 | | 0 | 23 | | 15 | | 0 | 0 | | 57 | | 6 |
| Growth Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Initial Bse: | 272 | | 0 | | 55 | 0 | | 0 | | 0 | 23 | | 15 | | 0 | 0 | | 57 | | 6 |
| Added Vol: | 280 | | 0 | | 167 | 0 | | 0 | | 0 | 47 | | 85 | | 0 | 0 | | 223 | | 54 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 552 | | 0 | | 222 | 0 | | 0 | | 0 | 70 | | 100 | | 0 | 0 | | 280 | | 60 |
| User Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| PHF Volume: | 552 | | 0 | | 222 | 0 | | 0 | | 0 | 70 | | 100 | | 0 | 0 | | 280 | | 60 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 552 | | 0 | | 222 | 0 | | 0 | | 0 | 70 | | 100 | | 0 | 0 | | 280 | | 60 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 380 | 580 | | 50 | xxxx | xxxx | xxxxx | | 340 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 600 | 428 | | 1014 | xxxx | xxxx | xxxxx | | 1230 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 574 | 404 | | 1014 | xxxx | xxxx | xxxxx | | 1230 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.96 | 0.00 | | 0.22 | xxxx | xxxx | xxxx | | 0.06 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.8 | xxxx | xxxx | xxxxx | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 9.5 | xxxxx | xxxx | xxxxx | | 8.1 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 574 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | 13.1 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | 55.4 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | F | * | | * | | * | * | | * | | * | * | | * | | * | * | | * | |
| ApproachDel: | 42.3 | | | | | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | |
| ApproachLOS: | E | | | | | * | | | | | * | | | | | * | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 13.4 Worst Case Level Of Service: C[ 24.1]

| Street Name: | US 101 North Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Rights: | Include | | | | | Include | | | | | Include | | | | | Include | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 144 | | 0 | | 27 | 0 | | 0 | | 0 | 26 | | 20 | | 0 | 0 | | 58 | | 8 |
| Growth Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Initial Bse: | 144 | | 0 | | 27 | 0 | | 0 | | 0 | 26 | | 20 | | 0 | 0 | | 58 | | 8 |
| Added Vol: | 280 | | 0 | | 210 | 0 | | 0 | | 0 | 47 | | 101 | | 0 | 0 | | 253 | | 60 |
| PasserByVol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| Initial Fut: | 424 | | 0 | | 237 | 0 | | 0 | | 0 | 73 | | 121 | | 0 | 0 | | 311 | | 68 |
| User Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| PHF Adj: | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| PHF Volume: | 424 | | 0 | | 237 | 0 | | 0 | | 0 | 73 | | 121 | | 0 | 0 | | 311 | | 68 |
| Reduct Vol: | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 0 | | 0 |
| FinalVolume: | 424 | | 0 | | 237 | 0 | | 0 | | 0 | 73 | | 121 | | 0 | 0 | | 311 | | 68 |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| FollowUpTim: | 3.5 | 4.0 | | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 423 | 646 | | 61 | xxxx | xxxx | xxxxx | | 379 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Potent Cap.: | 565 | 393 | | 999 | xxxx | xxxx | xxxxx | | 1191 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Move Cap.: | 538 | 369 | | 999 | xxxx | xxxx | xxxxx | | 1191 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Volume/Cap: | 0.79 | 0.00 | | 0.24 | xxxx | xxxx | xxxx | | 0.06 | xxxx | xxxx | | xxxx | xxxx | xxxx | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | | 0.9 | xxxx | xxxx | xxxxx | | 0.2 | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | |
| Control Del: | xxxxx | xxxx | | 9.7 | xxxxx | xxxx | xxxxx | | 8.2 | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | |
| LOS by Move: | * | * | | A | * | * | * | | A | * | * | | * | * | * | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | 538 | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | | xxxx | xxxx | xxxxx | | |
| SharedQueue: | 7.4 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shrd ConDel: | 32.1 | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | | xxxxx | xxxx | xxxxx | | |
| Shared LOS: | D | * | | * | | * | * | | * | | * | * | | * | | * | * | | * | |
| ApproachDel: | 24.1 | | | | | xxxxxx | | | | | xxxxxx | | | | | xxxxxx | | | | |
| ApproachLOS: | C | | | | | * | | | | | * | | | | | * | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.577 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 20.9 |
| Optimal Cycle: | 31 | Level Of Service: | C |

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Protected | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | |
| Base Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Added Vol: | 280 | 0 | 167 | 0 | 0 | 0 | 47 | 85 | 0 | 0 | 223 | 54 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 552 | 0 | 222 | 0 | 0 | 0 | 70 | 100 | 0 | 0 | 280 | 60 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 552 | 0 | 222 | 0 | 0 | 0 | 70 | 100 | 0 | 0 | 280 | 60 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 552 | 0 | 222 | 0 | 0 | 0 | 70 | 100 | 0 | 0 | 280 | 60 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 552 | 0 | 222 | 0 | 0 | 0 | 70 | 100 | 0 | 0 | 280 | 60 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 0.93 | 0.93 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 1.65 | 0.35 |
| Final Sat.: | 1357 | 0 | 1615 | 0 | 0 | 0 | 1805 | 3610 | 0 | 0 | 2896 | 620 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.41 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.04 | 0.03 | 0.00 | 0.00 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.71 | 0.00 | 1.41 | 0.00 | 0.00 | 0.00 | 0.07 | 0.23 | 0.00 | 0.00 | 0.17 | 0.17 |
| Volume/Cap: | 0.58 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.58 | 0.12 | 0.00 | 0.00 | 0.58 | 0.58 |
| Delay/Veh: | 8.2 | 0.0 | 9.8 | 0.0 | 0.0 | 0.0 | 52.0 | 30.2 | 0.0 | 0.0 | 39.8 | 39.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 8.2 | 0.0 | 9.8 | 0.0 | 0.0 | 0.0 | 52.0 | 30.2 | 0.0 | 0.0 | 39.8 | 39.8 |
| LOS by Move: | A | A | A | A | A | A | D | C | A | A | D | D |
| HCM2k95thQ: | 17 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 11 | 11 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.490 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 20.1 |
| Optimal Cycle: | 27 | Level Of Service: | C |

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Protected | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Added Vol: | 280 | 0 | 210 | 0 | 0 | 0 | 47 | 101 | 0 | 0 | 253 | 60 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 424 | 0 | 237 | 0 | 0 | 0 | 73 | 121 | 0 | 0 | 311 | 68 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 424 | 0 | 237 | 0 | 0 | 0 | 73 | 121 | 0 | 0 | 311 | 68 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 424 | 0 | 237 | 0 | 0 | 0 | 73 | 121 | 0 | 0 | 311 | 68 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 424 | 0 | 237 | 0 | 0 | 0 | 73 | 121 | 0 | 0 | 311 | 68 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 0.92 | 0.92 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 1.64 | 0.36 |
| Final Sat.: | 1357 | 0 | 1615 | 0 | 0 | 0 | 1805 | 3610 | 0 | 0 | 2882 | 630 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.31 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.04 | 0.03 | 0.00 | 0.00 | 0.11 | 0.11 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.64 | 0.00 | 1.27 | 0.00 | 0.00 | 0.00 | 0.08 | 0.30 | 0.00 | 0.00 | 0.22 | 0.22 |
| Volume/Cap: | 0.49 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.49 | 0.11 | 0.00 | 0.00 | 0.49 | 0.49 |
| Delay/Veh: | 10.0 | 0.0 | 4.5 | 0.0 | 0.0 | 0.0 | 46.4 | 25.2 | 0.0 | 0.0 | 34.6 | 34.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 10.0 | 0.0 | 4.5 | 0.0 | 0.0 | 0.0 | 46.4 | 25.2 | 0.0 | 0.0 | 34.6 | 34.6 |
| LOS by Move: | B | A | A | A | A | A | D | C | A | A | C | C |
| HCM2k95thQ: | 14 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 11 | 11 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.9 Worst Case Level Of Service: C[ 15.3]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Added Vol: | 230 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 192 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 262 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 198 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 262 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 198 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 262 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 198 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 180 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 772 | xxxx | 107 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 371 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 318 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.19 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.41 | xxxx | 0.21 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.9 | xxxx | 0.8 | xxxx | xxxx | xxxxx |
| Control Del: | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 23.9 | xxxx | 9.8 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 15.3 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.4 Worst Case Level Of Service: B[ 13.1]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Added Vol: | 266 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 251 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 277 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 261 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 277 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 261 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 277 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 261 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 181 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 784 | xxxx | 106 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 365 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 309 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.20 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.30 | xxxx | 0.27 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.2 | xxxx | 1.1 | xxxx | xxxx | xxxxx |
| Control Del: | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 21.5 | xxxx | 10.2 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 13.1 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 10.2 Worst Case Level Of Service: D[ 30.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 217 | 127 | 110 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 217 | 127 | 147 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 217 | 127 | 147 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 225 | 217 | 127 | 147 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp:xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | |
| FollowUpTim:xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 442 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 735 | 735 | 334 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1129 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 390 | 350 | 713 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1129 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 354 | 307 | 713 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.11 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.54 | 0.00 | 0.16 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del:xxxxx | xxxx | xxxxx | 8.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 435 | xxxxx |
| SharedQueue:xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 5.3 | xxxxx | |
| Shrd ConDel:xxxxx | xxxx | xxxxx | 8.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 30.5 | xxxxx | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | D | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 30.5 | | |
| ApproachLOS: | * | | | * | | | * | | | D | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 41.4 Worst Case Level Of Service: F[124.6]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 318 | 186 | 110 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 318 | 186 | 147 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 318 | 186 | 147 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 196 | 318 | 186 | 147 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp:xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | |
| FollowUpTim:xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 514 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 874 | 874 | 355 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1062 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 323 | 290 | 693 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1062 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 274 | 234 | 693 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.18 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.92 | 0.00 | 0.21 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del:xxxxx | xxxx | xxxxx | 9.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 354 | xxxxx |
| SharedQueue:xxxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 15.7 | xxxxx | |
| Shrd ConDel:xxxxx | xxxx | xxxxx | 9.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 125 | xxxxx | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 124.6 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.358 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 19.2 |
| Optimal Cycle: | 22 | Level Of Service: | B |

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1 | 0 1 | 1 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 217 | 127 | 110 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 217 | 127 | 147 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 217 | 127 | 147 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 225 | 217 | 127 | 147 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 225 | 217 | 127 | 147 | 0 | 0 | 0 | 0 | 192 | 0 | 113 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.12 | 0.13 | 0.07 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.07 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.38 | 0.38 | 0.59 | 0.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.37 | 0.00 | 0.37 |
| Volume/Cap: | 0.00 | 0.32 | 0.36 | 0.18 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.36 | 0.00 | 0.19 |
| Delay/Veh: | 0.0 | 22.4 | 22.9 | 9.5 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 23.4 | 0.0 | 21.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 22.4 | 22.9 | 9.5 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 23.4 | 0.0 | 21.7 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 10 | 10 | 4 | 4 | 0 | 0 | 0 | 0 | 9 | 0 | 5 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.503 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 20.0 |
| Optimal Cycle: | 27 | Level Of Service: | B |

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 1 | 0 1 | 1 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 318 | 186 | 110 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 318 | 186 | 147 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 318 | 186 | 147 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 196 | 318 | 186 | 147 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 196 | 318 | 186 | 147 | 0 | 0 | 0 | 0 | 253 | 0 | 149 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.10 | 0.20 | 0.10 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.09 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.39 | 0.39 | 0.62 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.34 | 0.00 | 0.34 |
| Volume/Cap: | 0.00 | 0.26 | 0.50 | 0.24 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.27 |
| Delay/Veh: | 0.0 | 20.9 | 23.7 | 8.7 | 8.9 | 0.0 | 0.0 | 0.0 | 0.0 | 26.8 | 0.0 | 24.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 20.9 | 23.7 | 8.7 | 8.9 | 0.0 | 0.0 | 0.0 | 0.0 | 26.8 | 0.0 | 24.0 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 8 | 15 | 5 | 4 | 0 | 0 | 0 | 0 | 13 | 0 | 7 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[ 15.7]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! | 0 0 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 347 | 0 | 0 | 357 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 413 | 16 | 2 | 392 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 413 | 16 | 2 | 392 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 413 | 16 | 2 | 392 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 429 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 817 | 817 | 421 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1141 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 349 | 313 | 637 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1141 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 348 | 313 | 637 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.08 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 365 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 15.7 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 15.7 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[ 11.2]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Added Vol: | 0 | 447 | 0 | 0 | 418 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 484 | 2 | 1 | 454 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 484 | 2 | 1 | 454 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 484 | 2 | 1 | 454 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 486 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 485 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1087 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 586 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1087 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 586 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.01 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.2 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 11.2 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[ 18.5]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 |
| Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm | | | | | | | | | | | | |
| Base Vol: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 |
| Added Vol: | 78 | 322 | 0 | 0 | 252 | 9 | 10 | 0 | 72 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 255 | 665 | 0 | 0 | 387 | 56 | 43 | 0 | 143 | 0 | 0 | 0 |
| User Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 281 | 732 | 0 | 0 | 426 | 62 | 47 | 0 | 157 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 281 | 732 | 0 | 0 | 426 | 62 | 47 | 0 | 157 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 487 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1734 | 1734 | 426 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1086 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 91 | 82 | 633 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1086 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 73 | 61 | 633 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 154 | 138 | xxxxx | 75 | 119 | xxxxx |
| Volume/Cap: | 0.26 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.31 | 0.00 | 0.25 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx |
| Control Del: | 9.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 12.6 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 154 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 38.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | E | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 18.5 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: C[ 16.5]

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 |
| Added Vol: | 81 | 322 | 0 | 0 | 253 | 9 | 10 | 0 | 75 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 205 | 561 | 0 | 0 | 492 | 49 | 50 | 0 | 199 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 205 | 561 | 0 | 0 | 492 | 49 | 50 | 0 | 199 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 205 | 561 | 0 | 0 | 492 | 49 | 50 | 0 | 199 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 541 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1463 | 1463 | 492 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1038 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 143 | 130 | 581 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1038 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 121 | 104 | 581 | xxxx | xxxx | xxxxx |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 229 | 204 | xxxxx | 88 | 177 | xxxxx |
| Volume/Cap: | 0.20 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.22 | 0.00 | 0.34 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.5 | xxxx | xxxx | xxxxx |
| Control Del: | 9.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 14.4 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 229 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 25.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | D | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 16.5 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 35.7 Worst Case Level Of Service: F[ 66.6]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 260 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 314 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 454 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 766 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 454 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 766 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 159 | 187 | 454 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 766 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 293 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1265 | xxxx | 195 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 180 | xxxx | 814 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 128 | xxxx | 814 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.37 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.16 | xxxx | 0.94 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.9 | xxxx | 14.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 195.9 | xxxx | 41.4 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | E |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 66.6 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 29.4 Worst Case Level Of Service: F[ 58.7]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 263 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 318 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 543 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 663 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 543 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 663 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 122 | 175 | 543 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 663 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 297 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1423 | xxxx | 210 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 151 | xxxx | 836 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 101 | xxxx | 836 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.43 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.24 | xxxx | 0.79 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.5 | xxxx | 8.3 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 244.5 | xxxx | 23.6 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | C |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 58.7 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.981
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 58.2
Optimal Cycle: 180 Level Of Service: E

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 1 | 0 | 0 | 0 0 | 1 | 0 | 0 1 |
| Volume Module: 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 260 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 314 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 454 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 766 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 454 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 766 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 159 | 187 | 454 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 766 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 159 | 187 | 454 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 766 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.93 | 0.93 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.46 | 0.54 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 809 | 952 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1480 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.20 | 0.20 | 0.25 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.47 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.20 | 0.20 | 0.26 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.48 | 0.00 | 0.48 |
| Volume/Cap: | 0.00 | 0.98 | 0.98 | 0.98 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.98 |
| Delay/Veh: | 0.0 | 82.5 | 82.5 | 73.7 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 52.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 82.5 | 82.5 | 73.7 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 52.8 |
| LOS by Move: | A | F | F | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 28 | 28 | 33 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 48 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.938
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 49.9
Optimal Cycle: 121 Level Of Service: D

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 1 | 0 | 0 | 0 0 | 1 | 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 263 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 318 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 543 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 663 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 543 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 663 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 122 | 175 | 543 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 663 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 122 | 175 | 543 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 663 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.92 | 0.92 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.41 | 0.59 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 718 | 1030 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1490 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.17 | 0.17 | 0.30 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.41 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.18 | 0.18 | 0.32 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.44 | 0.00 | 0.44 |
| Volume/Cap: | 0.00 | 0.94 | 0.94 | 0.94 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.94 |
| Delay/Veh: | 0.0 | 74.9 | 74.9 | 56.0 | 13.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 46.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 74.9 | 74.9 | 56.0 | 13.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 46.9 |
| LOS by Move: | A | E | E | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 23 | 23 | 35 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 40 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 115.0 Worst Case Level Of Service: F[1104.9]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 0 | 0 | 0 1 | 0 0 | 1 | 0 0 | 0 1 | 0 | 1 | 0 1 | 0 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 309 | 483 | 390 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 415 | 499 | 819 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 415 | 499 | 819 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 415 | 499 | 819 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2251 | 2458 | 819 | xxxx | xxxx | xxxxx | 641 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 46 | 31 | 379 | xxxx | xxxx | xxxxx | 953 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 27 | 15 | 379 | xxxx | xxxx | xxxxx | 953 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 4.63 | 0.00 | 0.25 | xxxx | xxxx | xxxx | 0.52 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx | 3.1 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 17.7 | xxxxx | xxxx | xxxxx | 12.9 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | B | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 27 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 15.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 1925 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 1104.9 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 134.9 Worst Case Level Of Service: F[1283.5]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 0 | 0 | 0 1 | 0 0 | 1 | 0 0 | 0 1 | 0 | 1 | 0 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 312 | 541 | 394 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 513 | 542 | 693 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 513 | 542 | 693 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 513 | 542 | 693 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2284 | 2540 | 693 | xxxx | xxxx | xxxxx | 763 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 44 | 28 | 447 | xxxx | xxxx | xxxxx | 859 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 22 | 10 | 447 | xxxx | xxxx | xxxxx | 859 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 5.53 | 0.00 | 0.24 | xxxx | xxxx | xxxx | 0.63 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.9 | xxxx | xxxx | xxxxx | 4.6 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 15.5 | xxxxx | xxxx | xxxxx | 16.1 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | C | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 22 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 15.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 2394 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 1283.5 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.787
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 23.0
Optimal Cycle: 55 Level Of Service: C

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 0 | 0 | 0 | 1 0 | 1 | 0 | 0 1 | 0 | 1 | 0 1 | 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 309 | 483 | 390 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 415 | 499 | 819 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 415 | 499 | 819 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 415 | 499 | 819 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 415 | 499 | 819 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.35 | 0.65 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 612 | 1123 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.06 | 0.00 | 0.37 | 0.37 | 0.28 | 0.43 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.12 | 0.00 | 0.47 | 0.47 | 0.35 | 0.82 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.79 | 0.00 | 0.50 | 0.00 | 0.79 | 0.79 | 0.79 | 0.53 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 65.1 | 0.0 | 43.3 | 0.0 | 27.4 | 27.4 | 35.6 | 3.2 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 65.1 | 0.0 | 43.3 | 0.0 | 27.4 | 27.4 | 35.6 | 3.2 | 0.0 |
| LOS by Move: | A | A | A | E | A | D | A | C | C | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 11 | 0 | 7 | 0 | 31 | 31 | 23 | 14 | 0 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.885
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 30.6
Optimal Cycle: 86 Level Of Service: C

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 0 | 0 | 0 | 1 0 | 1 | 0 | 0 1 | 0 | 1 | 0 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 312 | 541 | 394 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 513 | 542 | 693 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 513 | 542 | 693 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 513 | 542 | 693 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 513 | 542 | 693 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.33 | 0.67 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 566 | 1161 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.07 | 0.00 | 0.44 | 0.44 | 0.30 | 0.36 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.10 | 0.00 | 0.50 | 0.50 | 0.34 | 0.84 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.89 | 0.00 | 0.65 | 0.00 | 0.89 | 0.89 | 0.89 | 0.44 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 88.9 | 0.0 | 52.2 | 0.0 | 33.3 | 33.3 | 45.7 | 2.3 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 88.9 | 0.0 | 52.2 | 0.0 | 33.3 | 33.3 | 45.7 | 2.3 | 0.0 |
| LOS by Move: | A | A | A | F | A | D | A | C | C | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 12 | 0 | 9 | 0 | 40 | 40 | 27 | 10 | 0 |

Note: Queue reported is the number of cars per lane.

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SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### PM Buildout + Project C Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 665 | 2.0 | 0.512 | 12.0 | LOS B | 143 | 0.55 | 0.64 | 23.4 |
| 6T | T | 722 | 1.9 | 0.466 | 2.5 | LOS A | 129 | 0.49 | 0.27 | 28.1 |
| **Approach** | | **1387** | **1.9** | **0.512** | **7.0** | **LOS A** | **143** | **0.52** | **0.44** | **25.3** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 134 | 2.2 | 0.434 | 18.1 | LOS B | 74 | 0.80 | 0.99 | 21.4 |
| 14T | T | 17 | 5.6 | 0.429 | 8.3 | LOS A | 74 | 0.80 | 0.89 | 25.4 |
| 14R | R | 83 | 2.4 | 0.432 | 10.0 | LOS B | 74 | 0.80 | 0.92 | 24.0 |
| **Approach** | | **235** | **2.6** | **0.433** | **14.5** | **LOS B** | **74** | **0.80** | **0.96** | **22.4** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 167 | 1.8 | 0.309 | 14.6 | LOS B | 54 | 0.83 | 0.85 | 22.3 |
| 12T | T | 311 | 1.9 | 0.461 | 7.0 | LOS A | 129 | 0.92 | 0.78 | 25.1 |
| 12R | R | 121 | 1.7 | 0.460 | 8.8 | LOS A | 129 | 0.92 | 0.86 | 24.3 |
| **Approach** | | **598** | **1.8** | **0.461** | **9.5** | **LOS A** | **129** | **0.89** | **0.81** | **24.0** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 167 | 1.8 | 0.640 | 22.4 | LOS C | 166 | 0.90 | 1.13 | 19.1 |
| 18T | T | 71 | 1.4 | 0.636 | 14.1 | LOS B | 166 | 0.90 | 1.09 | 21.3 |
| 18R | R | 126 | 2.4 | 0.638 | 15.7 | LOS B | 166 | 0.90 | 1.09 | 20.4 |
| **Approach** | | **364** | **1.9** | **0.639** | **18.5** | **LOS B** | **166** | **0.90** | **1.11** | **19.9** |
| **All Vehicles** | | **2584** | **2.0** | **0.640** | **9.9** | **LOS A** | **166** | **0.69** | **0.67** | **23.8** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### WKD Buildout+Project C Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 686 | 2.0 | 0.428 | 11.6 | LOS B | 117 | 0.42 | 0.60 | 23.7 |
| 6T | T | 613 | 2.0 | 0.454 | 2.5 | LOS A | 122 | 0.46 | 0.27 | 28.4 |
| **Approach** | | **1299** | **2.0** | **0.454** | **7.3** | **LOS A** | **122** | **0.44** | **0.45** | **25.4** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 128 | 2.3 | 0.403 | 17.0 | LOS B | 65 | 0.76 | 0.96 | 21.9 |
| 14T | T | 18 | 5.3 | 0.404 | 7.2 | LOS A | 65 | 0.76 | 0.83 | 26.2 |
| 14R | R | 94 | 2.1 | 0.403 | 9.0 | LOS A | 65 | 0.76 | 0.88 | 24.8 |
| **Approach** | | **242** | **2.5** | **0.403** | **13.1** | **LOS B** | **65** | **0.76** | **0.92** | **23.1** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 186 | 2.1 | 0.339 | 15.0 | LOS B | 60 | 0.83 | 0.86 | 22.1 |
| 12T | T | 385 | 2.1 | 0.547 | 9.0 | LOS A | 177 | 0.94 | 0.95 | 24.8 |
| 12R | R | 134 | 2.2 | 0.547 | 10.8 | LOS B | 177 | 0.94 | 0.96 | 23.4 |
| **Approach** | | **707** | **2.1** | **0.547** | **10.9** | **LOS B** | **177** | **0.91** | **0.93** | **23.7** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 128 | 2.3 | 0.629 | 25.1 | LOS C | 162 | 0.93 | 1.15 | 18.1 |
| 18T | T | 61 | 1.6 | 0.629 | 16.8 | LOS B | 162 | 0.93 | 1.12 | 19.8 |
| 18R | R | 123 | 1.6 | 0.631 | 18.4 | LOS B | 162 | 0.93 | 1.11 | 19.0 |
| **Approach** | | **313** | **1.9** | **0.630** | **20.8** | **LOS C** | **162** | **0.93** | **1.13** | **18.7** |
| **All Vehicles** | | **2561** | **2.1** | **0.631** | **10.5** | **LOS B** | **177** | **0.66** | **0.71** | **23.7** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 351.0 Worst Case Level Of Service: F[701.4]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 468 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 582 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 486 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 656 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 486 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 656 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 663 | 0 | 486 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 656 | 142 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1194 | 1265 | 237 | xxxx | xxxx | xxxxx | 798 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 208 | 171 | 807 | xxxx | xxxx | xxxxx | 833 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 186 | 147 | 807 | xxxx | xxxx | xxxxx | 833 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.56 | 0.00 | 0.60 | xxxx | xxxx | xxxx | 0.14 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 4.1 | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 16.0 | xxxxx | xxxx | xxxxx | 10.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | C | * | * | * | B | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 186 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 63.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1204 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 701.4 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 261.7 Worst Case Level Of Service: F[540.1]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 569 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 643 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 580 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 700 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 580 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 700 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 540 | 6 | 580 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 700 | 138 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1263 | 1332 | 236 | xxxx | xxxx | xxxxx | 838 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 189 | 156 | 808 | xxxx | xxxx | xxxxx | 805 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 166 | 131 | 808 | xxxx | xxxx | xxxxx | 805 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.26 | 0.05 | 0.72 | xxxx | xxxx | xxxx | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 6.3 | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 19.9 | xxxxx | xxxx | xxxxx | 10.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | C | * | * | * | B | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 165 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 51.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1093 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 540.1 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 1.051 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 62.2 |
| Optimal Cycle: | 180 | Level Of Service: | E |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 468 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 582 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 486 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 656 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 486 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 656 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 663 | 0 | 486 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 656 | 142 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 663 | 0 | 486 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 656 | 142 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.82 | 0.18 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1524 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.49 | 0.00 | 0.30 | 0.00 | 0.00 | 0.00 | 0.06 | 0.12 | 0.00 | 0.00 | 0.43 | 0.43 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.47 | 0.00 | 0.47 | 0.00 | 0.00 | 0.00 | 0.06 | 0.47 | 0.00 | 0.00 | 0.41 | 0.41 |
| Volume/Cap: | 1.05 | 0.00 | 0.65 | 0.00 | 0.00 | 0.00 | 1.05 | 0.27 | 0.00 | 0.00 | 1.05 | 1.05 |
| Delay/Veh: | 76.4 | 0.0 | 22.2 | 0.0 | 0.0 | 0.0 | 147.3 | 16.2 | 0.0 | 0.0 | 76.3 | 76.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 76.4 | 0.0 | 22.2 | 0.0 | 0.0 | 0.0 | 147.3 | 16.2 | 0.0 | 0.0 | 76.3 | 76.3 |
| LOS by Move: | E | A | C | A | A | A | F | B | A | A | E | E |
| HCM2k95thQ: | 48 | 0 | 22 | 0 | 0 | 0 | 9 | 8 | 0 | 0 | 49 | 49 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.942 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 43.5 |
| Optimal Cycle: | 125 | Level Of Service: | D |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 569 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 643 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 580 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 700 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 580 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 700 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 540 | 6 | 580 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 700 | 138 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 540 | 6 | 580 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 700 | 138 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.92 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 0.99 | 0.01 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.84 | 0.16 |
| Final Sat.: | 1726 | 19 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1552 | 306 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.31 | 0.31 | 0.36 | 0.00 | 0.00 | 0.00 | 0.07 | 0.12 | 0.00 | 0.00 | 0.45 | 0.45 |
| Crit Moves: | | | **** | | | | **** | | | | **** | |
| Green/Cycle: | 0.39 | 0.39 | 0.39 | 0.00 | 0.00 | 0.00 | 0.08 | 0.55 | 0.00 | 0.00 | 0.48 | 0.48 |
| Volume/Cap: | 0.81 | 0.81 | 0.94 | 0.00 | 0.00 | 0.00 | 0.94 | 0.22 | 0.00 | 0.00 | 0.94 | 0.94 |
| Delay/Veh: | 34.9 | 34.9 | 52.5 | 0.0 | 0.0 | 0.0 | 105.1 | 11.4 | 0.0 | 0.0 | 42.4 | 42.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 34.9 | 34.9 | 52.5 | 0.0 | 0.0 | 0.0 | 105.1 | 11.4 | 0.0 | 0.0 | 42.4 | 42.4 |
| LOS by Move: | C | C | D | A | A | A | F | B | A | A | D | D |
| HCM2k95thQ: | 30 | 30 | 37 | 0 | 0 | 0 | 8 | 7 | 0 | 0 | 41 | 41 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 332 | 310 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 379 | 359 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 379 | 359 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 379 | 359 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 444 | xxxx | xxxxx | 92 | xxxx | xxxxx | 1038 | 949 | 255 | 1129 | 1137 | 91 |
| Potent Cap.: | 1127 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 211 | 263 | 789 | 183 | 204 | 973 |
| Move Cap.: | 1127 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 0 | 185 | 789 | 42 | 143 | 973 |
| Volume/Cap: | 0.24 | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | 0.73 | 0.29 | 0.09 | 1.03 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.9 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.2 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx | xxxx | 159 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.1 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 179 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 179.1 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 393 | 411 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 435 | 448 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 435 | 448 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 435 | 448 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 503 | xxxx | xxxxx | 78 | xxxx | xxxxx | 1043 | 954 | 286 | 1134 | 1170 | 77 |
| Potent Cap.: | 1072 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 209 | 261 | 758 | 181 | 195 | 990 |
| Move Cap.: | 1072 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 0 | 182 | 758 | 40 | 135 | 990 |
| Volume/Cap: | 0.25 | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | 0.74 | 0.30 | 0.10 | 1.09 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.5 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx | xxxx | 151 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.7 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 205 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 205.0 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.793
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 42.6
Optimal Cycle: 64 | Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 332 | 310 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 379 | 359 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 379 | 359 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 271 | 89 | 3 | 30 | 65 | 379 | 359 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 379 | 359 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 1.00 | 1.00 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.97 | 0.03 | 1.00 | 0.15 | 0.85 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1829 | 62 | 1805 | 243 | 1414 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.05 | 0.05 | 0.02 | 0.27 | 0.27 | 0.20 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.19 | 0.39 | 0.39 | 0.13 | 0.34 | 0.34 | 0.27 | 0.27 | 0.27 | 0.13 | 0.13 | 0.13 |
| Volume/Cap: | 0.79 | 0.12 | 0.12 | 0.12 | 0.79 | 0.79 | 0.75 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 |
| Delay/Veh: | 50.7 | 19.4 | 19.4 | 38.3 | 37.6 | 37.6 | 39.8 | 43.3 | 43.3 | 59.2 | 59.2 | 59.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 50.7 | 19.4 | 19.4 | 38.3 | 37.6 | 37.6 | 39.8 | 43.3 | 43.3 | 59.2 | 59.2 | 59.2 |
| LOS by Move: | D | B | B | D | D | D | D | D | D | E | E | E |
| HCM2k95thQ: | 19 | 4 | 4 | 2 | 25 | 25 | 19 | 20 | 20 | 14 | 14 | 14 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative C (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 | Critical Vol./Cap.(X): 0.869
Loss Time (sec): 8 (Y+R=4.0 sec) | Average Delay (sec/veh): 48.3
Optimal Cycle: 86 | Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 393 | 411 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 435 | 448 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 435 | 448 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 265 | 75 | 3 | 30 | 68 | 435 | 448 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 435 | 448 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.99 | 0.99 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.96 | 0.04 | 1.00 | 0.14 | 0.86 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1816 | 73 | 1805 | 223 | 1430 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.04 | 0.04 | 0.02 | 0.30 | 0.30 | 0.25 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | **** | | | **** | | |
| Green/Cycle: | 0.17 | 0.37 | 0.37 | 0.15 | 0.35 | 0.35 | 0.29 | 0.29 | 0.29 | 0.11 | 0.11 | 0.11 |
| Volume/Cap: | 0.87 | 0.11 | 0.11 | 0.11 | 0.87 | 0.87 | 0.87 | 0.74 | 0.74 | 0.87 | 0.87 | 0.87 |
| Delay/Veh: | 62.8 | 20.8 | 20.8 | 37.0 | 43.6 | 43.6 | 48.5 | 38.3 | 38.3 | 73.0 | 73.0 | 73.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 62.8 | 20.8 | 20.8 | 37.0 | 43.6 | 43.6 | 48.5 | 38.3 | 38.3 | 73.0 | 73.0 | 73.0 |
| LOS by Move: | E | C | C | D | D | D | D | D | D | E | E | E |
| HCM2k95thQ: | 20 | 3 | 3 | 2 | 30 | 30 | 25 | 19 | 19 | 16 | 16 | 16 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Buildout+ Project C Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 67 | 1.5 | 0.713 | 20.0 | LOS C | 167 | 0.90 | 1.13 | 19.7 |
| 16T | T | 218 | 1.8 | 0.712 | 12.9 | LOS B | 167 | 0.90 | 1.09 | 22.0 |
| 16R | R | 97 | 2.1 | 0.713 | 14.5 | LOS B | 167 | 0.90 | 1.10 | 21.0 |
| **Approach** | | **382** | **1.8** | **0.711** | **14.6** | **LOS B** | **167** | **0.90** | **1.10** | **21.3** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.455 | 22.9 | LOS C | 90 | 0.88 | 1.04 | 19.4 |
| 6T | T | 119 | 1.7 | 0.452 | 13.3 | LOS B | 90 | 0.88 | 0.99 | 21.7 |
| 6R | R | 72 | 1.4 | 0.452 | 14.6 | LOS B | 90 | 0.88 | 0.98 | 21.0 |
| **Approach** | | **195** | **2.1** | **0.452** | **14.0** | **LOS B** | **90** | **0.88** | **0.99** | **21.4** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 100 | 2.0 | 0.901 | 37.7 | LOS D | 368 | 1.00 | 1.51 | 14.7 |
| 14T | T | 352 | 2.0 | 0.905 | 29.0 | LOS C | 368 | 1.00 | 1.51 | 15.1 |
| 14R | R | 46 | 2.2 | 0.902 | 30.5 | LOS C | 368 | 1.00 | 1.51 | 14.6 |
| **Approach** | | **498** | **2.0** | **0.904** | **30.9** | **LOS C** | **368** | **1.00** | **1.51** | **14.9** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 192 | 2.1 | 0.268 | 11.0 | LOS B | 58 | 0.33 | 0.60 | 24.2 |
| 2T | T | 66 | 1.5 | 0.268 | 2.1 | LOS A | 58 | 0.33 | 0.23 | 29.4 |
| 2R | R | 114 | 1.8 | 0.268 | 2.1 | LOS A | 58 | 0.33 | 0.23 | 29.4 |
| **Approach** | | **371** | **1.9** | **0.268** | **6.7** | **LOS A** | **58** | **0.33** | **0.42** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 698 | 2.0 | 0.587 | 15.7 | LOS B | 156 | 0.73 | 0.88 | 22.5 |
| 18T | T | 308 | 1.9 | 0.587 | 5.6 | LOS A | 156 | 0.72 | 0.65 | 26.3 |
| 18R | R | 203 | 2.0 | 0.587 | 6.7 | LOS A | 156 | 0.72 | 0.71 | 25.7 |
| **Approach** | | **1209** | **2.0** | **0.586** | **11.6** | **LOS B** | **156** | **0.73** | **0.79** | **23.7** |
| **All Vehicles** | | **2655** | **2.0** | **0.905** | **15.1** | **LOS B** | **368** | **0.76** | **0.93** | **21.3** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Buildout+ Project C Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 66 | 1.5 | 0.667 | 18.9 | LOS B | 149 | 0.89 | 1.10 | 20.1 |
| 16T | T | 213 | 1.9 | 0.667 | 11.8 | LOS B | 149 | 0.89 | 1.05 | 22.8 |
| 16R | R | 82 | 2.4 | 0.667 | 13.4 | LOS B | 149 | 0.89 | 1.06 | 21.7 |
| **Approach** | | **360** | **1.9** | **0.667** | **13.4** | **LOS B** | **149** | **0.89** | **1.06** | **21.9** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.455 | 22.1 | LOS C | 86 | 0.88 | 1.03 | 19.7 |
| 6T | T | 119 | 1.7 | 0.441 | 12.5 | LOS B | 86 | 0.88 | 0.97 | 22.3 |
| 6R | R | 72 | 1.4 | 0.441 | 13.8 | LOS B | 86 | 0.88 | 0.97 | 21.5 |
| **Approach** | | **195** | **2.1** | **0.440** | **13.2** | **LOS B** | **86** | **0.88** | **0.97** | **21.9** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 103 | 1.9 | 0.936 | 39.9 | LOS D | 441 | 1.00 | 1.61 | 14.3 |
| 14T | T | 412 | 1.9 | 0.936 | 31.2 | LOS C | 441 | 1.00 | 1.61 | 14.4 |
| 14R | R | 45 | 2.2 | 0.938 | 32.7 | LOS C | 441 | 1.00 | 1.61 | 14.0 |
| **Approach** | | **559** | **2.0** | **0.936** | **32.9** | **LOS C** | **441** | **1.00** | **1.61** | **14.4** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 201 | 2.0 | 0.277 | 11.1 | LOS B | 61 | 0.34 | 0.60 | 24.1 |
| 2T | T | 67 | 1.5 | 0.277 | 2.1 | LOS A | 61 | 0.34 | 0.23 | 29.4 |
| 2R | R | 116 | 1.7 | 0.277 | 2.1 | LOS A | 61 | 0.34 | 0.23 | 29.4 |
| **Approach** | | **383** | **1.8** | **0.277** | **6.8** | **LOS A** | **61** | **0.34** | **0.43** | **26.1** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 568 | 1.9 | 0.582 | 15.9 | LOS B | 155 | 0.74 | 0.90 | 22.4 |
| 18T | T | 414 | 1.9 | 0.583 | 5.8 | LOS A | 155 | 0.73 | 0.66 | 26.2 |
| 18R | R | 203 | 2.0 | 0.582 | 6.8 | LOS A | 155 | 0.73 | 0.72 | 25.6 |
| **Approach** | | **1184** | **1.9** | **0.582** | **10.8** | **LOS B** | **155** | **0.73** | **0.79** | **23.9** |
| **All Vehicles** | | **2681** | **1.9** | **0.938** | **15.4** | **LOS B** | **441** | **0.76** | **0.96** | **21.0** |

Symbols which may appear in this table:

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.2 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.2 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 1.0 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 1.0 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.7 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.7 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.5 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.5 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 1.0 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 1.0 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.6 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.6 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.1 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.1 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.9 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.9 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.7 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.7 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.4 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.4 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 0.9 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 0.9 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 5.2 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 5.2 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.6 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.6 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.6 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.6 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.5 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.5 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 1.0 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 1.0 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 1.0 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 1.0 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.3 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.3 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.7 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.7 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.9 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.9 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.4 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.4 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.3 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.3 |

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 4.9 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 4.9 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.5 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.5 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.4 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.4 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 1.0 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 1.0 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 0.9 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 0.9 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.2 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.2 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.8 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.8 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.2 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.2 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.2 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.2 |

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.8 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.8 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 8.3 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 8.3 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.1 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.1 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.3 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.3 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.2 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.2 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 5.2 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 5.2 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.6 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.6 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.9 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.9 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.4 |





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.7 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.7 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 7.9 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 7.9 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.0 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.0 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.1 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.1 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 5.0 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 5.0 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.5 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.5 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.8 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.8 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.2 |

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.4 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.4 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.4 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.3 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.3 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.8 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.8 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 8.3 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 8.3 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.3 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.3 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 86.9 |





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.2 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.2 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.2 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.2 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.2 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.7 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.7 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 7.8 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 7.8 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 82.1 |

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt D

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 291.00 | 262.00 | 291 | 262 | 553 | 13.1 |
| | Zone 38 Subtotal | | | | | 291 | 262 | 553 | 13.1 |
| TOTAL | | | | | | 291 | 262 | 553 | 13.1 |





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt D

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 448.00 | 354.00 | 448 | 354 | 802 | 17.9 |
| | Zone 38 Subtotal | | | | | 448 | 354 | 802 | 17.9 |
| TOTAL | | | | | | 448 | 354 | 802 | 17.9 |

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 Critical Vol./Cap.(X): 0.495
Loss Time (sec): 4 (Y+R=4.0 sec) Average Delay (sec/veh): 13.3
Optimal Cycle: 22 Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 47 | 317 | 71 | 34 | 212 | 15 | 16 | 35 | 69 | 109 | 36 | 38 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 52 | 349 | 78 | 37 | 233 | 17 | 18 | 39 | 76 | 120 | 40 | 42 |
| Added Vol: | 74 | 101 | 85 | 21 | 77 | 0 | 0 | 14 | 69 | 103 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 126 | 450 | 163 | 58 | 310 | 17 | 18 | 53 | 145 | 223 | 54 | 70 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 126 | 450 | 163 | 58 | 310 | 17 | 18 | 53 | 145 | 223 | 54 | 70 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 126 | 450 | 163 | 58 | 310 | 17 | 18 | 53 | 145 | 223 | 54 | 70 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 126 | 450 | 163 | 58 | 310 | 17 | 18 | 53 | 145 | 223 | 54 | 70 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.75 | 0.75 | 0.85 | 0.78 | 0.78 | 0.78 | 0.88 | 0.88 | 0.88 | 0.69 | 0.69 | 0.69 |
| Lanes: | 0.44 | 1.56 | 1.00 | 0.30 | 1.61 | 0.09 | 0.08 | 0.24 | 0.68 | 0.65 | 0.15 | 0.20 |
| Final Sat.: | 619 | 2215 | 1615 | 451 | 2396 | 127 | 137 | 408 | 1126 | 845 | 203 | 265 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.10 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.26 | 0.26 | 0.26 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 |
| Volume/Cap: | 0.50 | 0.50 | 0.25 | 0.32 | 0.32 | 0.32 | 0.24 | 0.24 | 0.24 | 0.50 | 0.50 | 0.50 |
| Delay/Veh: | 15.6 | 15.6 | 13.7 | 14.1 | 14.1 | 14.1 | 8.9 | 8.9 | 8.9 | 10.9 | 10.9 | 10.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 15.6 | 15.6 | 13.7 | 14.1 | 14.1 | 14.1 | 8.9 | 8.9 | 8.9 | 10.9 | 10.9 | 10.9 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 Critical Vol./Cap.(X): 0.475
Loss Time (sec): 4 (Y+R=4.0 sec) Average Delay (sec/veh): 13.1
Optimal Cycle: 21 Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Added Vol: | 74 | 102 | 91 | 21 | 79 | 0 | 0 | 14 | 69 | 111 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 138 | 393 | 190 | 60 | 370 | 17 | 18 | 53 | 133 | 210 | 54 | 67 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 138 | 393 | 190 | 60 | 370 | 17 | 18 | 53 | 133 | 210 | 54 | 67 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 138 | 393 | 190 | 60 | 370 | 17 | 18 | 53 | 133 | 210 | 54 | 67 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 138 | 393 | 190 | 60 | 370 | 17 | 18 | 53 | 133 | 210 | 54 | 67 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.70 | 0.70 | 0.85 | 0.80 | 0.80 | 0.80 | 0.88 | 0.88 | 0.88 | 0.71 | 0.71 | 0.71 |
| Lanes: | 0.52 | 1.48 | 1.00 | 0.27 | 1.65 | 0.08 | 0.09 | 0.26 | 0.65 | 0.64 | 0.16 | 0.20 |
| Final Sat.: | 688 | 1958 | 1615 | 406 | 2504 | 115 | 148 | 434 | 1090 | 850 | 219 | 271 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.20 | 0.20 | 0.12 | 0.15 | 0.15 | 0.15 | 0.12 | 0.12 | 0.12 | 0.25 | 0.25 | 0.25 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.42 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 |
| Volume/Cap: | 0.47 | 0.47 | 0.28 | 0.35 | 0.35 | 0.35 | 0.23 | 0.23 | 0.23 | 0.47 | 0.47 | 0.47 |
| Delay/Veh: | 14.9 | 14.9 | 13.4 | 13.9 | 13.9 | 13.9 | 9.3 | 9.3 | 9.3 | 11.2 | 11.2 | 11.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.9 | 14.9 | 13.4 | 13.9 | 13.9 | 13.9 | 9.3 | 9.3 | 9.3 | 11.2 | 11.2 | 11.2 |
| LOS by Move: | B | B | B | B | B | B | A | A | A | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 3 | 4 | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 4.2 Worst Case Level Of Service: E[ 47.2]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 0 | | 0 1 | 1 0 | 0 | 0 0 | 0 0 | 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Added Vol: | 0 | 259 | 57 | 1 | 249 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 725 | 152 | 47 | 648 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 725 | 152 | 47 | 648 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 725 | 152 | 47 | 648 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 877 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1219 | xxxx | 439 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 779 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 176 | xxxx | 572 |
| Move Cap.: | xxxx | xxxx | xxxxx | 779 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 167 | xxxx | 572 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.64 | xxxx | 0.06 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 3.6 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 58.5 | xxxx | 11.7 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 47.2 | | |
| ApproachLOS: | * | | | * | | | * | | | E | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.1 Worst Case Level Of Service: F[ 51.1]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 0 | | 0 1 | 1 0 | 0 | 0 0 | 0 0 | 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Added Vol: | 0 | 266 | 57 | 1 | 258 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 698 | 135 | 41 | 690 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 698 | 135 | 41 | 690 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 698 | 135 | 41 | 690 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 833 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1193 | xxxx | 417 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 809 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 183 | xxxx | 591 |
| Move Cap.: | xxxx | xxxx | xxxxx | 809 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 175 | xxxx | 591 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.71 | xxxx | 0.07 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 4.3 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 63.9 | xxxx | 11.5 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 51.1 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.604
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 17.9
Optimal Cycle: 32 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 7 | 382 | 52 | 97 | 370 | 2 | 1 | 12 | 15 | 104 | 21 | 178 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 8 | 420 | 57 | 107 | 407 | 2 | 1 | 13 | 17 | 114 | 23 | 196 |
| Added Vol: | 22 | 143 | 241 | 161 | 122 | 12 | 14 | 3 | 26 | 255 | 5 | 160 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 30 | 563 | 298 | 268 | 529 | 14 | 15 | 16 | 43 | 369 | 28 | 356 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 30 | 563 | 298 | 268 | 529 | 14 | 15 | 16 | 43 | 369 | 28 | 356 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 30 | 563 | 298 | 268 | 529 | 14 | 15 | 16 | 43 | 369 | 28 | 356 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 30 | 563 | 298 | 268 | 529 | 14 | 15 | 16 | 43 | 369 | 28 | 356 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.90 | 0.90 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.31 | 0.69 | 1.00 | 1.95 | 0.05 | 0.20 | 0.22 | 0.58 | 1.86 | 0.14 | 1.00 |
| Final Sat.: | 1805 | 2238 | 1185 | 1805 | 3502 | 94 | 355 | 381 | 999 | 3376 | 257 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.25 | 0.25 | 0.15 | 0.15 | 0.15 | 0.04 | 0.04 | 0.04 | 0.11 | 0.11 | 0.22 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.07 | 0.42 | 0.42 | 0.25 | 0.60 | 0.60 | 0.07 | 0.07 | 0.07 | 0.18 | 0.18 | 0.43 |
| Volume/Cap: | 0.25 | 0.60 | 0.60 | 0.60 | 0.25 | 0.25 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.52 |
| Delay/Veh: | 32.2 | 16.6 | 16.6 | 25.7 | 6.7 | 6.7 | 39.9 | 39.9 | 39.9 | 27.9 | 27.9 | 15.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 32.2 | 16.6 | 16.6 | 25.7 | 6.7 | 6.7 | 39.9 | 39.9 | 39.9 | 27.9 | 27.9 | 15.4 |
| LOS by Move: | C | B | B | C | A | A | D | D | D | C | C | B |
| HCM2kAvgQ: | 1 | 8 | 8 | 6 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 6 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.705
Loss Time (sec): 6 (Y+R=4.0 sec) | Average Delay (sec/veh): 26.2
Optimal Cycle: 41 | Level Of Service: C

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Added Vol: | 22 | 143 | 242 | 170 | 122 | 12 | 14 | 3 | 26 | 256 | 5 | 167 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 90 | 149 | 330 | 170 | 130 | 21 | 19 | 258 | 76 | 336 | 235 | 167 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 90 | 149 | 330 | 170 | 130 | 21 | 19 | 258 | 76 | 336 | 235 | 167 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 90 | 149 | 330 | 170 | 130 | 21 | 19 | 258 | 76 | 336 | 235 | 167 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 90 | 149 | 330 | 170 | 130 | 21 | 19 | 258 | 76 | 336 | 235 | 167 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.85 | 0.85 | 0.95 | 0.93 | 0.93 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.72 | 0.28 | 0.05 | 0.73 | 0.22 | 1.18 | 0.82 | 1.00 |
| Final Sat.: | 1805 | 1619 | 1619 | 1805 | 3043 | 492 | 99 | 1344 | 396 | 2171 | 1519 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.05 | 0.09 | 0.20 | 0.09 | 0.04 | 0.04 | 0.19 | 0.19 | 0.19 | 0.15 | 0.15 | 0.10 |
| Crit Moves: | | | **** | **** | | | **** | | | **** | | |
| Green/Cycle: | 0.23 | 0.29 | 0.29 | 0.13 | 0.20 | 0.20 | 0.27 | 0.27 | 0.27 | 0.22 | 0.22 | 0.35 |
| Volume/Cap: | 0.22 | 0.32 | 0.71 | 0.71 | 0.22 | 0.22 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.29 |
| Delay/Veh: | 22.2 | 19.6 | 25.6 | 38.1 | 23.9 | 23.9 | 27.5 | 27.5 | 27.5 | 28.1 | 28.1 | 16.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 22.2 | 19.6 | 25.6 | 38.1 | 23.9 | 23.9 | 27.5 | 27.5 | 27.5 | 28.1 | 28.1 | 16.6 |
| LOS by Move: | C | B | C | D | C | C | C | C | C | C | C | B |
| HCM2kAvgQ: | 2 | 3 | 8 | 5 | 2 | 2 | 8 | 8 | 8 | 7 | 7 | 3 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[ 16.7]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | - T | - R | L | - T | - R | L | - T | - R | L | - T | - R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | 25 | 345 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | 25 | 345 | 0 |
| Added Vol: | 0 | 0 | 0 | 33 | 0 | 53 | 0 | 94 | 312 | 123 | 367 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 37 | 0 | 77 | 0 | 137 | 409 | 148 | 712 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 37 | 0 | 77 | 0 | 137 | 409 | 148 | 712 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 37 | 0 | 77 | 0 | 137 | 409 | 148 | 712 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1077 | 1554 | 356 | xxxx | xxxx | xxxxx | 546 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 217 | 114 | 646 | xxxx | xxxx | xxxxx | 1033 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 193 | 98 | 646 | xxxx | xxxx | xxxxx | 1033 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.19 | 0.00 | 0.12 | xxxx | xxxx | xxxx | 0.14 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 28.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.1 | xxxx | xxxxx |
| LOS by Move: | * | * | * | D | * | * | * | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 646 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.3 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | B | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 16.7 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.4 Worst Case Level Of Service: C[ 15.9]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | - T | - R | L | - T | - R | L | - T | - R | L | - T | - R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | 19 | 176 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | 19 | 176 | 0 |
| Added Vol: | 0 | 0 | 0 | 44 | 0 | 53 | 0 | 99 | 317 | 143 | 375 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 47 | 0 | 76 | 0 | 141 | 434 | 162 | 551 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 47 | 0 | 76 | 0 | 141 | 434 | 162 | 551 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 47 | 0 | 76 | 0 | 141 | 434 | 162 | 551 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 946 | 1450 | 276 | xxxx | xxxx | xxxxx | 575 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 264 | 132 | 728 | xxxx | xxxx | xxxxx | 1008 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 231 | 111 | 728 | xxxx | xxxx | xxxxx | 1008 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.20 | 0.00 | 0.10 | xxxx | xxxx | xxxx | 0.16 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 24.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.3 | xxxx | xxxxx |
| LOS by Move: | * | * | * | C | * | * | * | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 728 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.3 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.5 | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | B | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 15.9 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | C | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 24.7 Worst Case Level Of Service: E[ 39.9]

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 2 | 0 0 | | 0 0 1 | 1 0 | |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | |
| Base Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Added Vol: | 280 | 0 | 153 | 0 | 0 | 0 | 47 | 79 | 0 | 0 | 211 | 51 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 552 | 0 | 208 | 0 | 0 | 0 | 70 | 94 | 0 | 0 | 268 | 57 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 552 | 0 | 208 | 0 | 0 | 0 | 70 | 94 | 0 | 0 | 268 | 57 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 552 | 0 | 208 | 0 | 0 | 0 | 70 | 94 | 0 | 0 | 268 | 57 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 368 | 559 | 47 | xxxx | xxxx | xxxxx | 325 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 611 | 440 | 1019 | xxxx | xxxx | xxxxx | 1246 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 584 | 416 | 1019 | xxxx | xxxx | xxxxx | 1246 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.94 | 0.00 | 0.20 | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.8 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 9.4 | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | 584 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 12.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 51.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 39.9 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | E | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 13.0 Worst Case Level Of Service: C[ 23.2]

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 2 | 0 0 | | 0 0 1 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Added Vol: | 280 | 0 | 195 | 0 | 0 | 0 | 47 | 95 | 0 | 0 | 238 | 57 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 424 | 0 | 222 | 0 | 0 | 0 | 73 | 115 | 0 | 0 | 296 | 65 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 424 | 0 | 222 | 0 | 0 | 0 | 73 | 115 | 0 | 0 | 296 | 65 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 424 | 0 | 222 | 0 | 0 | 0 | 73 | 115 | 0 | 0 | 296 | 65 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 409 | 622 | 58 | xxxx | xxxx | xxxxx | 361 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 576 | 405 | 1003 | xxxx | xxxx | xxxxx | 1209 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 549 | 381 | 1003 | xxxx | xxxx | xxxxx | 1209 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.77 | 0.00 | 0.22 | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.8 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 9.6 | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | 549 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 7.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 30.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | D | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 23.2 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | C | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.5 Worst Case Level Of Service: B[ 15.0]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Added Vol: | 214 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 172 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 246 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 178 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 246 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 178 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 246 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 178 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 180 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 740 | xxxx | 107 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 387 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 335 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.17 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.38 | xxxx | 0.19 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.8 | xxxx | 0.7 | xxxx | xxxx | xxxxx |
| Control Del: | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 22.3 | xxxx | 9.6 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 15.0 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.1 Worst Case Level Of Service: B[ 12.8]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Added Vol: | 248 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 230 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 259 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 240 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 259 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 240 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 259 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 240 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 181 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 748 | xxxx | 106 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 383 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 329 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.18 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.28 | xxxx | 0.25 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.1 | xxxx | 1.0 | xxxx | xxxx | xxxxx |
| Control Del: | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 20.2 | xxxx | 10.0 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 12.8 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 7.2 Worst Case Level Of Service: C[ 21.9]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 183 | 108 | 110 | 0 | 0 | 0 | 0 | 165 | 0 | 97 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 183 | 108 | 147 | 0 | 0 | 0 | 0 | 165 | 0 | 97 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 183 | 108 | 147 | 0 | 0 | 0 | 0 | 165 | 0 | 97 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 225 | 183 | 108 | 147 | 0 | 0 | 0 | 0 | 165 | 0 | 97 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 680 | 680 | 317 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1162 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 420 | 376 | 729 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1162 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 388 | 339 | 729 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.09 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.43 | 0.00 | 0.13 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 469 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 3.4 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 21.9 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 21.9 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 20.0 Worst Case Level Of Service: F[ 60.4]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 282 | 166 | 110 | 0 | 0 | 0 | 0 | 223 | 0 | 131 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 282 | 166 | 147 | 0 | 0 | 0 | 0 | 223 | 0 | 131 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 282 | 166 | 147 | 0 | 0 | 0 | 0 | 223 | 0 | 131 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 196 | 282 | 166 | 147 | 0 | 0 | 0 | 0 | 223 | 0 | 131 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 478 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 816 | 816 | 337 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1095 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 349 | 314 | 710 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1095 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 304 | 261 | 710 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.15 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.73 | 0.00 | 0.18 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 386 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 9.7 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 60.4 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 60.4 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[ 14.9]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1! | 0 0 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 313 | 0 | 0 | 330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 379 | 16 | 2 | 365 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 379 | 16 | 2 | 365 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 379 | 16 | 2 | 365 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 395 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 756 | 756 | 387 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1175 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 379 | 340 | 665 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1175 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 378 | 339 | 665 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.07 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 395 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.2 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 14.9 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | B | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 14.9 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[ 10.9]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Added Vol: | 0 | 412 | 0 | 0 | 388 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 449 | 2 | 1 | 424 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 449 | 2 | 1 | 424 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 449 | 2 | 1 | 424 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 451 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 450 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1120 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 613 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1120 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 613 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.9 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 10.9 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[ 18.5]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm | | | | | | | | | | | | | | | | |
| Base Vol: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Initial Bse: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 | | | | |
| Added Vol: | 77 | 321 | 0 | 0 | 252 | 9 | 10 | 0 | 71 | 0 | 0 | 0 | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Initial Fut: | 254 | 664 | 0 | 0 | 387 | 56 | 43 | 0 | 142 | 0 | 0 | 0 | | | | |
| User Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Volume: | 279 | 730 | 0 | 0 | 426 | 62 | 47 | 0 | 156 | 0 | 0 | 0 | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| FinalVolume: | 279 | 730 | 0 | 0 | 426 | 62 | 47 | 0 | 156 | 0 | 0 | 0 | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 487 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1731 | 1731 | 426 | xxxx | xxxx | xxxxx | | | | |
| Potent Cap.: | 1086 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 91 | 83 | 633 | xxxx | xxxx | xxxxx | | | | |
| Move Cap.: | 1086 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 73 | 62 | 633 | xxxx | xxxx | xxxxx | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 155 | 138 | xxxxx | 76 | 120 | xxxxx | | | | |
| Volume/Cap: | 0.26 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.31 | 0.00 | 0.25 | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx | | | | |
| Control Del: | 9.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 12.5 | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 155 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 1.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 38.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | * | * | * | * | * | * | E | * | * | * | * | * | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 18.5 | | | xxxxxx | | | | | | |
| ApproachLOS: | * | | | * | | | C | | | * | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 3.8 Worst Case Level Of Service: C[ 16.5]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Volume Module: | | | | | | | | | | | | | | | | |
| Base Vol: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Initial Bse: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 | | | | |
| Added Vol: | 80 | 322 | 0 | 0 | 252 | 9 | 10 | 0 | 73 | 0 | 0 | 0 | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Initial Fut: | 204 | 561 | 0 | 0 | 491 | 49 | 50 | 0 | 197 | 0 | 0 | 0 | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Volume: | 204 | 561 | 0 | 0 | 491 | 49 | 50 | 0 | 197 | 0 | 0 | 0 | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| FinalVolume: | 204 | 561 | 0 | 0 | 491 | 49 | 50 | 0 | 197 | 0 | 0 | 0 | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 540 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1460 | 1460 | 491 | xxxx | xxxx | xxxxx | | | | |
| Potent Cap.: | 1039 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 144 | 130 | 582 | xxxx | xxxx | xxxxx | | | | |
| Move Cap.: | 1039 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 122 | 105 | 582 | xxxx | xxxx | xxxxx | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 230 | 205 | xxxxx | 90 | 178 | xxxxx | | | | |
| Volume/Cap: | 0.20 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.22 | 0.00 | 0.34 | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.5 | xxxx | xxxx | xxxxx | | | | |
| Control Del: | 9.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 14.3 | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 230 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 24.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | * | * | * | * | * | * | C | * | * | * | * | * | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 16.5 | | | xxxxxx | | | | | | |
| ApproachLOS: | * | | | * | | | C | | | * | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 35.3 Worst Case Level Of Service: F[ 65.9]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 258 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 313 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 452 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 765 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 452 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 765 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 159 | 187 | 452 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 765 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp:xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | |
| FollowUpTim:xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 294 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1261 | xxxx | 196 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 181 | xxxx | 814 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1224 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 129 | xxxx | 814 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.37 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.15 | xxxx | 0.94 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.7 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.8 | xxxx | 14.2 |
| Control Del:xxxxx | xxxx | xxxxx | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 192.1 | xxxx | 41.3 | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | E |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue:xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| Shrd ConDel:xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 65.9 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 29.2 Worst Case Level Of Service: F[ 58.3]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 262 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 316 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 542 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 661 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 542 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 661 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 122 | 175 | 542 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 661 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp:xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | |
| FollowUpTim:xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 297 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1421 | xxxx | 210 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 152 | xxxx | 836 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 101 | xxxx | 836 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.42 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.23 | xxxx | 0.79 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 8.5 | xxxx | 8.2 |
| Control Del:xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 242.5 | xxxx | 23.5 | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | C |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue:xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| Shrd ConDel:xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 58.3 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.979
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 57.8
Optimal Cycle: 180 Level Of Service: E

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 0 | 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 258 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 313 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 452 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 765 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 452 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 765 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 159 | 187 | 452 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 765 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 159 | 187 | 452 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 765 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.93 | 0.93 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.46 | 0.54 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 809 | 952 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1480 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.20 | 0.20 | 0.25 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.47 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.20 | 0.20 | 0.26 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.48 | 0.00 | 0.48 |
| Volume/Cap: | 0.00 | 0.98 | 0.98 | 0.98 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.98 |
| Delay/Veh: | 0.0 | 81.9 | 81.9 | 73.3 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 52.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 81.9 | 81.9 | 73.3 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 0.0 | 52.3 |
| LOS by Move: | A | F | F | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 27 | 27 | 33 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 48 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.936
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 49.6
Optimal Cycle: 119 Level Of Service: D

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 0 | 0 | 0 | 0 0 | 1 | 0 | 0 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 262 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 316 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 542 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 661 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 542 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 661 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 122 | 175 | 542 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 661 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 122 | 175 | 542 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 661 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.92 | 0.92 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.41 | 0.59 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 718 | 1030 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1490 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.17 | 0.17 | 0.30 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.41 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.18 | 0.18 | 0.32 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.44 | 0.00 | 0.44 |
| Volume/Cap: | 0.00 | 0.94 | 0.94 | 0.94 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.94 |
| Delay/Veh: | 0.0 | 74.3 | 74.3 | 55.7 | 13.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 46.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 74.3 | 74.3 | 55.7 | 13.3 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 46.5 |
| LOS by Move: | A | E | E | E | B | A | A | A | A | B | A | D |
| HCM2k95thQ: | 0 | 23 | 23 | 35 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 40 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 101.1 Worst Case Level Of Service: F[957.3]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 307 | 457 | 389 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 413 | 473 | 818 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 413 | 473 | 818 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 413 | 473 | 818 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2197 | 2403 | 818 | xxxx | xxxx | xxxxx | 639 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 50 | 34 | 379 | xxxx | xxxx | xxxxx | 955 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 31 | 17 | 379 | xxxx | xxxx | xxxxx | 955 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 4.12 | 0.00 | 0.25 | xxxx | xxxx | xxxx | 0.50 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx | 2.8 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 17.6 | xxxxx | xxxx | xxxxx | 12.4 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | B | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 31 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 15.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 1666 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 957.3 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 115.3 Worst Case Level Of Service: F[1079.5]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 311 | 512 | 392 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 512 | 513 | 691 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 512 | 513 | 691 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 512 | 513 | 691 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2223 | 2479 | 691 | xxxx | xxxx | xxxxx | 762 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 48 | 30 | 448 | xxxx | xxxx | xxxxx | 859 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 25 | 12 | 448 | xxxx | xxxx | xxxxx | 859 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 4.78 | 0.00 | 0.24 | xxxx | xxxx | xxxx | 0.60 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.9 | xxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 15.5 | xxxxx | xxxx | xxxxx | 15.2 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | C | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 25 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 15.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 2012 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 1079.5 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.770 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 22.3 |
| Optimal Cycle: | 52 | Level Of Service: | C |

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 0 | 0 | 0 | 1 0 | 1 | 0 | 0 1 | 0 | 1 | 0 1 | 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 307 | 457 | 389 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 413 | 473 | 818 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 413 | 473 | 818 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 413 | 473 | 818 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 413 | 473 | 818 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.35 | 0.65 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 614 | 1121 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.06 | 0.00 | 0.37 | 0.37 | 0.26 | 0.43 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.12 | 0.00 | 0.48 | 0.48 | 0.34 | 0.82 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.77 | 0.00 | 0.49 | 0.00 | 0.77 | 0.77 | 0.77 | 0.53 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 62.4 | 0.0 | 42.9 | 0.0 | 26.0 | 26.0 | 35.4 | 3.2 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 62.4 | 0.0 | 42.9 | 0.0 | 26.0 | 26.0 | 35.4 | 3.2 | 0.0 |
| LOS by Move: | A | A | A | E | A | D | A | C | C | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 11 | 0 | 7 | 0 | 30 | 30 | 22 | 14 | 0 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.868 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 28.9 |
| Optimal Cycle: | 78 | Level Of Service: | C |

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 0 | 0 | 0 | 1 0 | 1 | 0 | 0 1 | 0 | 1 | 0 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 126 | 311 | 512 | 392 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 512 | 513 | 691 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 512 | 513 | 691 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 512 | 513 | 691 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 512 | 513 | 691 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.91 | 0.91 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.33 | 0.67 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 567 | 1160 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.07 | 0.00 | 0.44 | 0.44 | 0.28 | 0.36 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.10 | 0.00 | 0.51 | 0.51 | 0.33 | 0.84 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.87 | 0.00 | 0.64 | 0.00 | 0.87 | 0.87 | 0.87 | 0.43 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 84.0 | 0.0 | 51.1 | 0.0 | 30.8 | 30.8 | 44.5 | 2.3 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 84.0 | 0.0 | 51.1 | 0.0 | 30.8 | 30.8 | 44.5 | 2.3 | 0.0 |
| LOS by Move: | A | A | A | F | A | D | A | C | C | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 12 | 0 | 8 | 0 | 39 | 39 | 25 | 10 | 0 |

Note: Queue reported is the number of cars per lane.

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SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### PM Buildout + Project D Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 639 | 2.0 | 0.493 | 12.0 | LOS B | 135 | 0.54 | 0.64 | 23.4 |
| 6T | T | 720 | 1.9 | 0.464 | 2.5 | LOS A | 128 | 0.49 | 0.27 | 28.1 |
| **Approach** | | **1359** | **2.0** | **0.493** | **6.9** | **LOS A** | **135** | **0.51** | **0.44** | **25.4** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 134 | 2.2 | 0.428 | 18.0 | LOS B | 73 | 0.80 | 0.99 | 21.5 |
| 14T | T | 17 | 5.6 | 0.429 | 8.2 | LOS A | 73 | 0.80 | 0.88 | 25.5 |
| 14R | R | 83 | 2.4 | 0.428 | 9.9 | LOS A | 73 | 0.80 | 0.92 | 24.1 |
| **Approach** | | **235** | **2.6** | **0.428** | **14.4** | **LOS B** | **73** | **0.80** | **0.95** | **22.4** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 167 | 1.8 | 0.301 | 14.3 | LOS B | 52 | 0.81 | 0.84 | 22.5 |
| 12T | T | 308 | 1.9 | 0.445 | 6.4 | LOS A | 119 | 0.90 | 0.70 | 25.3 |
| 12R | R | 121 | 1.7 | 0.445 | 8.2 | LOS A | 119 | 0.90 | 0.81 | 24.4 |
| **Approach** | | **596** | **1.8** | **0.445** | **9.0** | **LOS A** | **119** | **0.87** | **0.76** | **24.2** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 167 | 1.8 | 0.621 | 21.3 | LOS C | 156 | 0.89 | 1.11 | 19.6 |
| 18T | T | 71 | 1.4 | 0.619 | 12.9 | LOS B | 156 | 0.89 | 1.06 | 22.0 |
| 18R | R | 126 | 2.4 | 0.620 | 14.5 | LOS B | 156 | 0.89 | 1.06 | 21.0 |
| **Approach** | | **364** | **1.9** | **0.621** | **17.3** | **LOS B** | **156** | **0.89** | **1.08** | **20.4** |
| **All Vehicles** | | **2554** | **2.0** | **0.621** | **9.6** | **LOS A** | **156** | **0.68** | **0.65** | **24.0** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### WKD Buildout+Project D Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 656 | 2.0 | 0.408 | 11.6 | LOS B | 109 | 0.41 | 0.60 | 23.8 |
| 6T | T | 612 | 2.0 | 0.451 | 2.5 | LOS A | 121 | 0.46 | 0.27 | 28.4 |
| **Approach** | | **1267** | **2.0** | **0.451** | **7.2** | **LOS A** | **121** | **0.43** | **0.44** | **25.5** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 128 | 2.3 | 0.393 | 16.7 | LOS B | 63 | 0.75 | 0.95 | 22.1 |
| 14T | T | 18 | 5.3 | 0.396 | 6.9 | LOS A | 63 | 0.75 | 0.79 | 26.2 |
| 14R | R | 94 | 2.1 | 0.393 | 8.6 | LOS A | 63 | 0.75 | 0.87 | 25.1 |
| **Approach** | | **242** | **2.5** | **0.393** | **12.8** | **LOS B** | **63** | **0.75** | **0.91** | **23.3** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 186 | 2.1 | 0.330 | 14.6 | LOS B | 57 | 0.81 | 0.85 | 22.3 |
| 12T | T | 385 | 2.1 | 0.529 | 8.1 | LOS A | 165 | 0.92 | 0.90 | 25.1 |
| 12R | R | 134 | 2.2 | 0.530 | 10.0 | LOS A | 165 | 0.92 | 0.92 | 24.0 |
| **Approach** | | **707** | **2.1** | **0.530** | **10.2** | **LOS B** | **165** | **0.89** | **0.89** | **24.0** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 128 | 2.3 | 0.608 | 23.5 | LOS C | 151 | 0.91 | 1.13 | 18.7 |
| 18T | T | 61 | 1.6 | 0.610 | 15.1 | LOS B | 151 | 0.91 | 1.09 | 20.7 |
| 18R | R | 123 | 1.6 | 0.609 | 16.7 | LOS B | 151 | 0.91 | 1.08 | 19.8 |
| **Approach** | | **313** | **1.9** | **0.608** | **19.2** | **LOS B** | **151** | **0.91** | **1.10** | **19.4** |
| **All Vehicles** | | **2529** | **2.1** | **0.610** | **10.0** | **LOS B** | **165** | **0.65** | **0.69** | **24.0** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 341.0 Worst Case Level Of Service: F[683.0]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 435 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 555 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 453 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 629 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 453 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 629 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 663 | 0 | 453 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 629 | 142 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1167 | 1238 | 237 | xxxx | xxxx | xxxxx | 771 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 216 | 177 | 807 | xxxx | xxxx | xxxxx | 853 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 194 | 153 | 807 | xxxx | xxxx | xxxxx | 853 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.42 | 0.00 | 0.56 | xxxx | xxxx | xxxx | 0.13 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 3.6 | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 15.0 | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | C | * | * | * | A | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 194 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 62.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1139 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 683.0 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 252.2 Worst Case Level Of Service: F[522.2]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 534 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 613 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 545 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 670 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 545 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 670 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 540 | 6 | 545 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 670 | 138 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1233 | 1302 | 236 | xxxx | xxxx | xxxxx | 808 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 197 | 162 | 808 | xxxx | xxxx | xxxxx | 826 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 174 | 137 | 808 | xxxx | xxxx | xxxxx | 826 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.11 | 0.04 | 0.67 | xxxx | xxxx | xxxx | 0.16 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 5.3 | xxxx | xxxx | xxxxx | 0.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 18.2 | xxxxx | xxxx | xxxxx | 10.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | C | * | * | * | B | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | 173 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 50.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1025 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 522.2 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 1.036 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 59.2 |
| Optimal Cycle: | 180 | Level Of Service: | E |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 435 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 555 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 453 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 629 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 453 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 629 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 663 | 0 | 453 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 629 | 142 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 663 | 0 | 453 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 629 | 142 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.82 | 0.18 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1511 | 341 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.49 | 0.00 | 0.28 | 0.00 | 0.00 | 0.00 | 0.06 | 0.12 | 0.00 | 0.00 | 0.42 | 0.42 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.48 | 0.00 | 0.48 | 0.00 | 0.00 | 0.00 | 0.06 | 0.46 | 0.00 | 0.00 | 0.40 | 0.40 |
| Volume/Cap: | 1.04 | 0.00 | 0.59 | 0.00 | 0.00 | 0.00 | 1.04 | 0.27 | 0.00 | 0.00 | 1.04 | 1.04 |
| Delay/Veh: | 71.3 | 0.0 | 20.4 | 0.0 | 0.0 | 0.0 | 142.3 | 16.6 | 0.0 | 0.0 | 72.5 | 72.5 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 71.3 | 0.0 | 20.4 | 0.0 | 0.0 | 0.0 | 142.3 | 16.6 | 0.0 | 0.0 | 72.5 | 72.5 |
| LOS by Move: | E | A | C | A | A | A | F | B | A | A | E | E |
| HCM2k95thQ: | 47 | 0 | 19 | 0 | 0 | 0 | 9 | 8 | 0 | 0 | 47 | 47 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.902 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 39.2 |
| Optimal Cycle: | 94 | Level Of Service: | D |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 534 | 0 | 0 | 0 | 52 | 195 | 0 | 0 | 613 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 545 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 670 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 545 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 670 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 540 | 6 | 545 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 670 | 138 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 540 | 6 | 545 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 670 | 138 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.92 | 0.92 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 0.99 | 0.01 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.83 | 0.17 |
| Final Sat.: | 1723 | 19 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1539 | 317 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.31 | 0.31 | 0.34 | 0.00 | 0.00 | 0.00 | 0.07 | 0.12 | 0.00 | 0.00 | 0.44 | 0.44 |
| Crit Moves: | | | **** | | | | **** | | | | **** | |
| Green/Cycle: | 0.38 | 0.38 | 0.38 | 0.00 | 0.00 | 0.00 | 0.08 | 0.56 | 0.00 | 0.00 | 0.48 | 0.48 |
| Volume/Cap: | 0.83 | 0.83 | 0.90 | 0.00 | 0.00 | 0.00 | 0.90 | 0.22 | 0.00 | 0.00 | 0.90 | 0.90 |
| Delay/Veh: | 36.8 | 36.8 | 46.1 | 0.0 | 0.0 | 0.0 | 92.8 | 11.1 | 0.0 | 0.0 | 35.9 | 35.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 36.8 | 36.8 | 46.1 | 0.0 | 0.0 | 0.0 | 92.8 | 11.1 | 0.0 | 0.0 | 35.9 | 35.9 |
| LOS by Move: | D | D | D | A | A | A | F | B | A | A | D | D |
| HCM2k95thQ: | 30 | 30 | 33 | 0 | 0 | 0 | 8 | 7 | 0 | 0 | 38 | 38 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 4888.2 Worst Case Level Of Service: F[11883.9]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 304 | 277 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 351 | 326 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 351 | 326 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 351 | 326 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 416 | xxxx | xxxxx | 92 | xxxx | xxxxx | 1024 | 935 | 241 | 1115 | 1109 | 91 |
| Potent Cap.: | 1154 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 216 | 268 | 803 | 187 | 212 | 973 |
| Move Cap.: | 1154 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 13 | 190 | 803 | 46 | 150 | 973 |
| Volume/Cap: | 0.23 | xxxx | xxxx | 0.02 | xxxx | xxxx | 25.78 | 0.71 | 0.29 | 0.09 | 0.99 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.9 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.1 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 26 | xxxxx | xxxx | 167 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 86.0 | xxxxx | xxxxx | 9.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 157 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 157.3 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 362 | 376 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 404 | 413 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 404 | 413 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 404 | 413 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 472 | xxxx | xxxxx | 78 | xxxx | xxxxx | 1027 | 938 | 270 | 1119 | 1139 | 77 |
| Potent Cap.: | 1100 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 215 | 266 | 774 | 186 | 203 | 990 |
| Move Cap.: | 1100 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 0 | 187 | 774 | 44 | 143 | 990 |
| Volume/Cap: | 0.24 | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | 0.72 | 0.30 | 0.09 | 1.04 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.9 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.3 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx | xxxx | 159 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.1 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 178 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 178.2 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.774 |
| Loss Time (sec): | 8 (Y+R=4.0 sec) | Average Delay (sec/veh): | 40.9 |
| Optimal Cycle: | 60 | Level Of Service: | D |

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 304 | 277 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 351 | 326 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 351 | 326 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 271 | 89 | 3 | 30 | 65 | 351 | 326 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 351 | 326 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 1.00 | 1.00 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.97 | 0.03 | 1.00 | 0.16 | 0.84 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1829 | 62 | 1805 | 259 | 1400 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.05 | 0.05 | 0.02 | 0.25 | 0.25 | 0.18 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.19 | 0.39 | 0.39 | 0.13 | 0.32 | 0.32 | 0.27 | 0.27 | 0.27 | 0.13 | 0.13 | 0.13 |
| Volume/Cap: | 0.77 | 0.13 | 0.13 | 0.13 | 0.77 | 0.77 | 0.66 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 |
| Delay/Veh: | 48.6 | 19.9 | 19.9 | 38.6 | 37.4 | 37.4 | 35.5 | 41.4 | 41.4 | 56.7 | 56.7 | 56.7 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 48.6 | 19.9 | 19.9 | 38.6 | 37.4 | 37.4 | 35.5 | 41.4 | 41.4 | 56.7 | 56.7 | 56.7 |
| LOS by Move: | D | B | B | D | D | D | D | D | D | E | E | E |
| HCM2k95thQ: | 18 | 4 | 4 | 2 | 24 | 24 | 17 | 20 | 20 | 14 | 14 | 14 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative D (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.826 |
| Loss Time (sec): | 8 (Y+R=4.0 sec) | Average Delay (sec/veh): | 45.0 |
| Optimal Cycle: | 72 | Level Of Service: | D |

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 362 | 376 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 404 | 413 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 404 | 413 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 265 | 75 | 3 | 30 | 68 | 404 | 413 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 404 | 413 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.99 | 0.99 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.96 | 0.04 | 1.00 | 0.14 | 0.86 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1816 | 73 | 1805 | 239 | 1418 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.04 | 0.04 | 0.02 | 0.28 | 0.28 | 0.23 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | **** | | | **** | | |
| Green/Cycle: | 0.18 | 0.37 | 0.37 | 0.15 | 0.34 | 0.34 | 0.28 | 0.28 | 0.28 | 0.12 | 0.12 | 0.12 |
| Volume/Cap: | 0.83 | 0.11 | 0.11 | 0.11 | 0.83 | 0.83 | 0.83 | 0.76 | 0.76 | 0.83 | 0.83 | 0.83 |
| Delay/Veh: | 55.7 | 20.6 | 20.6 | 36.9 | 39.7 | 39.7 | 44.8 | 40.4 | 40.4 | 64.6 | 64.6 | 64.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 55.7 | 20.6 | 20.6 | 36.9 | 39.7 | 39.7 | 44.8 | 40.4 | 40.4 | 64.6 | 64.6 | 64.6 |
| LOS by Move: | E | C | C | D | D | D | D | D | D | E | E | E |
| HCM2k95thQ: | 19 | 3 | 3 | 2 | 27 | 27 | 23 | 20 | 20 | 15 | 15 | 15 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Buildout+ Project D Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 67 | 1.5 | 0.691 | 19.2 | LOS B | 159 | 0.89 | 1.11 | 20.0 |
| 16T | T | 218 | 1.8 | 0.692 | 12.1 | LOS B | 159 | 0.89 | 1.06 | 22.6 |
| 16R | R | 97 | 2.1 | 0.693 | 13.7 | LOS B | 159 | 0.89 | 1.08 | 21.5 |
| **Approach** | | **382** | **1.8** | **0.692** | **13.7** | **LOS B** | **159** | **0.89** | **1.08** | **21.8** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.455 | 22.2 | LOS C | 86 | 0.88 | 1.03 | 19.6 |
| 6T | T | 119 | 1.7 | 0.439 | 12.7 | LOS B | 86 | 0.88 | 0.97 | 22.2 |
| 6R | R | 72 | 1.4 | 0.438 | 13.9 | LOS B | 86 | 0.88 | 0.97 | 21.4 |
| **Approach** | | **195** | **2.1** | **0.439** | **13.4** | **LOS B** | **86** | **0.88** | **0.97** | **21.8** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 100 | 2.0 | 0.847 | 32.2 | LOS C | 298 | 0.97 | 1.38 | 16.1 |
| 14T | T | 323 | 1.9 | 0.850 | 23.5 | LOS C | 298 | 0.97 | 1.37 | 16.9 |
| 14R | R | 46 | 2.2 | 0.852 | 25.1 | LOS C | 298 | 0.97 | 1.37 | 16.3 |
| **Approach** | | **469** | **1.9** | **0.850** | **25.5** | **LOS C** | **298** | **0.97** | **1.37** | **16.6** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 192 | 2.1 | 0.268 | 11.0 | LOS B | 58 | 0.33 | 0.60 | 24.2 |
| 2T | T | 66 | 1.5 | 0.267 | 2.1 | LOS A | 58 | 0.33 | 0.23 | 29.5 |
| 2R | R | 114 | 1.8 | 0.268 | 2.1 | LOS A | 58 | 0.33 | 0.23 | 29.5 |
| **Approach** | | **371** | **1.9** | **0.268** | **6.7** | **LOS A** | **58** | **0.33** | **0.42** | **26.2** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 698 | 2.0 | 0.569 | 15.5 | LOS B | 146 | 0.72 | 0.87 | 22.6 |
| 18T | T | 273 | 1.8 | 0.569 | 5.4 | LOS A | 146 | 0.71 | 0.62 | 26.4 |
| 18R | R | 203 | 2.0 | 0.569 | 6.5 | LOS A | 146 | 0.71 | 0.70 | 25.8 |
| **Approach** | | **1173** | **2.0** | **0.569** | **11.6** | **LOS B** | **146** | **0.72** | **0.78** | **23.7** |
| **All Vehicles** | | **2590** | **1.9** | **0.852** | **13.9** | **LOS B** | **298** | **0.74** | **0.89** | **22.0** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Buildout+ Project D Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 66 | 1.5 | 0.647 | 18.2 | LOS B | 142 | 0.87 | 1.08 | 20.5 |
| 16T | T | 213 | 1.9 | 0.648 | 11.1 | LOS B | 142 | 0.87 | 1.03 | 23.2 |
| 16R | R | 82 | 2.4 | 0.651 | 12.7 | LOS B | 142 | 0.87 | 1.05 | 22.2 |
| **Approach** | | **360** | **1.9** | **0.648** | **12.7** | **LOS B** | **142** | **0.87** | **1.04** | **22.4** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.417 | 21.4 | LOS C | 82 | 0.87 | 1.02 | 19.9 |
| 6T | T | 119 | 1.7 | 0.427 | 11.9 | LOS B | 82 | 0.87 | 0.96 | 22.7 |
| 6R | R | 72 | 1.4 | 0.425 | 13.1 | LOS B | 82 | 0.87 | 0.95 | 21.9 |
| **Approach** | | **195** | **2.1** | **0.426** | **12.6** | **LOS B** | **82** | **0.87** | **0.96** | **22.3** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 103 | 1.9 | 0.880 | 33.3 | LOS C | 351 | 0.99 | 1.45 | 15.8 |
| 14T | T | 380 | 2.1 | 0.884 | 24.5 | LOS C | 351 | 0.99 | 1.45 | 16.5 |
| 14R | R | 45 | 2.2 | 0.882 | 26.1 | LOS C | 351 | 0.99 | 1.45 | 16.0 |
| **Approach** | | **528** | **2.1** | **0.883** | **26.3** | **LOS C** | **351** | **0.99** | **1.45** | **16.3** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 201 | 2.0 | 0.277 | 11.1 | LOS B | 61 | 0.33 | 0.60 | 24.1 |
| 2T | T | 67 | 1.5 | 0.277 | 2.1 | LOS A | 61 | 0.33 | 0.23 | 29.4 |
| 2R | R | 116 | 1.7 | 0.277 | 2.1 | LOS A | 61 | 0.33 | 0.23 | 29.4 |
| **Approach** | | **383** | **1.8** | **0.277** | **6.8** | **LOS A** | **61** | **0.33** | **0.43** | **26.1** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 568 | 1.9 | 0.564 | 15.7 | LOS B | 145 | 0.73 | 0.88 | 22.6 |
| 18T | T | 376 | 2.1 | 0.564 | 5.6 | LOS A | 145 | 0.72 | 0.63 | 26.3 |
| 18R | R | 203 | 2.0 | 0.564 | 6.6 | LOS A | 145 | 0.72 | 0.71 | 25.7 |
| **Approach** | | **1147** | **2.0** | **0.564** | **10.8** | **LOS B** | **145** | **0.72** | **0.77** | **24.0** |
| **All Vehicles** | | **2613** | **2.0** | **0.884** | **13.7** | **LOS B** | **351** | **0.75** | **0.91** | **21.9** |

Symbols which may appear in this table:

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.2 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.2 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.9 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.9 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.7 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.7 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.5 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.5 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 0.9 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 0.9 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Existing

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 1.00 | TAZ 2 | 25.00 | 26.00 | 25 | 26 | 51 | 1.2 |
| | Zone 2 Subtotal | | | | | 25 | 26 | 51 | 1.2 |
| 3 | | 1.00 | TAZ 3 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 3 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 5 | | 1.00 | TAZ 5 | 6.00 | 3.00 | 6 | 3 | 9 | 0.2 |
| | Zone 5 Subtotal | | | | | 6 | 3 | 9 | 0.2 |
| 6 | | 1.00 | TAZ 6 | 27.00 | 14.00 | 27 | 14 | 41 | 0.9 |
| | Zone 6 Subtotal | | | | | 27 | 14 | 41 | 0.9 |
| 7 | Jefferson Sp | 1.00 | TAZ 7 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 7 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 8 | 12.4 (2/10) | 1.00 | TAZ 8 | 14.00 | 16.00 | 14 | 16 | 30 | 0.7 |
| | Zone 8 Subtotal | | | | | 14 | 16 | 30 | 0.7 |
| 9 | 12.4 (3/10) | 1.00 | TAZ 9 | 2.00 | 2.00 | 2 | 2 | 4 | 0.1 |
| | Zone 9 Subtotal | | | | | 2 | 2 | 4 | 0.1 |
| 12 | Tall Trees | 1.00 | TAZ 12 | 25.00 | 15.00 | 25 | 15 | 40 | 0.9 |
| | Zone 12 Subtotal | | | | | 25 | 15 | 40 | 0.9 |
| 13 | 12.4 (9/10) | 1.00 | TAZ 13 | 13.00 | 7.00 | 13 | 7 | 20 | 0.5 |
| | Zone 13 Subtotal | | | | | 13 | 7 | 20 | 0.5 |
| 14 | Downtown Com | 1.00 | TAZ 14 | 21.00 | 21.00 | 21 | 21 | 42 | 1.0 |
| | Zone 14 Subtotal | | | | | 21 | 21 | 42 | 1.0 |
| 16 | | 1.00 | TAZ 16 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 16 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 17 | | 1.00 | TAZ 17 | 12.00 | 6.00 | 12 | 6 | 18 | 0.4 |
| | Zone 17 Subtotal | | | | | 12 | 6 | 18 | 0.4 |
| 18 | | 1.00 | TAZ 18 | 13.00 | 13.00 | 13 | 13 | 26 | 0.6 |
| | Zone 18 Subtotal | | | | | 13 | 13 | 26 | 0.6 |
| 19 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 19 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 20 | | 1.00 | TAZ 20 | 5.00 | 3.00 | 5 | 3 | 8 | 0.2 |

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 5.0 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 5.0 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.5 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.5 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.4 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.4 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 1.0 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 1.0 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 0.9 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 0.9 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.2 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.2 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.8 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.8 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.3 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.3 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.2 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.2 |

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 20 Subtotal | | | | | 5 | 3 | 8 | 0.2 |
| 22 | | 1.00 | TAZ 22 | 109.00 | 112.00 | 109 | 112 | 221 | 5.0 |
| | Zone 22 Subtotal | | | | | 109 | 112 | 221 | 5.0 |
| 23 | | 1.00 | TAZ 23 | 33.00 | 35.00 | 33 | 35 | 68 | 1.5 |
| | Zone 23 Subtotal | | | | | 33 | 35 | 68 | 1.5 |
| 24 | 24 Vineyard | 1.00 | TAZ 24 | 16.00 | 10.00 | 16 | 10 | 26 | 0.6 |
| | Zone 24 Subtotal | | | | | 16 | 10 | 26 | 0.6 |
| 25 | 25 Westside | 1.00 | TAZ 25 | 15.00 | 9.00 | 15 | 9 | 24 | 0.5 |
| | Zone 25 Subtotal | | | | | 15 | 9 | 24 | 0.5 |
| 26 | | 1.00 | TAZ 26 | 30.00 | 33.00 | 30 | 33 | 63 | 1.4 |
| | Zone 26 Subtotal | | | | | 30 | 33 | 63 | 1.4 |
| 28 | 28 Citrus Ga | 1.00 | TAZ 28 | 23.00 | 20.00 | 23 | 20 | 43 | 1.0 |
| | Zone 28 Subtotal | | | | | 23 | 20 | 43 | 1.0 |
| 29 | | 1.00 | TAZ 29 | 14.00 | 13.00 | 14 | 13 | 27 | 0.6 |
| | Zone 29 Subtotal | | | | | 14 | 13 | 27 | 0.6 |
| 30 | | 1.00 | TAZ 30 | 17.00 | 25.00 | 17 | 25 | 42 | 1.0 |
| | Zone 30 Subtotal | | | | | 17 | 25 | 42 | 1.0 |
| 31 | | 1.00 | TAZ 31 | 46.00 | 51.00 | 46 | 51 | 97 | 2.2 |
| | Zone 31 Subtotal | | | | | 46 | 51 | 97 | 2.2 |
| 33 | | 1.00 | TAZ 33 | 18.00 | 10.00 | 18 | 10 | 28 | 0.6 |
| | Zone 33 Subtotal | | | | | 18 | 10 | 28 | 0.6 |
| 34 | | 1.00 | TAZ 34 | 1.00 | 1.00 | 1 | 1 | 2 | 0.0 |
| | Zone 34 Subtotal | | | | | 1 | 1 | 2 | 0.0 |
| 37 | | 1.00 | TAZ 37 | 54.00 | 27.00 | 54 | 27 | 81 | 1.8 |
| | Zone 37 Subtotal | | | | | 54 | 27 | 81 | 1.8 |
| 38 | Casino Proje | 1.00 | Casino | 0.00 | 0.00 | 0 | 0 | 0 | 0.0 |
| 39 | | 1.00 | TAZ 39 | 72.00 | 73.00 | 72 | 73 | 145 | 3.3 |
| | Zone 39 Subtotal | | | | | 72 | 73 | 145 | 3.3 |
| 40 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 40 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 42 | 42 Rancho de | 1.00 | TAZ 42 | 47.00 | 51.00 | 47 | 51 | 98 | 2.2 |
| | Zone 42 Subtotal | | | | | 47 | 51 | 98 | 2.2 |

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.7 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.7 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 7.9 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 7.9 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.0 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.0 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.1 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.1 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 5.0 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 5.0 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.6 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.6 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.8 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.8 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.2 |





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 43 | | 1.00 | TAZ 43 | 53.00 | 67.00 | 53 | 67 | 120 | 2.7 |
| | Zone 43 Subtotal | | | | | 53 | 67 | 120 | 2.7 |
| 44 | | 1.00 | TAZ 44 | 167.00 | 185.00 | 167 | 185 | 352 | 8.0 |
| | Zone 44 Subtotal | | | | | 167 | 185 | 352 | 8.0 |
| 45 | | 1.00 | TAZ 45 | 7.00 | 38.00 | 7 | 38 | 45 | 1.0 |
| | Zone 45 Subtotal | | | | | 7 | 38 | 45 | 1.0 |
| 46 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 46 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 47 | | 1.00 | TAZ 47 | 9.00 | 9.00 | 9 | 9 | 18 | 0.4 |
| | Zone 47 Subtotal | | | | | 9 | 9 | 18 | 0.4 |
| 48 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 48 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| 50 | | 1.00 | TAZ 50 | 8.00 | 5.00 | 8 | 5 | 13 | 0.3 |
| | Zone 50 Subtotal | | | | | 8 | 5 | 13 | 0.3 |
| 54 | | 1.00 | TAZ 54 | 29.00 | 21.00 | 29 | 21 | 50 | 1.1 |
| | Zone 54 Subtotal | | | | | 29 | 21 | 50 | 1.1 |
| 56 | | 1.00 | TAZ 56 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 56 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 57 | | 1.00 | TAZ 57 | 4.00 | 3.00 | 4 | 3 | 7 | 0.2 |
| | Zone 57 Subtotal | | | | | 4 | 3 | 7 | 0.2 |
| 62 | | 1.00 | TAZ 62 | 4.00 | 2.00 | 4 | 2 | 6 | 0.1 |
| | Zone 62 Subtotal | | | | | 4 | 2 | 6 | 0.1 |
| 119 | | 1.00 | TAZ 19 | 23.00 | 38.00 | 23 | 38 | 61 | 1.4 |
| | Zone 119 Subtotal | | | | | 23 | 38 | 61 | 1.4 |
| 122 | | 1.00 | TAZ 22 | 110.00 | 112.00 | 110 | 112 | 222 | 5.0 |
| | Zone 122 Subtotal | | | | | 110 | 112 | 222 | 5.0 |
| 123 | | 1.00 | TAZ 23 | 33.00 | 36.00 | 33 | 36 | 69 | 1.6 |
| | Zone 123 Subtotal | | | | | 33 | 36 | 69 | 1.6 |
| 137 | | 1.00 | TAZ 37 | 53.00 | 26.00 | 53 | 26 | 79 | 1.8 |
| | Zone 137 Subtotal | | | | | 53 | 26 | 79 | 1.8 |
| 138 | TAZ 38 | 1.00 | TAZ 38 | 31.00 | 112.00 | 31 | 112 | 143 | 3.2 |

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.2 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.2 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.2 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.2 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.2 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.7 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.7 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 7.9 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 7.9 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 83.0 |





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| | Zone 138 Subtotal | | | | | 31 | 112 | 143 | 3.2 |
| 139 | | 1.00 | TAZ 39 | 72.00 | 72.00 | 72 | 72 | 144 | 3.3 |
| | Zone 139 Subtotal | | | | | 72 | 72 | 144 | 3.3 |
| 140 | | 1.00 | TAZ 40 | 36.00 | 38.00 | 36 | 38 | 74 | 1.7 |
| | Zone 140 Subtotal | | | | | 36 | 38 | 74 | 1.7 |
| 142 | | 1.00 | TAZ 42 | 48.00 | 51.00 | 48 | 51 | 99 | 2.2 |
| | Zone 142 Subtotal | | | | | 48 | 51 | 99 | 2.2 |
| 143 | | 1.00 | TAZ 43 | 53.00 | 66.00 | 53 | 66 | 119 | 2.7 |
| | Zone 143 Subtotal | | | | | 53 | 66 | 119 | 2.7 |
| 144 | | 1.00 | TAZ 44 | 167.00 | 184.00 | 167 | 184 | 351 | 8.0 |
| | Zone 144 Subtotal | | | | | 167 | 184 | 351 | 8.0 |
| 146 | | 1.00 | TAZ 46 | 27.00 | 27.00 | 27 | 27 | 54 | 1.2 |
| | Zone 146 Subtotal | | | | | 27 | 27 | 54 | 1.2 |
| 148 | | 1.00 | TAZ 48 | 10.00 | 51.00 | 10 | 51 | 61 | 1.4 |
| | Zone 148 Subtotal | | | | | 10 | 51 | 61 | 1.4 |
| TOTAL | | | | | | 1741 | 1935 | 3676 | 83.4 |

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for PM Alt E

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 281.00 | 474.00 | 281 | 474 | 755 | 17.0 |
| | Zone 38 Subtotal | | | | | 281 | 474 | 755 | 17.0 |
| TOTAL | | | | | | 281 | 474 | 755 | 17.0 |





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Trip Generation Report

Forecast for MD Alt E

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 38 | Casino Proje | 1.00 | Casino | 374.00 | 358.00 | 374 | 358 | 732 | 16.6 |
| | Zone 38 Subtotal | | | | | 374 | 358 | 732 | 16.6 |
| TOTAL | | | | | | 374 | 358 | 732 | 16.6 |

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.535
Loss Time (sec): 4 (Y+R=4.0 sec) | Average Delay (sec/veh): 13.1
Optimal Cycle: 23 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | |
| Base Vol: | 47 | 317 | 71 | 34 | 212 | 15 | 16 | 35 | 69 | 109 | 36 | 38 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 52 | 349 | 78 | 37 | 233 | 17 | 18 | 39 | 76 | 120 | 40 | 42 |
| Added Vol: | 97 | 146 | 92 | 21 | 102 | 0 | 0 | 14 | 83 | 100 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 149 | 495 | 170 | 58 | 335 | 17 | 18 | 53 | 159 | 220 | 54 | 70 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 149 | 495 | 170 | 58 | 335 | 17 | 18 | 53 | 159 | 220 | 54 | 70 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 149 | 495 | 170 | 58 | 335 | 17 | 18 | 53 | 159 | 220 | 54 | 70 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 149 | 495 | 170 | 58 | 335 | 17 | 18 | 53 | 159 | 220 | 54 | 70 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.72 | 0.72 | 0.85 | 0.78 | 0.78 | 0.78 | 0.88 | 0.88 | 0.88 | 0.67 | 0.67 | 0.67 |
| Lanes: | 0.46 | 1.54 | 1.00 | 0.28 | 1.64 | 0.08 | 0.08 | 0.23 | 0.69 | 0.64 | 0.16 | 0.20 |
| Final Sat.: | 631 | 2098 | 1615 | 420 | 2408 | 119 | 128 | 382 | 1156 | 819 | 200 | 260 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.24 | 0.24 | 0.11 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.27 | 0.27 | 0.27 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.44 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Volume/Cap: | 0.53 | 0.53 | 0.24 | 0.32 | 0.32 | 0.32 | 0.27 | 0.27 | 0.27 | 0.53 | 0.53 | 0.53 |
| Delay/Veh: | 14.8 | 14.8 | 12.4 | 12.8 | 12.8 | 12.8 | 10.2 | 10.2 | 10.2 | 12.8 | 12.8 | 12.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.8 | 14.8 | 12.4 | 12.8 | 12.8 | 12.8 | 10.2 | 10.2 | 10.2 | 12.8 | 12.8 | 12.8 |
| LOS by Move: | B | B | B | B | B | B | B | B | B | B | B | B |
| HCM2kAvgQ: | 6 | 6 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 6 | 6 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Cloverdale Blvd/First St

Cycle (sec): 70 | Critical Vol./Cap.(X): 0.503
Loss Time (sec): 4 (Y+R=4.0 sec) | Average Delay (sec/veh): 12.8
Optimal Cycle: 22 | Level Of Service: B

| Street Name: | Cloverdale Blvd | | | | | | First St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1! | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 64 | 291 | 99 | 39 | 291 | 17 | 18 | 39 | 64 | 99 | 40 | 39 |
| Added Vol: | 92 | 134 | 86 | 21 | 112 | 0 | 0 | 14 | 88 | 104 | 14 | 28 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 156 | 425 | 185 | 60 | 403 | 17 | 18 | 53 | 152 | 203 | 54 | 67 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 156 | 425 | 185 | 60 | 403 | 17 | 18 | 53 | 152 | 203 | 54 | 67 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 156 | 425 | 185 | 60 | 403 | 17 | 18 | 53 | 152 | 203 | 54 | 67 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 156 | 425 | 185 | 60 | 403 | 17 | 18 | 53 | 152 | 203 | 54 | 67 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.67 | 0.67 | 0.85 | 0.80 | 0.80 | 0.80 | 0.88 | 0.88 | 0.88 | 0.69 | 0.69 | 0.69 |
| Lanes: | 0.54 | 1.46 | 1.00 | 0.25 | 1.68 | 0.07 | 0.08 | 0.24 | 0.68 | 0.62 | 0.17 | 0.21 |
| Final Sat.: | 688 | 1875 | 1615 | 378 | 2539 | 107 | 135 | 397 | 1138 | 819 | 218 | 270 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.23 | 0.23 | 0.11 | 0.16 | 0.16 | 0.16 | 0.13 | 0.13 | 0.13 | 0.25 | 0.25 | 0.25 |
| Crit Moves: | | **** | | | | | | | | | **** | |
| Green/Cycle: | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 |
| Volume/Cap: | 0.50 | 0.50 | 0.25 | 0.35 | 0.35 | 0.35 | 0.27 | 0.27 | 0.27 | 0.50 | 0.50 | 0.50 |
| Delay/Veh: | 14.0 | 14.0 | 12.1 | 12.7 | 12.7 | 12.7 | 10.6 | 10.6 | 10.6 | 12.6 | 12.6 | 12.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 14.0 | 14.0 | 12.1 | 12.7 | 12.7 | 12.7 | 10.6 | 10.6 | 10.6 | 12.6 | 12.6 | 12.6 |
| LOS by Move: | B | B | B | B | B | B | B | B | B | B | B | B |
| HCM2kAvgQ: | 5 | 5 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 5 | 5 | 5 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 5.1 Worst Case Level Of Service: F[ 63.0]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 0 | | 0 1 | 1 0 | 0 | 0 0 | 0 0 | 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 466 | 95 | 46 | 399 | 0 | 0 | 0 | 0 | 61 | 0 | 34 |
| Added Vol: | 0 | 334 | 57 | 1 | 285 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 800 | 152 | 47 | 684 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 800 | 152 | 47 | 684 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 800 | 152 | 47 | 684 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 952 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1312 | xxxx | 476 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 730 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 153 | xxxx | 541 |
| Move Cap.: | xxxx | xxxx | xxxxx | 730 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 145 | xxxx | 541 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.74 | xxxx | 0.06 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 4.4 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 10.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 79.1 | xxxx | 12.1 |
| LOS by Move: | * | * | * | B | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 10.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | B | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 63.0 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 Cloverdale Blvd/Lake St

Average Delay (sec/veh): 6.0 Worst Case Level Of Service: F[ 64.1]

| Street Name: | Cloverdale Blvd | | | | | | Lake St | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1 | 1 0 | | 0 1 | 1 0 | 0 | 0 0 | 0 0 | 0 | 1 | 0 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 432 | 78 | 40 | 432 | 0 | 0 | 0 | 0 | 78 | 0 | 40 |
| Added Vol: | 0 | 311 | 57 | 1 | 303 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 743 | 135 | 41 | 735 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 743 | 135 | 41 | 735 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 743 | 135 | 41 | 735 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.8 | xxxx | 6.9 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 878 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1260 | xxxx | 439 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 778 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 165 | xxxx | 571 |
| Move Cap.: | xxxx | xxxx | xxxxx | 778 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 158 | xxxx | 571 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.05 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.78 | xxxx | 0.07 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 5.0 | xxxx | 0.2 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 80.9 | xxxx | 11.8 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | B |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 64.1 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.636 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 18.7 |
| Optimal Cycle: | 34 | Level Of Service: | B |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: >> Count Date: 4 Apr 2005 << 4:00 - 5:00 pm | | | | | | | | | | | | |
| Base Vol: | 7 | 382 | 52 | 97 | 370 | 2 | 1 | 12 | 15 | 104 | 21 | 178 |
| Growth Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Initial Bse: | 8 | 420 | 57 | 107 | 407 | 2 | 1 | 13 | 17 | 114 | 23 | 196 |
| Added Vol: | 22 | 143 | 253 | 197 | 122 | 12 | 14 | 3 | 26 | 277 | 5 | 235 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 30 | 563 | 310 | 304 | 529 | 14 | 15 | 16 | 43 | 391 | 28 | 431 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 30 | 563 | 310 | 304 | 529 | 14 | 15 | 16 | 43 | 391 | 28 | 431 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 30 | 563 | 310 | 304 | 529 | 14 | 15 | 16 | 43 | 391 | 28 | 431 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 30 | 563 | 310 | 304 | 529 | 14 | 15 | 16 | 43 | 391 | 28 | 431 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.90 | 0.90 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.96 | 0.96 | 0.85 |
| Lanes: | 1.00 | 1.29 | 0.71 | 1.00 | 1.95 | 0.05 | 0.20 | 0.22 | 0.58 | 1.87 | 0.13 | 1.00 |
| Final Sat.: | 1805 | 2204 | 1214 | 1805 | 3502 | 94 | 355 | 381 | 999 | 3386 | 243 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.02 | 0.26 | 0.26 | 0.17 | 0.15 | 0.15 | 0.04 | 0.04 | 0.04 | 0.12 | 0.12 | 0.27 |
| Crit Moves: | | **** | | **** | | | | | **** | **** | | |
| Green/Cycle: | 0.07 | 0.40 | 0.40 | 0.26 | 0.60 | 0.60 | 0.07 | 0.07 | 0.07 | 0.18 | 0.18 | 0.45 |
| Volume/Cap: | 0.25 | 0.64 | 0.64 | 0.64 | 0.25 | 0.25 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.60 |
| Delay/Veh: | 32.2 | 17.8 | 17.8 | 25.6 | 6.6 | 6.6 | 43.0 | 43.0 | 43.0 | 28.6 | 28.6 | 16.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 32.2 | 17.8 | 17.8 | 25.6 | 6.6 | 6.6 | 43.0 | 43.0 | 43.0 | 28.6 | 28.6 | 16.0 |
| LOS by Move: | C | B | B | C | A | A | D | D | D | C | C | B |
| HCM2kAvgQ: | 1 | 9 | 9 | 7 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 8 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 Cloverdale Blvd/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 70 | Critical Vol./Cap.(X): | 0.748 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 27.5 |
| Optimal Cycle: | 46 | Level Of Service: | C |

| Street Name: | Cloverdale Blvd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Ovl | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 1 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 68 | 6 | 88 | 0 | 8 | 9 | 5 | 255 | 50 | 80 | 230 | 0 |
| Added Vol: | 22 | 143 | 257 | 216 | 122 | 12 | 14 | 3 | 26 | 271 | 5 | 212 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 90 | 149 | 345 | 216 | 130 | 21 | 19 | 258 | 76 | 351 | 235 | 212 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 90 | 149 | 345 | 216 | 130 | 21 | 19 | 258 | 76 | 351 | 235 | 212 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 90 | 149 | 345 | 216 | 130 | 21 | 19 | 258 | 76 | 351 | 235 | 212 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 90 | 149 | 345 | 216 | 130 | 21 | 19 | 258 | 76 | 351 | 235 | 212 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.85 | 0.85 | 0.95 | 0.93 | 0.93 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.85 |
| Lanes: | 1.00 | 1.00 | 1.00 | 1.00 | 1.72 | 0.28 | 0.05 | 0.73 | 0.22 | 1.20 | 0.80 | 1.00 |
| Final Sat.: | 1805 | 1615 | 1615 | 1805 | 3043 | 492 | 99 | 1344 | 396 | 2210 | 1480 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.05 | 0.09 | 0.21 | 0.12 | 0.04 | 0.04 | 0.19 | 0.19 | 0.19 | 0.16 | 0.16 | 0.13 |
| Crit Moves: | | | **** | **** | | | **** | | | | **** | |
| Green/Cycle: | 0.24 | 0.29 | 0.29 | 0.16 | 0.21 | 0.21 | 0.26 | 0.26 | 0.26 | 0.21 | 0.21 | 0.37 |
| Volume/Cap: | 0.21 | 0.32 | 0.75 | 0.75 | 0.21 | 0.21 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.35 |
| Delay/Veh: | 21.5 | 19.8 | 27.4 | 38.4 | 23.2 | 23.2 | 30.4 | 30.4 | 30.4 | 29.8 | 29.8 | 16.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 21.5 | 19.8 | 27.4 | 38.4 | 23.2 | 23.2 | 30.4 | 30.4 | 30.4 | 29.8 | 29.8 | 16.2 |
| LOS by Move: | C | B | C | D | C | C | C | C | C | C | C | B |
| HCM2kAvgQ: | 2 | 3 | 9 | 6 | 2 | 2 | 9 | 9 | 9 | 8 | 8 | 4 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: C[ 22.3]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 4:45 - 5:45 pm | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | 0 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | | 25 | 345 | 0 | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 68 | 0 | 53 | 0 | 155 | 298 | | 67 | 464 | 0 | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 72 | 0 | 77 | 0 | 198 | 395 | | 92 | 809 | 0 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 72 | 0 | 77 | 0 | 198 | 395 | | 92 | 809 | 0 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 72 | 0 | 77 | 0 | 198 | 395 | | 92 | 809 | 0 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 1092 | 1586 | 405 | xxxx | xxxx | xxxxx | | 593 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 212 | 109 | 601 | xxxx | xxxx | xxxxx | | 993 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 197 | 99 | 601 | xxxx | xxxx | xxxxx | | 993 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.37 | 0.00 | 0.13 | xxxx | xxxx | xxxx | | 0.09 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.6 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.3 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 33.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 9.0 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | D | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 601 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 11.9 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 22.3 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | C | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Average Delay (sec/veh): 2.6 Worst Case Level Of Service: C[ 18.7]

| Street Name: | US 101 South Ramps | | | | | | | | | Citrus Fair Dr | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | | | | | | | |
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | | | | | | | |
| Rights: | Include | | | Include | | | Include | | | Include | | | | | | | | |
| Lanes: | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 |
| Volume Module: | | | | | | | | | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | 0 | | | | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| Initial Bse: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | | 19 | 176 | 0 | | | | | | | |
| Added Vol: | 0 | 0 | 0 | 87 | 0 | 53 | 0 | 179 | 298 | | 67 | 435 | 0 | | | | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| Initial Fut: | 0 | 0 | 0 | 90 | 0 | 76 | 0 | 221 | 415 | | 86 | 611 | 0 | | | | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | | | | | |
| PHF Volume: | 0 | 0 | 0 | 90 | 0 | 76 | 0 | 221 | 415 | | 86 | 611 | 0 | | | | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | | | | | |
| FinalVolume: | 0 | 0 | 0 | 90 | 0 | 76 | 0 | 221 | 415 | | 86 | 611 | 0 | | | | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | | 4.1 | xxxx | xxxxx | | | | | | | |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | 2.2 | xxxx | xxxxx | | | | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 894 | 1419 | 306 | xxxx | xxxx | xxxxx | | 636 | xxxx | xxxxx | | | | | | | |
| Potent Cap.: | xxxx | xxxx | xxxxx | 285 | 138 | 696 | xxxx | xxxx | xxxxx | | 957 | xxxx | xxxxx | | | | | | | |
| Move Cap.: | xxxx | xxxx | xxxxx | 265 | 126 | 696 | xxxx | xxxx | xxxxx | | 957 | xxxx | xxxxx | | | | | | | |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.34 | 0.00 | 0.11 | xxxx | xxxx | xxxx | | 0.09 | xxxx | xxxx | | | | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | 0.3 | xxxx | xxxxx | | | | | | | |
| Control Del: | xxxxx | xxxx | xxxxx | 25.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | 9.1 | xxxx | xxxxx | | | | | | | |
| LOS by Move: | * | * | * | D | * | * | * | * | * | | A | * | * | | | | | | | |
| Movement: | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT | LT | - | LTR | - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | 696 | xxxx | xxxx | xxxxx | | xxxx | xxxx | xxxxx | | | | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 0.4 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.8 | xxxxx | xxxx | xxxxx | | xxxxx | xxxx | xxxxx | | | | | | | |
| Shared LOS: | * | * | * | * | * | B | * | * | * | | * | * | * | | | | | | | |
| ApproachDel: | xxxxxx | | | 18.7 | | | xxxxxx | | | | xxxxxx | | | | | | | | | |
| ApproachLOS: | * | | | C | | | * | | | | * | | | | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 44.0 Worst Case Level Of Service: F[ 88.5]

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 2 | 0 0 | | 0 0 1 | 1 0 | |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | |
| Base Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Added Vol: | 280 | 0 | 74 | 0 | 0 | 0 | 47 | 177 | 0 | 0 | 250 | 127 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 192 | 0 | 0 | 307 | 133 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 192 | 0 | 0 | 307 | 133 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 192 | 0 | 0 | 307 | 133 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 486 | 772 | 96 | xxxx | xxxx | xxxxx | 440 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 516 | 333 | 948 | xxxx | xxxx | xxxxx | 1131 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 491 | 312 | 948 | xxxx | xxxx | xxxxx | 1131 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 1.12 | 0.00 | 0.14 | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.5 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 9.4 | xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | 491 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 18.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 107.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 88.5 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Average Delay (sec/veh): 19.5 Worst Case Level Of Service: E[ 44.5]

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 2 | 0 0 | | 0 0 1 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Added Vol: | 280 | 0 | 74 | 0 | 0 | 0 | 47 | 219 | 0 | 0 | 221 | 104 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 239 | 0 | 0 | 279 | 112 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 239 | 0 | 0 | 279 | 112 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 239 | 0 | 0 | 279 | 112 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.8 | 6.5 | 6.9 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 525 | 776 | 120 | xxxx | xxxx | xxxxx | 391 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 488 | 331 | 916 | xxxx | xxxx | xxxxx | 1179 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 464 | 310 | 916 | xxxx | xxxx | xxxxx | 1179 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.91 | 0.00 | 0.11 | xxxx | xxxx | xxxx | 0.06 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 0.4 | xxxx | xxxx | xxxxx | 0.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 9.4 | xxxxx | xxxx | xxxxx | 8.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | A | * | * | * | A | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | 464 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 10.3 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 52.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 44.5 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | E | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.623 |
| Loss Time (sec): | 8 (Y+R=4.0 sec) | Average Delay (sec/veh): | 24.1 |
| Optimal Cycle: | 40 | Level Of Service: | C |

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: >> Count Date: 11 Apr 2005 << 5:00 - 6:00 pm | | | | | | | | | | | | |
| Base Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |
| Added Vol: | 280 | 0 | 74 | 0 | 0 | 0 | 47 | 177 | 0 | 0 | 250 | 127 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 192 | 0 | 0 | 307 | 133 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 192 | 0 | 0 | 307 | 133 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 192 | 0 | 0 | 307 | 133 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 192 | 0 | 0 | 307 | 133 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | 0.91 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 1.40 | 0.60 |
| Final Sat.: | 1357 | 0 | 1615 | 0 | 0 | 0 | 1805 | 3610 | 0 | 0 | 2405 | 1042 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.41 | 0.00 | 0.08 | 0.00 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.00 | 0.13 | 0.13 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.65 | 0.00 | 0.65 | 0.00 | 0.00 | 0.00 | 0.06 | 0.27 | 0.00 | 0.00 | 0.20 | 0.20 |
| Volume/Cap: | 0.62 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.62 | 0.20 | 0.00 | 0.00 | 0.62 | 0.62 |
| Delay/Veh: | 11.5 | 0.0 | 6.6 | 0.0 | 0.0 | 0.0 | 56.2 | 28.5 | 0.0 | 0.0 | 38.0 | 38.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 11.5 | 0.0 | 6.6 | 0.0 | 0.0 | 0.0 | 56.2 | 28.5 | 0.0 | 0.0 | 38.0 | 38.0 |
| LOS by Move: | B | A | A | A | A | A | E | C | A | A | D | D |
| HCM2k95thQ: | 19 | 0 | 3 | 0 | 0 | 0 | 6 | 5 | 0 | 0 | 14 | 14 |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 US 101 North Ramps/Citrus Fair Dr

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.507 |
| Loss Time (sec): | 8 (Y+R=4.0 sec) | Average Delay (sec/veh): | 23.4 |
| Optimal Cycle: | 32 | Level Of Service: | C |

| Street Name: | US 101 North Ramps | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |
| Added Vol: | 280 | 0 | 74 | 0 | 0 | 0 | 47 | 219 | 0 | 0 | 221 | 104 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 239 | 0 | 0 | 279 | 112 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 239 | 0 | 0 | 279 | 112 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 239 | 0 | 0 | 279 | 112 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 239 | 0 | 0 | 279 | 112 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 0.91 | 0.91 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 1.43 | 0.57 |
| Final Sat.: | 1357 | 0 | 1615 | 0 | 0 | 0 | 1805 | 3610 | 0 | 0 | 2465 | 990 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.31 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.04 | 0.07 | 0.00 | 0.00 | 0.11 | 0.11 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.62 | 0.00 | 0.62 | 0.00 | 0.00 | 0.00 | 0.08 | 0.30 | 0.00 | 0.00 | 0.22 | 0.22 |
| Volume/Cap: | 0.51 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.51 | 0.22 | 0.00 | 0.00 | 0.51 | 0.51 |
| Delay/Veh: | 11.2 | 0.0 | 7.9 | 0.0 | 0.0 | 0.0 | 47.0 | 26.1 | 0.0 | 0.0 | 34.6 | 34.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 11.2 | 0.0 | 7.9 | 0.0 | 0.0 | 0.0 | 47.0 | 26.1 | 0.0 | 0.0 | 34.6 | 34.6 |
| LOS by Move: | B | A | A | A | A | A | D | C | A | A | C | C |
| HCM2k95thQ: | 14 | 0 | 3 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 12 | 12 |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 10.1 Worst Case Level Of Service: C[ 21.9]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |
| Added Vol: | 331 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 191 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 363 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 197 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 363 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 197 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 363 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 197 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 180 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 974 | xxxx | 107 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 282 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1408 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 226 | xxxx | 953 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.26 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.57 | xxxx | 0.21 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 3.2 | xxxx | 0.8 | xxxx | xxxx | xxxxx |
| Control Del: | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 40.3 | xxxx | 9.8 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | E | * | A | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 21.9 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | C | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Average Delay (sec/veh): 7.4 Worst Case Level Of Service: B[ 13.5]

| Street Name: | Asti (Frontage) Rd | | | | | | Citrus Fair Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |
| Added Vol: | 278 | 96 | 0 | 0 | 80 | 47 | 60 | 0 | 233 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 289 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 243 | 0 | 0 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 289 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 243 | 0 | 0 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 289 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 243 | 0 | 0 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 181 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 808 | xxxx | 106 | xxxx | xxxx | xxxxx |
| Potent Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 353 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Move Cap.: | 1407 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 297 | xxxx | 954 | xxxx | xxxx | xxxxx |
| Volume/Cap: | 0.21 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.31 | xxxx | 0.25 | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1.3 | xxxx | 1.0 | xxxx | xxxx | xxxxx |
| Control Del: | 8.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 22.4 | xxxx | 10.1 | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | * | * | * | C | * | B | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 13.5 | | | xxxxxx | | |
| ApproachLOS: | * | | | * | | | B | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 29.4  Worst Case Level Of Service: F[ 67.8]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 155 | 126 | 110 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 155 | 126 | 147 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 155 | 126 | 147 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 225 | 155 | 126 | 147 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp:xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | |
| FollowUpTim:xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 380 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 702 | 702 | 303 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1190 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 408 | 365 | 742 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1190 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 372 | 324 | 742 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.11 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.70 | 0.00 | 0.29 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del:xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 480 | xxxxx |
| SharedQueue:xxxxx | xxxx | xxxxx | 0.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 13.0 | xxxxx | |
| Shrd ConDel:xxxxx | xxxx | xxxxx | 8.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 67.8 | xxxxx | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 67.8 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Average Delay (sec/veh): 15.6  Worst Case Level Of Service: E[ 42.7]

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 206 | 168 | 110 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 206 | 168 | 147 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 206 | 168 | 147 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 196 | 206 | 168 | 147 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp:xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | |
| FollowUpTim:xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 402 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 782 | 782 | 299 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1168 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 366 | 328 | 745 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1168 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 321 | 276 | 745 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.14 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.61 | 0.00 | 0.22 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del:xxxxx | xxxx | xxxxx | 8.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 432 | xxxxx |
| SharedQueue:xxxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 7.9 | xxxxx | |
| Shrd ConDel:xxxxx | xxxx | xxxxx | 8.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 42.7 | xxxxx | |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | E | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 42.7 | | |
| ApproachLOS: | * | | | * | | | * | | | E | | |

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 Critical Vol./Cap.(X): 0.390
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 20.3
Optimal Cycle: 23 Level Of Service: C

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 155 | 126 | 110 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 225 | 155 | 126 | 147 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 225 | 155 | 126 | 147 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 225 | 155 | 126 | 147 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 225 | 155 | 126 | 147 | 0 | 0 | 0 | 0 | 261 | 0 | 213 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.12 | 0.10 | 0.07 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.13 |
| Crit Moves: | | **** | | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.30 | 0.30 | 0.50 | 0.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.46 | 0.00 | 0.46 |
| Volume/Cap: | 0.00 | 0.39 | 0.32 | 0.22 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.39 | 0.00 | 0.29 |
| Delay/Veh: | 0.0 | 28.0 | 27.2 | 14.1 | 14.6 | 0.0 | 0.0 | 0.0 | 0.0 | 18.3 | 0.0 | 17.2 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 28.0 | 27.2 | 14.1 | 14.6 | 0.0 | 0.0 | 0.0 | 0.0 | 18.3 | 0.0 | 17.2 |
| LOS by Move: | A | C | C | B | B | A | A | A | A | B | A | B |
| HCM2k95thQ: | 0 | 11 | 7 | 5 | 5 | 0 | 0 | 0 | 0 | 11 | 0 | 8 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Asti (Frontage) Rd/Project Access

Cycle (sec): 100 Critical Vol./Cap.(X): 0.378
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 20.1
Optimal Cycle: 22 Level Of Service: C

| Street Name: | Asti (Frontage) Rd | | | | | | Project Access | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Prot+Permit | | | Prot+Permit | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 156 | 206 | 168 | 110 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 196 | 206 | 168 | 147 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 196 | 206 | 168 | 147 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 196 | 206 | 168 | 147 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 196 | 206 | 168 | 147 | 0 | 0 | 0 | 0 | 197 | 0 | 161 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 0.85 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.77 | 1.00 | 0.85 |
| Lanes: | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 1900 | 1615 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1461 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.10 | 0.13 | 0.09 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.10 |
| Crit Moves: | | | **** | **** | | | | | | **** | | |
| Green/Cycle: | 0.00 | 0.34 | 0.34 | 0.60 | 0.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.36 | 0.00 | 0.36 |
| Volume/Cap: | 0.00 | 0.31 | 0.38 | 0.22 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.38 | 0.00 | 0.28 |
| Delay/Veh: | 0.0 | 24.8 | 25.6 | 9.2 | 9.5 | 0.0 | 0.0 | 0.0 | 0.0 | 24.4 | 0.0 | 23.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 24.8 | 25.6 | 9.2 | 9.5 | 0.0 | 0.0 | 0.0 | 0.0 | 24.4 | 0.0 | 23.3 |
| LOS by Move: | A | C | C | A | A | A | A | A | A | C | A | C |
| HCM2k95thQ: | 0 | 9 | 10 | 5 | 4 | 0 | 0 | 0 | 0 | 9 | 0 | 7 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C[ 15.8]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | - T | - R | L | - T | - R | L | - T | - R | L | - T | - R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Added Vol: | 0 | 285 | 0 | 0 | 426 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 351 | 16 | 2 | 461 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 351 | 16 | 2 | 461 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 351 | 16 | 2 | 461 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 367 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 824 | 824 | 359 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1203 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 346 | 310 | 690 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1203 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 345 | 310 | 690 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.08 | 0.00 | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 363 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 0.3 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 15.8 | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | C | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 15.8 | | |
| ApproachLOS: | * | | | * | | | * | | | C | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Asti (Frontage) Rd/Santana Dr

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[ 10.3]

| Street Name: | Asti (Frontage) Rd | | | | | | Santana Dr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | - T | - R | L | - T | - R | L | - T | - R | L | - T | - R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 0 | 0 0 | 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Added Vol: | 0 | 336 | 0 | 0 | 362 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 373 | 2 | 1 | 398 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 373 | 2 | 1 | 398 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 373 | 2 | 1 | 398 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 375 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 374 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1195 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 677 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1195 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 677 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.00 | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | xxxx | 0.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 0.0 |
| Control Del: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 10.3 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | B |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 0.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 8.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | A | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 10.3 | | |
| ApproachLOS: | * | | | * | | | * | | | B | | |

Note: Queue reported is the number of cars per lane.

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: C[ 20.3]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Volume Module: >> Count Date: 26 Jan 2006 << 4:30 - 5:30 pm | | | | | | | | | | | | | | | | |
| Base Vol: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Initial Bse: | 177 | 343 | 0 | 0 | 135 | 47 | 33 | 0 | 71 | 0 | 0 | 0 | | | | |
| Added Vol: | 94 | 366 | 0 | 0 | 277 | 9 | 10 | 0 | 78 | 0 | 0 | 0 | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Initial Fut: | 271 | 709 | 0 | 0 | 412 | 56 | 43 | 0 | 149 | 0 | 0 | 0 | | | | |
| User Adj: | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Volume: | 298 | 780 | 0 | 0 | 453 | 62 | 47 | 0 | 164 | 0 | 0 | 0 | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| FinalVolume: | 298 | 780 | 0 | 0 | 453 | 62 | 47 | 0 | 164 | 0 | 0 | 0 | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 515 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1857 | 1857 | 453 | xxxx | xxxx | xxxxx | | | | |
| Potent Cap.: | 1061 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 76 | 69 | 611 | xxxx | xxxx | xxxxx | | | | |
| Move Cap.: | 1061 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 59 | 49 | 611 | xxxx | xxxx | xxxxx | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 135 | 121 | xxxxx | 54 | 103 | xxxxx | | | | |
| Volume/Cap: | 0.28 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.35 | 0.00 | 0.27 | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 1.2 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.1 | xxxx | xxxx | xxxxx | | | | |
| Control Del: | 9.7 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 13.0 | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | A | * | * | * | * | * | * | * | B | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 135 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 1.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 45.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | * | * | * | * | * | * | E | * | * | * | * | * | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 20.3 | | | xxxxxx | | | | | | |
| ApproachLOS: | * | | | * | | | C | | | * | | | | | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 Cloverdale Blvd/Treadway Dr

Average Delay (sec/veh): 4.0 Worst Case Level Of Service: C[ 17.5]

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Volume Module: | | | | | | | | | | | | | | | | |
| Base Vol: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 | | | | |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Initial Bse: | 124 | 239 | 0 | 0 | 239 | 40 | 40 | 0 | 124 | 0 | 0 | 0 | | | | |
| Added Vol: | 88 | 355 | 0 | 0 | 287 | 9 | 10 | 0 | 82 | 0 | 0 | 0 | | | | |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Initial Fut: | 212 | 594 | 0 | 0 | 526 | 49 | 50 | 0 | 206 | 0 | 0 | 0 | | | | |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| PHF Volume: | 212 | 594 | 0 | 0 | 526 | 49 | 50 | 0 | 206 | 0 | 0 | 0 | | | | |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| FinalVolume: | 212 | 594 | 0 | 0 | 526 | 49 | 50 | 0 | 206 | 0 | 0 | 0 | | | | |
| Critical Gap Module: | | | | | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | | | | |
| FollowUpTim: | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | | | | |
| Capacity Module: | | | | | | | | | | | | | | | | |
| Cnflict Vol: | 575 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1544 | 1544 | 526 | xxxx | xxxx | xxxxx | | | | |
| Potent Cap.: | 1008 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 128 | 116 | 556 | xxxx | xxxx | xxxxx | | | | |
| Move Cap.: | 1008 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 107 | 92 | 556 | xxxx | xxxx | xxxxx | | | | |
| Total Cap: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 213 | 190 | xxxxx | 65 | 162 | xxxxx | | | | |
| Volume/Cap: | 0.21 | xxxx | xxxx | xxxx | xxxx | xxxx | 0.23 | 0.00 | 0.37 | xxxx | xxxx | xxxx | | | | |
| Level Of Service Module: | | | | | | | | | | | | | | | | |
| 2Way95thQ: | 0.8 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.7 | xxxx | xxxx | xxxxx | | | | |
| Control Del: | 9.5 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 15.2 | xxxxx | xxxx | xxxxx | | | | |
| LOS by Move: | A | * | * | * | * | * | * | * | C | * | * | * | | | | |
| Movement: | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | | LT - LTR - RT | | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | 213 | xxxx | xxxxx | xxxx | xxxx | xxxxx | | | | |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 0.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 27.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | | | | |
| Shared LOS: | * | * | * | * | * | * | D | * | * | * | * | * | | | | |
| ApproachDel: | xxxxxx | | | xxxxxx | | | 17.5 | | | xxxxxx | | | | | | |
| ApproachLOS: | * | | | * | | | C | | | * | | | | | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 46.3 Worst Case Level Of Service: F[ 86.3]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 291 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 374 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 485 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 826 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 485 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 826 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 159 | 187 | 485 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 826 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 264 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1326 | xxxx | 164 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1225 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 162 | xxxx | 827 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1225 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 112 | xxxx | 827 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.40 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.33 | xxxx | 1.00 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 1.9 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 10.1 | xxxx | 17.5 |
| Control Del: | xxxxx | xxxx | xxxxx | 9.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 269.6 | xxxx | 53.3 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | F | * | F |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 86.3 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Average Delay (sec/veh): 37.0 Worst Case Level Of Service: F[ 74.9]

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 305 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 357 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 585 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 702 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 585 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 702 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 122 | 175 | 585 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 702 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.4 | xxxx | 6.2 |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.5 | xxxx | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 297 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1507 | xxxx | 210 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 135 | xxxx | 836 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1276 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 86 | xxxx | 836 |
| Volume/Cap: | xxxx | xxxx | xxxx | 0.46 | xxxx | xxxx | xxxx | xxxx | xxxx | 1.45 | xxxx | 0.84 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | 2.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 9.7 | xxxx | 9.9 |
| Control Del: | xxxxx | xxxx | xxxxx | 10.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 341.6 | xxxx | 27.4 |
| LOS by Move: | * | * | * | B | * | * | * | * | * | F | * | D |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 74.9 | | |
| ApproachLOS: | * | | | * | | | * | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 1.039
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 71.9
Optimal Cycle: 180 Level Of Service: E

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 1 | 0 | 0 | 0 0 | 1 | 0 | 0 1 |
| Volume Module:2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 79 | 12 | 194 | 53 | 0 | 0 | 0 | 0 | 26 | 0 | 452 |
| Added Vol: | 0 | 80 | 175 | 291 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 374 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 159 | 187 | 485 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 826 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 159 | 187 | 485 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 826 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 159 | 187 | 485 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 826 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 159 | 187 | 485 | 115 | 0 | 0 | 0 | 0 | 149 | 0 | 826 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.93 | 0.93 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.46 | 0.54 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 809 | 952 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1480 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.20 | 0.20 | 0.27 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.51 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.19 | 0.19 | 0.26 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.49 | 0.00 | 0.49 |
| Volume/Cap: | 0.00 | 1.04 | 1.04 | 1.04 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.00 | 1.04 |
| Delay/Veh: | 0.0 | 100 | 100.3 | 89.2 | 16.3 | 0.0 | 0.0 | 0.0 | 0.0 | 14.5 | 0.0 | 67.8 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 100 | 100.3 | 89.2 | 16.3 | 0.0 | 0.0 | 0.0 | 0.0 | 14.5 | 0.0 | 67.8 |
| LOS by Move: | A | F | F | F | B | A | A | A | A | B | A | E |
| HCM2k95thQ: | 0 | 30 | 30 | 38 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 56 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 Cloverdale Blvd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.988
Loss Time (sec): 6 (Y+R=4.0 sec) Average Delay (sec/veh): 60.4
Optimal Cycle: 180 Level Of Service: E

| Street Name: | Cloverdale Blvd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 | 0 1 | 0 | 1 | 0 1 | 0 | 0 | 0 0 | 1 | 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |
| Added Vol: | 0 | 80 | 175 | 305 | 62 | 0 | 0 | 0 | 0 | 123 | 0 | 357 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 122 | 175 | 585 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 702 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 122 | 175 | 585 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 702 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 122 | 175 | 585 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 702 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 122 | 175 | 585 | 127 | 0 | 0 | 0 | 0 | 125 | 0 | 702 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.92 | 0.92 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 1.00 | 0.85 |
| Lanes: | 0.00 | 0.41 | 0.59 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 0 | 718 | 1030 | 1805 | 1900 | 0 | 0 | 0 | 0 | 1490 | 0 | 1615 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.17 | 0.17 | 0.32 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.43 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.17 | 0.17 | 0.33 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.44 | 0.00 | 0.44 |
| Volume/Cap: | 0.00 | 0.99 | 0.99 | 0.99 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.99 |
| Delay/Veh: | 0.0 | 89.8 | 89.8 | 67.2 | 13.5 | 0.0 | 0.0 | 0.0 | 0.0 | 17.3 | 0.0 | 58.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 89.8 | 89.8 | 67.2 | 13.5 | 0.0 | 0.0 | 0.0 | 0.0 | 17.3 | 0.0 | 58.4 |
| LOS by Move: | A | F | F | E | B | A | A | A | A | B | A | E |
| HCM2k95thQ: | 0 | 25 | 25 | 40 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 46 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 138.5 Worst Case Level Of Service: F[1398.2]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 168 | 298 | 491 | 451 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 268 | 404 | 507 | 880 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 268 | 404 | 507 | 880 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 268 | 404 | 507 | 880 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2364 | 2566 | 880 | xxxx | xxxx | xxxxx | 672 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 39 | 26 | 349 | xxxx | xxxx | xxxxx | 928 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 22 | 12 | 349 | xxxx | xxxx | xxxxx | 928 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 5.65 | 0.00 | 0.27 | xxxx | xxxx | xxxx | 0.55 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.1 | xxxx | xxxx | xxxxx | 3.4 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 19.1 | xxxxx | xxxx | xxxxx | 13.4 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | B | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 22 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 15.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 2438 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 1398.2 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

Average Delay (sec/veh): 94.9 Worst Case Level Of Service: F[895.9]

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 182 | 298 | 445 | 433 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 306 | 499 | 446 | 732 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 306 | 499 | 446 | 732 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 306 | 499 | 446 | 732 | 0 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | xxxxx | xxxx | xxxxx | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx |
| FollowUpTim: | xxxxx | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 2180 | 2429 | 732 | xxxx | xxxx | xxxxx | 805 | xxxx | xxxxx |
| Potent Cap.: | xxxx | xxxx | xxxxx | 51 | 32 | 424 | xxxx | xxxx | xxxxx | 828 | xxxx | xxxxx |
| Move Cap.: | xxxx | xxxx | xxxxx | 30 | 15 | 424 | xxxx | xxxx | xxxxx | 828 | xxxx | xxxxx |
| Volume/Cap: | xxxx | xxxx | xxxx | 4.10 | 0.00 | 0.25 | xxxx | xxxx | xxxx | 0.54 | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | xxxxx | xxxx | xxxx | 1.0 | xxxx | xxxx | xxxxx | 3.3 | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | 16.3 | xxxxx | xxxx | xxxxx | 14.3 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | C | * | * | * | B | * | * |
| Movement: | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT | LT | - | LTR - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | 30 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | 14.6 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | 1666 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | * | * | F | * | * | * | * | * | * | * | * |
| ApproachDel: | xxxxxx | | | 895.9 | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | * | | | F | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.808 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 23.5 |
| Optimal Cycle: | 60 | Level Of Service: | C |

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 0 | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 1 | 0 1 | 0 | 1 0 | 1 0 |
| Volume Module: >> Count Date: 6 Apr 2005 << 2007 Balanced | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 100 | 106 | 16 | 429 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 168 | 298 | 491 | 451 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 268 | 404 | 507 | 880 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 268 | 404 | 507 | 880 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 268 | 404 | 507 | 880 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 268 | 404 | 507 | 880 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.92 | 0.92 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.40 | 0.60 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 696 | 1050 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.06 | 0.00 | 0.38 | 0.38 | 0.28 | 0.46 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.12 | 0.00 | 0.48 | 0.48 | 0.35 | 0.82 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.81 | 0.00 | 0.51 | 0.00 | 0.81 | 0.81 | 0.81 | 0.56 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 69.0 | 0.0 | 43.9 | 0.0 | 28.2 | 28.2 | 37.3 | 3.4 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 69.0 | 0.0 | 43.9 | 0.0 | 28.2 | 28.2 | 37.3 | 3.4 | 0.0 |
| LOS by Move: | A | A | A | E | A | D | A | C | C | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 11 | 0 | 7 | 0 | 33 | 33 | 23 | 15 | 0 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 101S Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.851 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 26.6 |
| Optimal Cycle: | 72 | Level Of Service: | C |

| Street Name: | 101 S Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 0 0 | 0 0 | 0 | 1 0 | 0 1 | 0 | 0 1 | 0 1 | 0 | 1 0 | 1 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |
| Added Vol: | 0 | 0 | 0 | 121 | 0 | 46 | 0 | 182 | 298 | 445 | 433 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 306 | 499 | 446 | 732 | 0 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 306 | 499 | 446 | 732 | 0 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 306 | 499 | 446 | 732 | 0 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 306 | 499 | 446 | 732 | 0 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 1.00 | 1.00 | 0.71 | 1.00 | 0.84 | 1.00 | 0.92 | 0.92 | 0.95 | 1.00 | 1.00 |
| Lanes: | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 0.38 | 0.62 | 1.00 | 1.00 | 0.00 |
| Final Sat.: | 0 | 0 | 0 | 1343 | 0 | 1599 | 0 | 662 | 1079 | 1805 | 1900 | 0 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.07 | 0.00 | 0.46 | 0.46 | 0.25 | 0.39 | 0.00 |
| Crit Moves: | | | | **** | | | | **** | | **** | | |
| Green/Cycle: | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.11 | 0.00 | 0.54 | 0.54 | 0.29 | 0.83 | 0.00 |
| Volume/Cap: | 0.00 | 0.00 | 0.00 | 0.85 | 0.00 | 0.63 | 0.00 | 0.85 | 0.85 | 0.85 | 0.46 | 0.00 |
| Delay/Veh: | 0.0 | 0.0 | 0.0 | 79.7 | 0.0 | 50.0 | 0.0 | 26.8 | 26.8 | 46.0 | 2.5 | 0.0 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 0.0 | 0.0 | 79.7 | 0.0 | 50.0 | 0.0 | 26.8 | 26.8 | 46.0 | 2.5 | 0.0 |
| LOS by Move: | A | A | A | E | A | D | A | C | C | D | A | A |
| HCM2k95thQ: | 0 | 0 | 0 | 12 | 0 | 8 | 0 | 39 | 39 | 23 | 11 | 0 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### PM Buildout + Project E Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 675 | 1.9 | 0.522 | 12.1 | LOS B | 147 | 0.56 | 0.64 | 23.3 |
| 6T | T | 785 | 2.0 | 0.506 | 2.5 | LOS A | 146 | 0.52 | 0.27 | 27.9 |
| **Approach** | | **1460** | **2.0** | **0.521** | **6.9** | **LOS A** | **147** | **0.53** | **0.44** | **25.3** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 134 | 2.2 | 0.460 | 19.1 | LOS B | 81 | 0.82 | 1.01 | 20.9 |
| 14T | T | 17 | 5.6 | 0.462 | 9.4 | LOS A | 81 | 0.82 | 0.92 | 24.5 |
| 14R | R | 83 | 2.4 | 0.461 | 11.1 | LOS B | 81 | 0.82 | 0.95 | 23.2 |
| **Approach** | | **235** | **2.6** | **0.460** | **15.5** | **LOS B** | **81** | **0.82** | **0.98** | **21.8** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 212 | 1.9 | 0.391 | 15.0 | LOS B | 71 | 0.86 | 0.88 | 22.1 |
| 12T | T | 299 | 2.0 | 0.454 | 7.0 | LOS A | 126 | 0.92 | 0.77 | 25.1 |
| 12R | R | 121 | 1.7 | 0.455 | 8.8 | LOS A | 126 | 0.92 | 0.85 | 24.3 |
| **Approach** | | **631** | **1.9** | **0.454** | **10.0** | **LOS B** | **126** | **0.90** | **0.82** | **23.8** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 167 | 1.8 | 0.652 | 22.8 | LOS C | 169 | 0.91 | 1.14 | 19.0 |
| 18T | T | 71 | 1.4 | 0.654 | 14.5 | LOS B | 169 | 0.91 | 1.10 | 21.1 |
| 18R | R | 126 | 2.4 | 0.651 | 16.1 | LOS B | 169 | 0.91 | 1.11 | 20.2 |
| **Approach** | | **364** | **1.9** | **0.652** | **18.9** | **LOS B** | **169** | **0.91** | **1.12** | **19.7** |
| **All Vehicles** | | **2690** | **2.0** | **0.654** | **10.0** | **LOS B** | **169** | **0.70** | **0.67** | **23.7** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange West Consolidated Roundabout

### WKD Buildout+Project E Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **WB South Interchange** | | | | | | | | | | |
| 1L | L | 585 | 2.0 | 0.434 | 11.7 | LOS B | 114 | 0.44 | 0.62 | 23.7 |
| 6T | T | 655 | 2.0 | 0.407 | 2.2 | LOS A | 108 | 0.41 | 0.24 | 28.8 |
| **Approach** | | **1241** | **2.0** | **0.434** | **6.7** | **LOS A** | **114** | **0.42** | **0.42** | **25.8** |
| **SB Offramp** | | | | | | | | | | |
| 17L | L | 128 | 2.3 | 0.389 | 16.6 | LOS B | 62 | 0.74 | 0.95 | 22.1 |
| 14T | T | 18 | 5.3 | 0.388 | 6.8 | LOS A | 62 | 0.74 | 0.78 | 26.3 |
| 14R | R | 94 | 2.1 | 0.388 | 8.6 | LOS A | 62 | 0.74 | 0.86 | 25.2 |
| **Approach** | | **242** | **2.5** | **0.389** | **12.7** | **LOS B** | **62** | **0.74** | **0.90** | **23.3** |
| **SB Cloverdale Blvd** | | | | | | | | | | |
| 15L | L | 245 | 2.0 | 0.406 | 14.1 | LOS B | 71 | 0.80 | 0.85 | 22.6 |
| 12T | T | 371 | 1.9 | 0.486 | 6.4 | LOS A | 135 | 0.87 | 0.72 | 25.4 |
| 12R | R | 134 | 2.2 | 0.486 | 8.3 | LOS A | 135 | 0.87 | 0.82 | 24.6 |
| **Approach** | | **749** | **2.0** | **0.485** | **9.3** | **LOS A** | **135** | **0.85** | **0.78** | **24.2** |
| **NB Cloverdale Blvd** | | | | | | | | | | |
| 13L | L | 128 | 2.3 | 0.571 | 20.6 | LOS C | 131 | 0.88 | 1.08 | 19.9 |
| 18T | T | 61 | 1.6 | 0.570 | 12.2 | LOS B | 131 | 0.88 | 1.02 | 22.5 |
| 18R | R | 123 | 1.6 | 0.572 | 13.8 | LOS B | 131 | 0.88 | 1.03 | 21.5 |
| **Approach** | | **313** | **1.9** | **0.571** | **16.3** | **LOS B** | **131** | **0.88** | **1.05** | **20.9** |
| **All Vehicles** | | **2545** | **2.0** | **0.572** | **9.2** | **LOS A** | **135** | **0.64** | **0.65** | **24.4** |

Symbols which may appear in this table:

Following Degree of Saturation
# x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
# - Based on density for continuous movements

Following Queue
# - Density for continuous movement

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 430.9 Worst Case Level Of Service: F[949.3]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 364 | 0 | 0 | 0 | 52 | 237 | 0 | 0 | 650 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 382 | 0 | 0 | 0 | 115 | 279 | 0 | 0 | 724 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 382 | 0 | 0 | 0 | 115 | 279 | 0 | 0 | 724 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 663 | 0 | 382 | 0 | 0 | 0 | 115 | 279 | 0 | 0 | 724 | 142 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1304 | 1375 | 279 | xxxx | xxxx | xxxxx | 866 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 179 | 147 | 765 | xxxx | xxxx | xxxxx | 786 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 159 | 125 | 765 | xxxx | xxxx | xxxxx | 786 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 4.18 | 0.00 | 0.50 | xxxx | xxxx | xxxx | 0.15 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 2.8 | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 14.3 | xxxxx | xxxx | xxxxx | 10.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | B | * | * | * | B | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | 159 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 66.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1488 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 949.3 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

Average Delay (sec/veh): 277.1 Worst Case Level Of Service: F[623.7]

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 1 0 | 0 1 | | 0 0 0 | 0 0 | | 1 0 1 | 0 0 | | 0 0 0 | 1 0 | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 401 | 0 | 0 | 0 | 52 | 251 | 0 | 0 | 587 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 412 | 0 | 0 | 0 | 129 | 292 | 0 | 0 | 644 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 412 | 0 | 0 | 0 | 129 | 292 | 0 | 0 | 644 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 540 | 6 | 412 | 0 | 0 | 0 | 129 | 292 | 0 | 0 | 644 | 138 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 6.4 | 6.5 | 6.2 | xxxxx | xxxx | xxxxx | 4.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| FollowUpTim: | 3.5 | 4.0 | 3.3 | xxxxx | xxxx | xxxxx | 2.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1263 | 1332 | 292 | xxxx | xxxx | xxxxx | 782 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Potent Cap.: | 189 | 156 | 752 | xxxx | xxxx | xxxxx | 845 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Move Cap.: | 167 | 132 | 752 | xxxx | xxxx | xxxxx | 845 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Volume/Cap: | 3.23 | 0.05 | 0.55 | xxxx | xxxx | xxxx | 0.15 | xxxx | xxxx | xxxx | xxxx | xxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | xxxx | xxxx | 3.4 | xxxx | xxxx | xxxxx | 0.5 | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | xxxxx | xxxx | 15.4 | xxxxx | xxxx | xxxxx | 10.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | * | * | C | * | * | * | B | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | 166 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| SharedQueue: | 51.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shrd ConDel: | 1083 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | F | * | * | * | * | * | * | * | * | * | * | * |
| ApproachDel: | 623.7 | | | xxxxxx | | | xxxxxx | | | xxxxxx | | |
| ApproachLOS: | F | | | * | | | * | | | * | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 1.089 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 72.1 |
| Optimal Cycle: | 180 | Level Of Service: | E |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 371 | 0 | 18 | 0 | 0 | 0 | 63 | 42 | 0 | 0 | 74 | 5 |
| Added Vol: | 292 | 0 | 364 | 0 | 0 | 0 | 52 | 237 | 0 | 0 | 650 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 663 | 0 | 382 | 0 | 0 | 0 | 115 | 279 | 0 | 0 | 724 | 142 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 663 | 0 | 382 | 0 | 0 | 0 | 115 | 279 | 0 | 0 | 724 | 142 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 663 | 0 | 382 | 0 | 0 | 0 | 115 | 279 | 0 | 0 | 724 | 142 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 663 | 0 | 382 | 0 | 0 | 0 | 115 | 279 | 0 | 0 | 724 | 142 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.71 | 1.00 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.84 | 0.16 |
| Final Sat.: | 1343 | 0 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1554 | 305 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.49 | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.06 | 0.15 | 0.00 | 0.00 | 0.47 | 0.47 |
| Crit Moves: | **** | | | | | | **** | | | | **** | |
| Green/Cycle: | 0.45 | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.06 | 0.49 | 0.00 | 0.00 | 0.43 | 0.43 |
| Volume/Cap: | 1.09 | 0.00 | 0.53 | 0.00 | 0.00 | 0.00 | 1.09 | 0.30 | 0.00 | 0.00 | 1.09 | 1.09 |
| Delay/Veh: | 90.3 | 0.0 | 20.4 | 0.0 | 0.0 | 0.0 | 160.6 | 15.6 | 0.0 | 0.0 | 87.4 | 87.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 90.3 | 0.0 | 20.4 | 0.0 | 0.0 | 0.0 | 160.6 | 15.6 | 0.0 | 0.0 | 87.4 | 87.4 |
| LOS by Move: | F | A | C | A | A | A | F | B | A | A | F | F |
| HCM2k95thQ: | 51 | 0 | 16 | 0 | 0 | 0 | 10 | 9 | 0 | 0 | 56 | 56 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 101N Ramps/South Interchange

| | | | |
|---|---|---|---|
| Cycle (sec): | 100 | Critical Vol./Cap.(X): | 0.862 |
| Loss Time (sec): | 6 (Y+R=4.0 sec) | Average Delay (sec/veh): | 33.8 |
| Optimal Cycle: | 76 | Level Of Service: | C |

| Street Name: | 101 N Ramps | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Permitted | | | Permitted | | | Protected | | | Protected | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 248 | 6 | 11 | 0 | 0 | 0 | 77 | 41 | 0 | 0 | 57 | 1 |
| Added Vol: | 292 | 0 | 401 | 0 | 0 | 0 | 52 | 251 | 0 | 0 | 587 | 137 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 540 | 6 | 412 | 0 | 0 | 0 | 129 | 292 | 0 | 0 | 644 | 138 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 540 | 6 | 412 | 0 | 0 | 0 | 129 | 292 | 0 | 0 | 644 | 138 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 540 | 6 | 412 | 0 | 0 | 0 | 129 | 292 | 0 | 0 | 644 | 138 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 540 | 6 | 412 | 0 | 0 | 0 | 129 | 292 | 0 | 0 | 644 | 138 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.91 | 0.91 | 0.84 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 |
| Lanes: | 0.99 | 0.01 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.82 | 0.18 |
| Final Sat.: | 1702 | 19 | 1599 | 0 | 0 | 0 | 1805 | 1900 | 0 | 0 | 1527 | 327 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.32 | 0.32 | 0.26 | 0.00 | 0.00 | 0.00 | 0.07 | 0.15 | 0.00 | 0.00 | 0.42 | 0.42 |
| Crit Moves: | | **** | | | | | | **** | | | | **** |
| Green/Cycle: | 0.37 | 0.37 | 0.37 | 0.00 | 0.00 | 0.00 | 0.08 | 0.57 | 0.00 | 0.00 | 0.49 | 0.49 |
| Volume/Cap: | 0.86 | 0.86 | 0.70 | 0.00 | 0.00 | 0.00 | 0.86 | 0.27 | 0.00 | 0.00 | 0.86 | 0.86 |
| Delay/Veh: | 40.9 | 40.9 | 30.7 | 0.0 | 0.0 | 0.0 | 82.1 | 11.0 | 0.0 | 0.0 | 31.1 | 31.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 40.9 | 40.9 | 30.7 | 0.0 | 0.0 | 0.0 | 82.1 | 11.0 | 0.0 | 0.0 | 31.1 | 31.1 |
| LOS by Move: | D | D | C | A | A | A | F | B | A | A | C | C |
| HCM2k95thQ: | 32 | 32 | 21 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 36 | 36 |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): OVERFLOW  Worst Case Level Of Service: F[xxxxx]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 400 | 248 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 447 | 297 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 447 | 297 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 447 | 297 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 512 | xxxx | xxxxx | 92 | xxxx | xxxxx | 1072 | 983 | 289 | 1163 | 1205 | 91 |
| Potent Cap.: | 1064 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 200 | 251 | 755 | 173 | 186 | 973 |
| Move Cap.: | 1064 | xxxx | xxxxx | 1515 | xxxx | xxxxx | 0 | 172 | 755 | 34 | 127 | 973 |
| Volume/Cap: | 0.25 | xxxx | xxxx | 0.02 | xxxx | xxxx | xxxx | 0.78 | 0.30 | 0.12 | 1.16 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 1.0 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.5 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 0 | xxxxx | xxxx | 141 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 11.5 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 243 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 242.8 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Average Delay (sec/veh): 6307.6  Worst Case Level Of Service: F[15309.0]

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 336 | 299 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 378 | 336 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 378 | 336 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 378 | 336 | 134 | 230 | 4 | 148 | 33 |
| Critical Gap Module: | | | | | | | | | | | | |
| Critical Gp: | 4.1 | xxxx | xxxxx | 4.1 | xxxx | xxxxx | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| FollowUpTim: | 2.2 | xxxx | xxxxx | 2.2 | xxxx | xxxxx | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 446 | xxxx | xxxxx | 78 | xxxx | xxxxx | 1014 | 925 | 257 | 1106 | 1113 | 77 |
| Potent Cap.: | 1125 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 219 | 271 | 787 | 190 | 210 | 990 |
| Move Cap.: | 1125 | xxxx | xxxxx | 1533 | xxxx | xxxxx | 10 | 192 | 787 | 47 | 149 | 990 |
| Volume/Cap: | 0.24 | xxxx | xxxx | 0.02 | xxxx | xxxx | 33.23 | 0.70 | 0.29 | 0.08 | 0.99 | 0.03 |
| Level Of Service Module: | | | | | | | | | | | | |
| 2Way95thQ: | 0.9 | xxxx | xxxxx | 0.1 | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Control Del: | 9.2 | xxxx | xxxxx | 7.4 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| LOS by Move: | A | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 20 | xxxxx | xxxx | 167 | xxxxx |
| SharedQueue: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 87.9 | xxxxx | xxxxx | 9.6 | xxxxx |
| Shrd ConDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 158 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | F | * | * | F | * |
| ApproachDel: | xxxxxx | | | xxxxxx | | | xxxxxx | | | 158.1 | | |
| ApproachLOS: | * | | | * | | | F | | | F | | |

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.839
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 45.3
Optimal Cycle: 75 Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | 2007 Balanced | | | | | | | | | | | |
| Base Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 400 | 248 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 271 | 89 | 3 | 30 | 65 | 447 | 297 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 271 | 89 | 3 | 30 | 65 | 447 | 297 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 271 | 89 | 3 | 30 | 65 | 447 | 297 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 271 | 89 | 3 | 30 | 65 | 447 | 297 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 1.00 | 1.00 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.97 | 0.03 | 1.00 | 0.13 | 0.87 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1829 | 62 | 1805 | 210 | 1441 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.05 | 0.05 | 0.02 | 0.31 | 0.31 | 0.16 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.18 | 0.41 | 0.41 | 0.14 | 0.37 | 0.37 | 0.25 | 0.25 | 0.25 | 0.12 | 0.12 | 0.12 |
| Volume/Cap: | 0.84 | 0.12 | 0.12 | 0.12 | 0.84 | 0.84 | 0.65 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Delay/Veh: | 57.0 | 18.4 | 18.4 | 37.8 | 38.8 | 38.8 | 36.8 | 49.0 | 49.0 | 66.9 | 66.9 | 66.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 57.0 | 18.4 | 18.4 | 37.8 | 38.8 | 38.8 | 36.8 | 49.0 | 49.0 | 66.9 | 66.9 | 66.9 |
| LOS by Move: | E | B | B | D | D | D | D | D | D | E | E | E |
| HCM2k95thQ: | 20 | 4 | 4 | 2 | 29 | 29 | 15 | 21 | 21 | 15 | 15 | 15 |

Note: Queue reported is the number of cars per lane.





Midday Peak Hour - Buildout plus Alternative E (Mitigated)
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #13 Asti (Frontage) Rd/South Interchange

Cycle (sec): 100 Critical Vol./Cap.(X): 0.790
Loss Time (sec): 8 (Y+R=4.0 sec) Average Delay (sec/veh): 42.2
Optimal Cycle: 63 Level Of Service: D

| Street Name: | Asti (Frontage) Rd | | | | | | South Interchange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Split Phase | | | Split Phase | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Growth Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Initial Bse: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |
| Added Vol: | 239 | 56 | 3 | 30 | 50 | 336 | 299 | 134 | 219 | 4 | 148 | 33 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 265 | 75 | 3 | 30 | 68 | 378 | 336 | 134 | 230 | 4 | 148 | 33 |
| User Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PHF Volume: | 265 | 75 | 3 | 30 | 68 | 378 | 336 | 134 | 230 | 4 | 148 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 265 | 75 | 3 | 30 | 68 | 378 | 336 | 134 | 230 | 4 | 148 | 33 |
| PCE Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| MLF Adj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| FinalVolume: | 265 | 75 | 3 | 30 | 68 | 378 | 336 | 134 | 230 | 4 | 148 | 33 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.95 | 0.99 | 0.99 | 0.95 | 0.87 | 0.87 | 0.95 | 0.91 | 0.91 | 0.98 | 0.98 | 0.98 |
| Lanes: | 1.00 | 0.96 | 0.04 | 1.00 | 0.15 | 0.85 | 1.00 | 0.37 | 0.63 | 0.02 | 0.80 | 0.18 |
| Final Sat.: | 1805 | 1816 | 73 | 1805 | 253 | 1406 | 1805 | 633 | 1086 | 40 | 1482 | 330 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.15 | 0.04 | 0.04 | 0.02 | 0.27 | 0.27 | 0.19 | 0.21 | 0.21 | 0.10 | 0.10 | 0.10 |
| Crit Moves: | **** | | | | **** | | | | **** | **** | | |
| Green/Cycle: | 0.19 | 0.37 | 0.37 | 0.15 | 0.34 | 0.34 | 0.27 | 0.27 | 0.27 | 0.13 | 0.13 | 0.13 |
| Volume/Cap: | 0.79 | 0.11 | 0.11 | 0.11 | 0.79 | 0.79 | 0.70 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 |
| Delay/Veh: | 50.8 | 20.4 | 20.4 | 36.8 | 37.2 | 37.2 | 37.3 | 43.0 | 43.0 | 58.9 | 58.9 | 58.9 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 50.8 | 20.4 | 20.4 | 36.8 | 37.2 | 37.2 | 37.3 | 43.0 | 43.0 | 58.9 | 58.9 | 58.9 |
| LOS by Move: | D | C | C | D | D | D | D | D | D | E | E | E |
| HCM2k95thQ: | 18 | 3 | 3 | 2 | 25 | 25 | 17 | 20 | 20 | 14 | 14 | 14 |

Note: Queue reported is the number of cars per lane.

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### PM Buildout+ Project E Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 67 | 1.5 | 0.705 | 20.1 | LOS C | 167 | 0.90 | 1.13 | 19.6 |
| 16T | T | 218 | 1.8 | 0.706 | 13.0 | LOS B | 167 | 0.90 | 1.09 | 22.0 |
| 16R | R | 97 | 2.1 | 0.708 | 14.6 | LOS B | 167 | 0.90 | 1.10 | 21.0 |
| **Approach** | | **382** | **1.8** | **0.706** | **14.6** | **LOS B** | **167** | **0.90** | **1.10** | **21.2** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.455 | 23.3 | LOS C | 91 | 0.89 | 1.04 | 19.2 |
| 6T | T | 119 | 1.7 | 0.452 | 13.7 | LOS B | 91 | 0.89 | 0.99 | 21.5 |
| 6R | R | 72 | 1.4 | 0.452 | 15.0 | LOS B | 91 | 0.89 | 0.98 | 20.8 |
| **Approach** | | **195** | **2.1** | **0.452** | **14.4** | **LOS B** | **91** | **0.89** | **0.99** | **21.2** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 100 | 2.0 | 1.042 | 66.6 | LOS E | 690 | 1.00 | 2.09 | 10.2 |
| 14T | T | 424 | 1.9 | 1.042 | 57.9 | LOS E | 690 | 1.00 | 2.09 | 9.6 |
| 14R | R | 46 | 2.2 | 1.045 | 59.4 | LOS E | 690 | 1.00 | 2.09 | 9.4 |
| **Approach** | | **570** | **1.9** | **1.041** | **59.5** | **LOS E** | **690** | **1.00** | **2.09** | **9.7** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 236 | 2.1 | 0.296 | 10.7 | LOS B | 66 | 0.33 | 0.60 | 24.2 |
| 2T | T | 66 | 1.5 | 0.296 | 2.1 | LOS A | 66 | 0.33 | 0.23 | 29.4 |
| 2R | R | 114 | 1.8 | 0.297 | 2.1 | LOS A | 66 | 0.33 | 0.23 | 29.4 |
| **Approach** | | **415** | **1.9** | **0.296** | **7.0** | **LOS A** | **66** | **0.33** | **0.44** | **26.0** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 698 | 2.0 | 0.571 | 15.9 | LOS B | 150 | 0.74 | 0.90 | 22.4 |
| 18T | T | 238 | 2.1 | 0.571 | 5.8 | LOS A | 150 | 0.74 | 0.67 | 26.2 |
| 18R | R | 203 | 2.0 | 0.572 | 6.9 | LOS A | 150 | 0.74 | 0.73 | 25.6 |
| **Approach** | | **1139** | **2.0** | **0.571** | **12.2** | **LOS B** | **150** | **0.74** | **0.82** | **23.5** |
| **All Vehicles** | | **2701** | **2.0** | **1.045** | **21.9** | **LOS C** | **690** | **0.77** | **1.08** | **18.2** |

Symbols which may appear in this table:



Movement Summary Page 1 of 2

SIDRA INTERSECTION

# Movement Summary

## South Interchange East Consolidated Roundabout

### Weekend Midday Buildout+ Project E Alternative

**Roundabout**

### Vehicle Movements

| Mov ID | Turn | Dem Flow (veh/h) | %HV | Deg of Satn (v/c) | Aver Delay (sec) | Level of Service | 95% Back of Queue (ft) | Prop. Queued | Eff. Stop Rate | Aver Speed (mph) |
|---|---|---|---|---|---|---|---|---|---|---|
| **NB Asti** | | | | | | | | | | |
| 11L | L | 66 | 1.5 | 0.569 | 15.7 | LOS B | 116 | 0.82 | 1.02 | 21.7 |
| 16T | T | 213 | 1.9 | 0.571 | 8.6 | LOS A | 116 | 0.82 | 0.94 | 25.1 |
| 16R | R | 82 | 2.4 | 0.569 | 10.2 | LOS B | 116 | 0.82 | 0.97 | 23.9 |
| **Approach** | | **360** | **1.9** | **0.571** | **10.3** | **LOS B** | **116** | **0.82** | **0.96** | **24.0** |
| **WB AV Resort** | | | | | | | | | | |
| 1L | L | 4 | 20.0 | 0.357 | 19.0 | LOS B | 67 | 0.82 | 0.97 | 21.0 |
| 6T | T | 119 | 1.7 | 0.371 | 9.5 | LOS A | 67 | 0.82 | 0.89 | 24.4 |
| 6R | R | 72 | 1.4 | 0.370 | 10.7 | LOS B | 67 | 0.82 | 0.87 | 23.5 |
| **Approach** | | **195** | **2.1** | **0.370** | **10.2** | **LOS B** | **67** | **0.82** | **0.89** | **24.0** |
| **SB Asti** | | | | | | | | | | |
| 17L | L | 103 | 1.9 | 0.837 | 29.6 | LOS C | 294 | 0.96 | 1.35 | 16.9 |
| 14T | T | 353 | 2.0 | 0.835 | 20.8 | LOS C | 294 | 0.96 | 1.33 | 17.9 |
| 14R | R | 45 | 2.2 | 0.833 | 22.4 | LOS C | 294 | 0.96 | 1.34 | 17.3 |
| **Approach** | | **501** | **2.0** | **0.834** | **22.8** | **LOS C** | **294** | **0.96** | **1.34** | **17.6** |
| **EB South Interchange** | | | | | | | | | | |
| 5L | L | 201 | 2.0 | 0.277 | 11.1 | LOS B | 60 | 0.33 | 0.60 | 24.1 |
| 2T | T | 67 | 1.5 | 0.277 | 2.1 | LOS A | 60 | 0.33 | 0.23 | 29.4 |
| 2R | R | 116 | 1.7 | 0.277 | 2.1 | LOS A | 60 | 0.33 | 0.23 | 29.4 |
| **Approach** | | **383** | **1.8** | **0.277** | **6.8** | **LOS A** | **60** | **0.33** | **0.43** | **26.1** |
| **101 NB Offramp** | | | | | | | | | | |
| 13L | L | 568 | 1.9 | 0.476 | 14.6 | LOS B | 102 | 0.67 | 0.82 | 22.9 |
| 18T | T | 197 | 2.0 | 0.476 | 4.7 | LOS A | 102 | 0.67 | 0.51 | 26.6 |
| 18R | R | 203 | 2.0 | 0.477 | 5.7 | LOS A | 102 | 0.67 | 0.58 | 26.0 |
| **Approach** | | **968** | **2.0** | **0.476** | **10.7** | **LOS B** | **102** | **0.67** | **0.71** | **24.0** |
| **All Vehicles** | | **2407** | **2.0** | **0.837** | **12.5** | **LOS B** | **294** | **0.71** | **0.85** | **22.7** |

Symbols which may appear in this table:

# APPENDIX A .

## Signal Warrant Analysis

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 466 | | 95 | | 46 | 399 | | 0 | | 0 | 0 | | 0 | | 61 | 0 | | 34 | |

Major Street Volume: 1006
Minor Approach Volume: 95
Minor Approach Volume Threshold: 372

SIGNAL WARRANT DISCLAIMER

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The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.





Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 432 | | 78 | | 40 | 432 | | 0 | | 0 | 0 | | 0 | | 78 | 0 | | 40 | |

Major Street Volume: 982
Minor Approach Volume: 118
Minor Approach Volume Threshold: 382

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 4 | 0 | 24 | 0 | 43 | 97 | 25 | 345 | 0 |

Major Street Volume: 510
Minor Approach Volume: 28
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 3 | 0 | 23 | 0 | 42 | 117 | 19 | 176 | 0 |

Major Street Volume: 354
Minor Approach Volume: 26
Minor Approach Volume Threshold: 821

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 272 | 0 | 55 | 0 | 0 | 0 | 23 | 15 | 0 | 0 | 57 | 6 |

Major Street Volume: 101
Minor Approach Volume: 327
Minor Approach Volume Threshold: 1360

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 144 | 0 | 27 | 0 | 0 | 0 | 26 | 20 | 0 | 0 | 58 | 8 |

Major Street Volume: 112
Minor Approach Volume: 171
Minor Approach Volume Threshold: 1316

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 0 1 | 0 | 1 | 1 0 0 | 0 | 1 | 0 0 0 | 0 | 0 |
| Initial Vol: | 32 | 45 | 0 | 0 | 27 | 26 | 69 | 0 | 6 | 0 | 0 | 0 |

Major Street Volume: 130
Minor Approach Volume: 75
Minor Approach Volume Threshold: 1251

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 0 1 | 0 | 1 | 1 0 0 | 0 | 1 | 0 0 0 | 0 | 0 |
| Initial Vol: | 11 | 28 | 0 | 0 | 26 | 28 | 32 | 0 | 10 | 0 | 0 | 0 |

Major Street Volume: 93
Minor Approach Volume: 42
Minor Approach Volume Threshold: 1396

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Initial Vol: | 0 | 69 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Major Street Volume: 106
Minor Approach Volume: 0
Minor Approach Volume Threshold: 818

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Initial Vol: | 0 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Major Street Volume: 77
Minor Approach Volume: 0
Minor Approach Volume Threshold: 903

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| Initial Vol: | 0 | 66 | 16 | 2 | 35 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |

Major Street Volume: 119
Minor Approach Volume: 30
Minor Approach Volume Threshold: 787

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 0 0 1 | | |
| Initial Vol: | 0 | 37 | 2 | 1 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

Major Street Volume: 76
Minor Approach Volume: 3
Minor Approach Volume Threshold: 907

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 177 | 343 | | 0 | 0 | 135 | | 47 | 33 | | 0 | 71 | 0 | | 0 | 0 |

Major Street Volume: 702
Minor Approach Volume: 104
Minor Approach Volume Threshold: 526

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 124 | 239 | | 0 | 0 | 239 | | 40 | 40 | | 0 | 124 | 0 | | 0 | 0 |

Major Street Volume: 642
Minor Approach Volume: 164
Minor Approach Volume Threshold: 565

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 87 | 13 | 213 | 58 | 0 | 0 | 0 | 0 | 29 | 0 | 497 |

Major Street Volume: 372
Minor Approach Volume: 526
Minor Approach Volume Threshold: 800

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 0 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 42 | 0 | 280 | 65 | 0 | 0 | 0 | 0 | 2 | 0 | 345 |

Major Street Volume: 387
Minor Approach Volume: 347
Minor Approach Volume Threshold: 782

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #11 101S Ramps/South Interchange

**********

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 6 | 0 | 54 | 0 | 110 | 117 | 18 | 472 | 0 |

Major Street Volume: 716
Minor Approach Volume: 59
Minor Approach Volume Threshold: 518

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

**********

Intersection #11 101S Ramps/South Interchange

**********

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 124 | 201 | 1 | 299 | 0 |

Major Street Volume: 625
Minor Approach Volume: 60
Minor Approach Volume Threshold: 576

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Initial Vol: | 408 | | 0 | | 20 | 0 | | 0 | | 0 | 69 | | 46 | | 0 | 0 | | 81 | | 6 |

Major Street Volume: 202
Minor Approach Volume: 428
Minor Approach Volume Threshold: 1061

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Stop Sign | | | | | Stop Sign | | | | | Uncontrolled | | | | | Uncontrolled | | | | |
| Lanes: | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Initial Vol: | 248 | | 6 | | 11 | 0 | | 0 | | 0 | 77 | | 41 | | 0 | 0 | | 57 | | 1 |

Major Street Volume: 176
Minor Approach Volume: 265
Minor Approach Volume Threshold: 1121

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 1 | 0 | 0 0 | 0 0 | 0 | 1 0 | 0 0 | 1! 0 | 0 | 0 0 | 0 | 0 0 |
| Initial Vol: | 32 | 33 | 0 | 0 | 15 | 47 | 49 | 0 | 11 | 0 | 0 | 0 |

Major Street Volume: 127
Minor Approach Volume: 60
Minor Approach Volume Threshold: 770

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Existing Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Base Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 1 | 0 | 0 0 | 0 0 | 0 | 1 0 | 0 0 | 1! 0 | 0 | 0 0 | 0 | 0 0 |
| Initial Vol: | 26 | 19 | 0 | 0 | 18 | 42 | 37 | 0 | 11 | 0 | 0 | 0 |

Major Street Volume: 105
Minor Approach Volume: 48
Minor Approach Volume Threshold: 820

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 573 | 113 | 46 | 506 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |

Major Street Volume: 1238
Minor Approach Volume: 110
Minor Approach Volume Threshold: 282

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 415 | 71 | 28 | 415 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |

Major Street Volume: 929
Minor Approach Volume: 95
Minor Approach Volume Threshold: 406

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Initial Vol: | 0 | 0 | 0 | 42 | 0 | 41 | 0 | 85 | 215 | 137 | 490 | 0 |

Major Street Volume: 927
Minor Approach Volume: 83
Minor Approach Volume Threshold: 407

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Initial Vol: | 0 | 0 | 0 | 57 | 0 | 33 | 0 | 78 | 207 | 160 | 279 | 0 |

Major Street Volume: 724
Minor Approach Volume: 90
Minor Approach Volume Threshold: 513

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 361 | 0 | 211 | 0 | 0 | 0 | 38 | 80 | 0 | 0 | 225 | 45 |

Major Street Volume: 388
Minor Approach Volume: 572
Minor Approach Volume Threshold: 781

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 187 | 0 | 240 | 0 | 0 | 0 | 33 | 103 | 0 | 0 | 257 | 57 |

Major Street Volume: 450
Minor Approach Volume: 427
Minor Approach Volume Threshold: 717

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 224 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 207 | 0 | 0 | 0 |

Major Street Volume: 393
Minor Approach Volume: 295
Minor Approach Volume Threshold: 776

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 261 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 298 | 0 | 0 | 0 |

Major Street Volume: 388
Minor Approach Volume: 339
Minor Approach Volume Threshold: 781

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | | 0 | 1 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1! | 0 | 0 | |
| Initial Vol: | 0 | | 119 | | 308 | | 181 | | 72 | | 0 | | 0 | | 0 | | 0 | | 264 | | 0 | | 155 | |

Major Street Volume: 680
Minor Approach Volume: 419
Minor Approach Volume Threshold: 322

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | | 0 | 1 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1! | 0 | 0 | |
| Initial Vol: | 0 | | 77 | | 461 | | 271 | | 60 | | 0 | | 0 | | 0 | | 0 | | 369 | | 0 | | 216 | |

Major Street Volume: 869
Minor Approach Volume: 585
Minor Approach Volume Threshold: 257

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 0 0 0 | 0 | 0 | 1! 0 0 |
| Initial Vol: | 0 | 414 | 16 | 5 | 350 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |

Major Street Volume: 785
Minor Approach Volume: 30
Minor Approach Volume Threshold: 284

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1 |
| Initial Vol: | 0 | 526 | 1 | 4 | 444 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |

Major Street Volume: 975
Minor Approach Volume: 2
Minor Approach Volume Threshold: 226

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 |
| Initial Vol: | 210 | 448 | 0 | 0 | 218 | 50 | 36 | 0 | 102 | 0 | 0 | 0 |

Major Street Volume: 926
Minor Approach Volume: 138
Minor Approach Volume Threshold: 407

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 |
| Initial Vol: | 162 | 345 | 0 | 0 | 323 | 43 | 43 | 0 | 160 | 0 | 0 | 0 |

Major Street Volume: 873
Minor Approach Volume: 203
Minor Approach Volume Threshold: 432

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 110 | 68 | 301 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 594 |

Major Street Volume: 555
Minor Approach Volume: 661
Minor Approach Volume Threshold: 627

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 54 | 56 | 291 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 353 |

Major Street Volume: 465
Minor Approach Volume: 393
Minor Approach Volume Threshold: 703

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 223 | 362 | 594 | 0 |

Major Street Volume: 1326
Minor Approach Volume: 111
Minor Approach Volume Threshold: 253

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 253 | 444 | 345 | 0 |

Major Street Volume: 1167
Minor Approach Volume: 94
Minor Approach Volume Threshold: 308

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 1 0 |
| Initial Vol: | 489 | 0 | 407 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 467 | 49 |

Major Street Volume: 707
Minor Approach Volume: 896
Minor Approach Volume Threshold: 523

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 1 0 |
| Initial Vol: | 262 | 4 | 548 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 532 | 44 |

Major Street Volume: 735
Minor Approach Volume: 814
Minor Approach Volume Threshold: 506

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 108 | | 51 | | 1 | 10 | | 31 | | 355 | 387 | | 43 | | 81 | 1 | | 47 | | 10 |

Major Street Volume: 556
Minor Approach Volume: 511
Minor Approach Volume Threshold: 376

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 94 | | 31 | | 1 | 10 | | 28 | | 442 | 516 | | 43 | | 77 | 1 | | 47 | | 10 |

Major Street Volume: 606
Minor Approach Volume: 636
Minor Approach Volume Threshold: 353

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 566 | | 113 | | 46 | 497 | | 0 | | 0 | 0 | | 0 | | 76 | 0 | | 34 | |

Major Street Volume: 1222
Minor Approach Volume: 110
Minor Approach Volume Threshold: 288

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 404 | | 71 | | 28 | 403 | | 0 | | 0 | 0 | | 0 | | 68 | 0 | | 27 | |

Major Street Volume: 906
Minor Approach Volume: 95
Minor Approach Volume Threshold: 417

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 33 | 0 | 41 | 0 | 81 | 209 | 116 | 482 | 0 |

Major Street Volume: 888
Minor Approach Volume: 74
Minor Approach Volume Threshold: 425

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 44 | 0 | 33 | 0 | 72 | 199 | 129 | 267 | 0 |

Major Street Volume: 667
Minor Approach Volume: 77
Minor Approach Volume Threshold: 548

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 361 | 0 | 177 | 0 | 0 | 0 | 38 | 67 | 0 | 0 | 196 | 39 |

Major Street Volume: 340
Minor Approach Volume: 538
Minor Approach Volume Threshold: 838

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 187 | 0 | 189 | 0 | 0 | 0 | 33 | 85 | 0 | 0 | 214 | 47 |

Major Street Volume: 379
Minor Approach Volume: 376
Minor Approach Volume Threshold: 791

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 189 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 160 | 0 | 0 | 0 |

Major Street Volume: 358
Minor Approach Volume: 248
Minor Approach Volume Threshold: 816

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 207 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 229 | 0 | 0 | 0 |

Major Street Volume: 334
Minor Approach Volume: 270
Minor Approach Volume Threshold: 846

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | | 0 | 1 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1! | 0 | 0 | |
| Initial Vol: | 0 | | 119 | | 229 | | 134 | | 72 | | 0 | | 0 | | 0 | | 0 | | 203 | | 0 | | 120 | |

Major Street Volume: 554
Minor Approach Volume: 323
Minor Approach Volume Threshold: 377

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | | 0 | 1 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1! | 0 | 0 | |
| Initial Vol: | 0 | | 77 | | 343 | | 202 | | 60 | | 0 | | 0 | | 0 | | 0 | | 277 | | 0 | | 162 | |

Major Street Volume: 682
Minor Approach Volume: 439
Minor Approach Volume Threshold: 321

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 335 | | 16 | 5 | 289 | | 0 | 0 | | 0 | 0 | 27 | | 0 | 3 |

Major Street Volume: 645
Minor Approach Volume: 30
Minor Approach Volume Threshold: 336

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 408 | | 1 | 4 | 352 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 2 |

Major Street Volume: 765
Minor Approach Volume: 2
Minor Approach Volume Threshold: 291

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 0 | | 1 0 1 | 0 1 | | 0 0 1 | 0 0 | | 0 0 0 | 0 | |
| Initial Vol: | 208 | 447 | 0 | 0 | 217 | 50 | 36 | 0 | 100 | 0 | 0 | 0 |

Major Street Volume: 922
Minor Approach Volume: 136
Minor Approach Volume Threshold: 409

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 0 | | 1 0 1 | 0 1 | | 0 0 1 | 0 0 | | 0 0 0 | 0 | |
| Initial Vol: | 158 | 344 | 0 | 0 | 322 | 43 | 43 | 0 | 156 | 0 | 0 | 0 |

Major Street Volume: 867
Minor Approach Volume: 199
Minor Approach Volume Threshold: 435

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 110 | | 68 | | 298 | 76 | | 0 | | 0 | 0 | | 0 | | 67 | 0 | | 591 | |

Major Street Volume: 552
Minor Approach Volume: 658
Minor Approach Volume Threshold: 630

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 54 | | 56 | | 286 | 64 | | 0 | | 0 | 0 | | 0 | | 40 | 0 | | 348 | |

Major Street Volume: 460
Minor Approach Volume: 388
Minor Approach Volume Threshold: 708

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 220 | 305 | 591 | 0 |

Major Street Volume: 1263
Minor Approach Volume: 111
Minor Approach Volume Threshold: 274

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 248 | 358 | 340 | 0 |

Major Street Volume: 1071
Minor Approach Volume: 94
Minor Approach Volume Threshold: 345

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Initial Vol: | 489 | 0 | 328 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 406 | 49 |

Major Street Volume: 646
Minor Approach Volume: 817
Minor Approach Volume Threshold: 562

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Initial Vol: | 262 | 4 | 430 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 440 | 44 |

Major Street Volume: 643
Minor Approach Volume: 696
Minor Approach Volume Threshold: 564

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 108 | | 51 | | 1 | 10 | | 31 | | 294 | 308 | | 43 | | 81 | 1 | | 47 | | 10 |

Major Street Volume: 495
Minor Approach Volume: 432
Minor Approach Volume Threshold: 407

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Short Term plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 94 | | 31 | | 1 | 10 | | 28 | | 350 | 398 | | 43 | | 77 | 1 | | 47 | | 10 |

Major Street Volume: 514
Minor Approach Volume: 518
Minor Approach Volume Threshold: 397

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 565 | 113 | 46 | 496 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |

Major Street Volume: 1220
Minor Approach Volume: 110
Minor Approach Volume Threshold: 289

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 401 | 71 | 28 | 400 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |

Major Street Volume: 900
Minor Approach Volume: 95
Minor Approach Volume Threshold: 419

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 32 | 0 | 41 | 0 | 80 | 208 | 112 | 481 | 0 |

Major Street Volume: 881
Minor Approach Volume: 73
Minor Approach Volume Threshold: 429

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 41 | 0 | 33 | 0 | 71 | 197 | 121 | 264 | 0 |

Major Street Volume: 653
Minor Approach Volume: 74
Minor Approach Volume Threshold: 557

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 361 | 0 | 172 | 0 | 0 | 0 | 38 | 65 | 0 | 0 | 190 | 37 |

Major Street Volume: 330
Minor Approach Volume: 533
Minor Approach Volume Threshold: 851

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 187 | 0 | 178 | 0 | 0 | 0 | 33 | 80 | 0 | 0 | 203 | 44 |

Major Street Volume: 360
Minor Approach Volume: 365
Minor Approach Volume Threshold: 813

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 182 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 153 | 0 | 0 | 0 |

Major Street Volume: 351
Minor Approach Volume: 241
Minor Approach Volume Threshold: 824

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 194 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 213 | 0 | 0 | 0 |

Major Street Volume: 321
Minor Approach Volume: 254
Minor Approach Volume Threshold: 863

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | | 0 | 1 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1! | 0 | 0 | |
| Initial Vol: | 0 | | 119 | | 217 | | 127 | | 72 | | 0 | | 0 | | 0 | | 0 | | 192 | | 0 | | 113 | |

Major Street Volume: 535
Minor Approach Volume: 305
Minor Approach Volume Threshold: 386

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| Control: | Uncontrolled | | | | | | Uncontrolled | | | | | | Stop Sign | | | | | | Stop Sign | | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | | 0 | 1 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1! | 0 | 0 | |
| Initial Vol: | 0 | | 77 | | 318 | | 186 | | 60 | | 0 | | 0 | | 0 | | 0 | | 253 | | 0 | | 149 | |

Major Street Volume: 641
Minor Approach Volume: 402
Minor Approach Volume Threshold: 338

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 323 | | 16 | 5 | 278 | | 0 | 0 | | 0 | 0 | 27 | | 0 | 3 |

Major Street Volume: 622
Minor Approach Volume: 30
Minor Approach Volume Threshold: 346

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 383 | | 1 | 4 | 328 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 2 |

Major Street Volume: 716
Minor Approach Volume: 2
Minor Approach Volume Threshold: 308

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 0 | | 1 0 | 1 0 | 1 | 0 1 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 207 | 447 | 0 | 0 | 217 | 50 | 36 | 0 | 99 | 0 | 0 | 0 |

Major Street Volume: 921
Minor Approach Volume: 135
Minor Approach Volume Threshold: 409

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 0 | | 1 0 | 1 0 | 1 | 0 1 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 157 | 344 | 0 | 0 | 322 | 43 | 43 | 0 | 155 | 0 | 0 | 0 |

Major Street Volume: 866
Minor Approach Volume: 198
Minor Approach Volume Threshold: 436

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 110 | 68 | 297 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 590 |

Major Street Volume: 551
Minor Approach Volume: 657
Minor Approach Volume Threshold: 630

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 54 | 56 | 284 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 346 |

Major Street Volume: 458
Minor Approach Volume: 386
Minor Approach Volume Threshold: 710

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Initial Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 219 | 294 | 590 | 0 |

Major Street Volume: 1250
Minor Approach Volume: 111
Minor Approach Volume Threshold: 278

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 |
| Initial Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 246 | 336 | 338 | 0 |

Major Street Volume: 1045
Minor Approach Volume: 94
Minor Approach Volume Threshold: 355

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 1 0 |
| Initial Vol: | 489 | 0 | 316 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 395 | 49 |

Major Street Volume: 635
Minor Approach Volume: 805
Minor Approach Volume Threshold: 569

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 1 0 |
| Initial Vol: | 262 | 4 | 405 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 416 | 44 |

Major Street Volume: 619
Minor Approach Volume: 671
Minor Approach Volume Threshold: 580

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 108 | | 51 | | 1 | 10 | | 31 | | 283 | 296 | | 43 | | 81 | 1 | | 47 | | 10 |

Major Street Volume: 484
Minor Approach Volume: 420
Minor Approach Volume Threshold: 413

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 94 | | 31 | | 1 | 10 | | 28 | | 326 | 373 | | 43 | | 77 | 1 | | 47 | | 10 |

Major Street Volume: 490
Minor Approach Volume: 493
Minor Approach Volume Threshold: 410

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 562 | 113 | 46 | 493 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |

Major Street Volume: 1214
Minor Approach Volume: 110
Minor Approach Volume Threshold: 291

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 398 | 71 | 28 | 396 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |

Major Street Volume: 893
Minor Approach Volume: 95
Minor Approach Volume Threshold: 423

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Initial Vol: | 0 | 0 | 0 | 28 | 0 | 41 | 0 | 79 | 206 | 103 | 477 | 0 |

Major Street Volume: 865
Minor Approach Volume: 69
Minor Approach Volume Threshold: 436

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Initial Vol: | 0 | 0 | 0 | 37 | 0 | 33 | 0 | 69 | 194 | 110 | 260 | 0 |

Major Street Volume: 633
Minor Approach Volume: 70
Minor Approach Volume Threshold: 571

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 2 | 0 0 | 0 0 | 1 | 1 0 |
| Initial Vol: | 361 | 0 | 158 | 0 | 0 | 0 | 38 | 60 | 0 | 0 | 178 | 34 |

Major Street Volume: 310
Minor Approach Volume: 519
Minor Approach Volume Threshold: 878

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 2 | 0 0 | 0 0 | 1 | 1 0 |
| Initial Vol: | 187 | 0 | 163 | 0 | 0 | 0 | 33 | 75 | 0 | 0 | 188 | 41 |

Major Street Volume: 337
Minor Approach Volume: 350
Minor Approach Volume Threshold: 842

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 166 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 134 | 0 | 0 | 0 |

Major Street Volume: 335
Minor Approach Volume: 222
Minor Approach Volume Threshold: 844

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 176 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 193 | 0 | 0 | 0 |

Major Street Volume: 303
Minor Approach Volume: 234
Minor Approach Volume Threshold: 888

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 119 | | 183 | 108 | 72 | | 0 | 0 | 0 | | 0 | 165 | 0 | | 97 |

Major Street Volume: 482
Minor Approach Volume: 262
Minor Approach Volume Threshold: 414

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 77 | | 282 | 166 | 60 | | 0 | 0 | 0 | | 0 | 223 | 0 | | 131 |

Major Street Volume: 585
Minor Approach Volume: 354
Minor Approach Volume Threshold: 362

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 289 | | 16 | 5 | 251 | | 0 | 0 | | 0 | 0 | 27 | | 0 | 3 |

Major Street Volume: 561
Minor Approach Volume: 30
Minor Approach Volume Threshold: 374

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 347 | | 1 | 4 | 298 | | 0 | 0 | | 0 | 0 | 0 | | 0 | 2 |

Major Street Volume: 650
Minor Approach Volume: 2
Minor Approach Volume Threshold: 334

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 0 | | 1 0 | 1 0 | 1 | 0 1 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 206 | 446 | 0 | 0 | 216 | 50 | 36 | 0 | 98 | 0 | 0 | 0 |

Major Street Volume: 918
Minor Approach Volume: 134
Minor Approach Volume Threshold: 411

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 0 | | 1 0 | 1 0 | 1 | 0 1 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 156 | 343 | 0 | 0 | 321 | 43 | 43 | 0 | 154 | 0 | 0 | 0 |

Major Street Volume: 863
Minor Approach Volume: 197
Minor Approach Volume Threshold: 437

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 110 | 68 | 295 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 588 |

Major Street Volume: 549
Minor Approach Volume: 655
Minor Approach Volume Threshold: 632

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 54 | 56 | 283 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 345 |

Major Street Volume: 457
Minor Approach Volume: 385
Minor Approach Volume Threshold: 711

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 217 | 269 | 588 | 0 |

Major Street Volume: 1221
Minor Approach Volume: 111
Minor Approach Volume Threshold: 288

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 245 | 307 | 337 | 0 |

Major Street Volume: 1014
Minor Approach Volume: 94
Minor Approach Volume Threshold: 368

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Initial Vol: | 489 | 0 | 282 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 368 | 49 |

Major Street Volume: 608
Minor Approach Volume: 771
Minor Approach Volume Threshold: 588

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Initial Vol: | 262 | 4 | 369 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 386 | 44 |

Major Street Volume: 589
Minor Approach Volume: 635
Minor Approach Volume Threshold: 602

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 0 | 1! 0 | 0 | 0 | 0 | 1! 0 | 0 | 0 | 0 | 1! 0 | 0 |
| Initial Vol: | 108 | | 51 | 1 | 10 | | 31 | 256 | 262 | | 43 | 81 | 1 | | 47 | 10 |

Major Street Volume: 457
Minor Approach Volume: 386
Minor Approach Volume Threshold: 428

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 1! 0 | 0 | 0 | 0 | 1! 0 | 0 | 0 | 0 | 1! 0 | 0 | 0 | 0 | 1! 0 | 0 |
| Initial Vol: | 94 | | 31 | 1 | 10 | | 28 | 296 | 337 | | 43 | 77 | 1 | | 47 | 10 |

Major Street Volume: 460
Minor Approach Volume: 457
Minor Approach Volume Threshold: 427

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 556 | 113 | 46 | 480 | 0 | 0 | 0 | 0 | 76 | 0 | 34 |

Major Street Volume: 1195
Minor Approach Volume: 110
Minor Approach Volume Threshold: 297

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 382 | 71 | 28 | 378 | 0 | 0 | 0 | 0 | 68 | 0 | 27 |

Major Street Volume: 859
Minor Approach Volume: 95
Minor Approach Volume Threshold: 439

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 | 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 1 | 1 0 | 1 0 | 2 | 0 0 |
| Initial Vol: | 0 | 0 | 0 | 28 | 0 | 41 | 0 | 78 | 192 | 174 | 469 | 0 |

Major Street Volume: 913
Minor Approach Volume: 69
Minor Approach Volume Threshold: 413

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 | 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 1 | 1 0 | 1 0 | 2 | 0 0 |
| Initial Vol: | 0 | 0 | 0 | 32 | 0 | 33 | 0 | 67 | 175 | 131 | 241 | 0 |

Major Street Volume: 614
Minor Approach Volume: 65
Minor Approach Volume Threshold: 584

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 2 | 0 0 | 0 0 | 1 | 1 0 |
| Initial Vol: | 361 | 0 | 155 | 0 | 0 | 0 | 38 | 59 | 0 | 0 | 241 | 49 |

Major Street Volume: 387
Minor Approach Volume: 516
Minor Approach Volume Threshold: 782

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 2 | 0 0 | 0 0 | 1 | 1 0 |
| Initial Vol: | 187 | 0 | 143 | 0 | 0 | 0 | 33 | 67 | 0 | 0 | 189 | 41 |

Major Street Volume: 330
Minor Approach Volume: 330
Minor Approach Volume Threshold: 851

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 244 | 76 | 0 | 0 | 52 | 41 | 88 | 0 | 130 | 0 | 0 | 0 |

Major Street Volume: 413
Minor Approach Volume: 218
Minor Approach Volume Threshold: 754

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 | 1 0 | 0 | 0 0 | 1 0 | 1 | 1 0 | 0 0 | 1 | 0 0 | 0 0 | 0 |
| Initial Vol: | 177 | 50 | 0 | 0 | 43 | 34 | 41 | 0 | 165 | 0 | 0 | 0 |

Major Street Volume: 304
Minor Approach Volume: 206
Minor Approach Volume Threshold: 886

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 119 | | 177 | | 104 | | 72 | | 0 | 0 | | 0 | | 0 | 299 | | 0 | | 175 |

Major Street Volume: 472
Minor Approach Volume: 474
Minor Approach Volume Threshold: 420

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 77 | | 236 | | 138 | | 60 | | 0 | 0 | | 0 | | 0 | 226 | | 0 | | 132 |

Major Street Volume: 511
Minor Approach Volume: 358
Minor Approach Volume Threshold: 398

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 283 | | 16 | 5 | 385 | | 0 | 0 | 0 | | 0 | 27 | 0 | | 3 |

Major Street Volume: 689
Minor Approach Volume: 30
Minor Approach Volume Threshold: 319

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 301 | | 1 | 4 | 301 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 2 |

Major Street Volume: 607
Minor Approach Volume: 2
Minor Approach Volume Threshold: 353

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 |
| Initial Vol: | 199 | 444 | 0 | 0 | 214 | 50 | 36 | 0 | 91 | 0 | 0 | 0 |

Major Street Volume: 907
Minor Approach Volume: 127
Minor Approach Volume Threshold: 416

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 0 | 1 | 0 | 1 0 | 1 | 0 1 | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 |
| Initial Vol: | 146 | 340 | 0 | 0 | 318 | 43 | 43 | 0 | 144 | 0 | 0 | 0 |

Major Street Volume: 847
Minor Approach Volume: 187
Minor Approach Volume Threshold: 445

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 110 | 68 | 286 | 76 | 0 | 0 | 0 | 0 | 67 | 0 | 579 |

Major Street Volume: 540
Minor Approach Volume: 646
Minor Approach Volume Threshold: 639

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 0 1 0 | | | 1 0 1 0 0 | | | 0 0 0 0 0 | | | 1 0 0 0 1 | | |
| Initial Vol: | 0 | 54 | 56 | 270 | 64 | 0 | 0 | 0 | 0 | 40 | 0 | 332 |

Major Street Volume: 444
Minor Approach Volume: 372
Minor Approach Volume Threshold: 723

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 44 | 0 | 67 | 0 | 147 | 208 | 412 | 579 | 0 |

Major Street Volume: 1346
Minor Approach Volume: 111
Minor Approach Volume Threshold: 246

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 38 | 0 | 56 | 0 | 125 | 232 | 323 | 324 | 0 |

Major Street Volume: 1004
Minor Approach Volume: 94
Minor Approach Volume Threshold: 372

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Initial Vol: | 489 | 0 | 276 | 0 | 0 | 0 | 84 | 107 | 0 | 0 | 502 | 49 |

Major Street Volume: 742
Minor Approach Volume: 765
Minor Approach Volume Threshold: 502

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Initial Vol: | 262 | 4 | 323 | 0 | 0 | 0 | 69 | 90 | 0 | 0 | 389 | 44 |

Major Street Volume: 592
Minor Approach Volume: 589
Minor Approach Volume Threshold: 600

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Initial Vol: | 108 | 51 | 1 | 10 | 31 | 390 | 256 | 43 | 81 | 1 | 47 | 10 |

Major Street Volume: 591
Minor Approach Volume: 380
Minor Approach Volume Threshold: 360

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Short Term plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Initial Vol: | 94 | 31 | 1 | 10 | 28 | 299 | 291 | 43 | 77 | 1 | 47 | 10 |

Major Street Volume: 463
Minor Approach Volume: 411
Minor Approach Volume Threshold: 425

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 | 0 1 | 1 0 | 0 | 1 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Initial Vol: | 0 | 705 | 152 | 47 | 628 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |

Major Street Volume: 1532
Minor Approach Volume: 141
Minor Approach Volume Threshold: 191

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 | 0 1 | 1 0 | 0 | 1 1 | 0 0 | 0 | 0 0 | 0 0 | 1 | 0 0 | 0 1 |
| Initial Vol: | 0 | 671 | 135 | 41 | 661 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |

Major Street Volume: 1508
Minor Approach Volume: 164
Minor Approach Volume Threshold: 197

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| Initial Vol: | 0 | 0 | 0 | 16 | 0 | 77 | 0 | 128 | 395 | 92 | 690 | 0 |

Major Street Volume: 1305
Minor Approach Volume: 93
Minor Approach Volume Threshold: 260

SIGNAL WARRANT DISCLAIMER

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| Initial Vol: | 0 | 0 | 0 | 15 | 0 | 76 | 0 | 127 | 415 | 86 | 521 | 0 |

Major Street Volume: 1149
Minor Approach Volume: 91
Minor Approach Volume Threshold: 314

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 552 | 0 | 129 | 0 | 0 | 0 | 70 | 65 | 0 | 0 | 189 | 38 |

Major Street Volume: 362
Minor Approach Volume: 681
Minor Approach Volume Threshold: 811

SIGNAL WARRANT DISCLAIMER

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 424 | 0 | 101 | 0 | 0 | 0 | 73 | 70 | 0 | 0 | 190 | 40 |

Major Street Volume: 373
Minor Approach Volume: 525
Minor Approach Volume Threshold: 798

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 | 0 1 | 0 1 | 1 | 0 0 | 0 1 | 0 | 0 0 | 0 0 |
| Initial Vol: | 149 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 70 | 0 | 0 | 0 |

Major Street Volume: 470
Minor Approach Volume: 199
Minor Approach Volume Threshold: 699

SIGNAL WARRANT DISCLAIMER

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 | 0 1 | 0 1 | 1 | 0 0 | 0 1 | 0 | 0 0 | 0 0 |
| Initial Vol: | 128 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 74 | 0 | 0 | 0 |

Major Street Volume: 433
Minor Approach Volume: 166
Minor Approach Volume Threshold: 734

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Initial Vol: | 0 225 | | 0 | 0 147 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Major Street Volume: 372
Minor Approach Volume: 0
Minor Approach Volume Threshold: 483

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 0 | 0 | 0 0 1 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1! | 0 | 0 |
| Initial Vol: | 0 196 | | 0 | 0 147 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Major Street Volume: 343
Minor Approach Volume: 0
Minor Approach Volume Threshold: 505

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 0 0 0 | 0 | 0 | 1! 0 0 |
| Initial Vol: | 0 | 196 | 16 | 2 | 200 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |

Major Street Volume: 414
Minor Approach Volume: 30
Minor Approach Volume Threshold: 455

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1 |
| Initial Vol: | 0 | 167 | 2 | 1 | 201 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

Major Street Volume: 371
Minor Approach Volume: 3
Minor Approach Volume Threshold: 484

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 247 | 662 | | 0 | 0 | 384 | | 56 | 43 | | 0 | 135 | 0 | | 0 | 0 |

Major Street Volume: 1349
Minor Approach Volume: 178
Minor Approach Volume Threshold: 245

SIGNAL WARRANT DISCLAIMER

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 194 | 558 | | 0 | 0 | 488 | | 49 | 50 | | 0 | 188 | 0 | | 0 | 0 |

Major Street Volume: 1289
Minor Approach Volume: 238
Minor Approach Volume Threshold: 265

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 0 | 0 | 0 | 0 | 0 0 | 1 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 159 | | 187 | 443 | 115 | | 0 | 0 | | 0 | 0 | 149 | | 0 | 755 |

Major Street Volume: 904
Minor Approach Volume: 904
Minor Approach Volume Threshold: 417

SIGNAL WARRANT DISCLAIMER

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 0 | 0 | 0 | 0 | 0 0 | 1 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 122 | | 175 | 529 | 127 | | 0 | 0 | | 0 | 0 | 125 | | 0 | 648 |

Major Street Volume: 953
Minor Approach Volume: 773
Minor Approach Volume Threshold: 395

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 318 | 808 | 0 |

Major Street Volume: 1756
Minor Approach Volume: 221
Minor Approach Volume Threshold: 132 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER

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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 303 | 678 | 0 |

Major Street Volume: 1730
Minor Approach Volume: 227
Minor Approach Volume Threshold: 138 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 0 | 0 | 0 0 | 0 1 | 0 |
| Initial Vol: | 663 | 0 | 269 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 464 | 142 |

Major Street Volume: 958
Minor Approach Volume: 932
Minor Approach Volume Threshold: 393

SIGNAL WARRANT DISCLAIMER
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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 0 | 0 | 0 0 | 0 1 | 0 |
| Initial Vol: | 540 | 6 | 262 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 447 | 138 |

Major Street Volume: 950
Minor Approach Volume: 808
Minor Approach Volume Threshold: 396

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Initial Vol: | 271 | 89 | 3 | 30 | 65 | 186 | 142 | 134 | 230 | 4 | 148 | 33 |

Major Street Volume: 644
Minor Approach Volume: 506
Minor Approach Volume Threshold: 337

SIGNAL WARRANT DISCLAIMER
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Weekend Midday Peak Hour - Buildout Conditions
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 | 0 0 | 1! 0 | 0 |
| Initial Vol: | 265 | 75 | 3 | 30 | 68 | 181 | 130 | 134 | 230 | 4 | 148 | 33 |

Major Street Volume: 622
Minor Approach Volume: 494
Minor Approach Volume Threshold: 346

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 737 | 152 | 47 | 661 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |

Major Street Volume: 1597
Minor Approach Volume: 141
Minor Approach Volume Threshold: 173

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 715 | 135 | 41 | 709 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |

Major Street Volume: 1600
Minor Approach Volume: 164
Minor Approach Volume Threshold: 172

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 50 | 0 | 77 | 0 | 143 | 417 | 182 | 725 | 0 |

Major Street Volume: 1467
Minor Approach Volume: 127
Minor Approach Volume Threshold: 209

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 66 | 0 | 76 | 0 | 149 | 446 | 212 | 570 | 0 |

Major Street Volume: 1377
Minor Approach Volume: 142
Minor Approach Volume Threshold: 237

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 552 | 0 | 261 | 0 | 0 | 0 | 70 | 114 | 0 | 0 | 315 | 68 |

Major Street Volume: 567
Minor Approach Volume: 813
Minor Approach Volume Threshold: 618

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 424 | 0 | 299 | 0 | 0 | 0 | 73 | 144 | 0 | 0 | 365 | 81 |

Major Street Volume: 663
Minor Approach Volume: 723
Minor Approach Volume Threshold: 551

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 | 0 1 | 0 1 | 1 | 0 0 | 0 1 | 0 | 0 0 | 0 0 |
| Initial Vol: | 304 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 251 | 0 | 0 | 0 |

Major Street Volume: 625
Minor Approach Volume: 380
Minor Approach Volume Threshold: 576

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 | 0 1 | 0 1 | 1 | 0 0 | 0 1 | 0 | 0 0 | 0 0 |
| Initial Vol: | 345 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 345 | 0 | 0 | 0 |

Major Street Volume: 650
Minor Approach Volume: 437
Minor Approach Volume Threshold: 559

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 225 | | 308 | | 181 | 147 | | 0 | | 0 | 0 | | 0 | | 264 | 0 | | 155 | |

Major Street Volume: 861
Minor Approach Volume: 419
Minor Approach Volume Threshold: 259

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 196 | | 461 | | 271 | 147 | | 0 | | 0 | 0 | | 0 | | 369 | 0 | | 216 | |

Major Street Volume: 1075
Minor Approach Volume: 585
Minor Approach Volume Threshold: 200

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 504 | | 16 | 2 | 464 | | 0 | 0 | 0 | | 0 | 27 | 0 | | 3 |

Major Street Volume: 986
Minor Approach Volume: 30
Minor Approach Volume Threshold: 223

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 628 | | 2 | 1 | 570 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 3 |

Major Street Volume: 1201
Minor Approach Volume: 3
Minor Approach Volume Threshold: 171

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 258 | 666 | | 0 | 0 | 388 | | 56 | 43 | | 0 | 146 | 0 | | 0 | 0 |

Major Street Volume: 1368
Minor Approach Volume: 189
Minor Approach Volume Threshold: 239

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 210 | 563 | | 0 | 0 | 493 | | 49 | 50 | | 0 | 204 | 0 | | 0 | 0 |

Major Street Volume: 1315
Minor Approach Volume: 254
Minor Approach Volume Threshold: 256

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 159 | | 187 | | 458 | 115 | | 0 | | 0 | 0 | | 0 | | 149 | 0 | | 770 | |

Major Street Volume: 919
Minor Approach Volume: 919
Minor Approach Volume Threshold: 410

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 122 | | 175 | | 550 | 127 | | 0 | | 0 | 0 | | 0 | | 125 | 0 | | 669 | |

Major Street Volume: 974
Minor Approach Volume: 794
Minor Approach Volume Threshold: 385

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 419 | 567 | 823 | 0 |

Major Street Volume: 2035
Minor Approach Volume: 221
Minor Approach Volume Threshold: 69 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 520 | 650 | 699 | 0 |

Major Street Volume: 2119
Minor Approach Volume: 227
Minor Approach Volume Threshold: 51 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 1 | 0 0 | 0 | 0 0 | 1 0 |
| Initial Vol: | 663 | 0 | 577 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 728 | 142 |

Major Street Volume: 1222
Minor Approach Volume: 1240
Minor Approach Volume Threshold: 288

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 1 | 0 0 | 0 | 0 0 | 1 0 |
| Initial Vol: | 540 | 6 | 724 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 815 | 138 |

Major Street Volume: 1318
Minor Approach Volume: 1270
Minor Approach Volume Threshold: 255

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 271 | | 89 | | 3 | 30 | | 65 | | 450 | 450 | | 134 | | 230 | 4 | | 148 | | 33 |

Major Street Volume: 908
Minor Approach Volume: 814
Minor Approach Volume Threshold: 245

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative A
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 265 | | 75 | | 3 | 30 | | 68 | | 550 | 592 | | 134 | | 230 | 4 | | 148 | | 33 |

Major Street Volume: 991
Minor Approach Volume: 956
Minor Approach Volume Threshold: 222

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 730 | | 152 | | 47 | 653 | | 0 | | 0 | 0 | | 0 | | 107 | 0 | | 34 | |

Major Street Volume: 1582
Minor Approach Volume: 141
Minor Approach Volume Threshold: 177

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 704 | | 135 | | 41 | 697 | | 0 | | 0 | 0 | | 0 | | 124 | 0 | | 40 | |

Major Street Volume: 1577
Minor Approach Volume: 164
Minor Approach Volume Threshold: 178

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 42 | 0 | 77 | 0 | 139 | 412 | 162 | 717 | 0 |

Major Street Volume: 1430
Minor Approach Volume: 119
Minor Approach Volume Threshold: 220

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 53 | 0 | 76 | 0 | 143 | 438 | 181 | 558 | 0 |

Major Street Volume: 1320
Minor Approach Volume: 129
Minor Approach Volume Threshold: 255

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 552 | 0 | 227 | 0 | 0 | 0 | 70 | 102 | 0 | 0 | 286 | 61 |

Major Street Volume: 519
Minor Approach Volume: 779
Minor Approach Volume Threshold: 656

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 424 | 0 | 248 | 0 | 0 | 0 | 73 | 125 | 0 | 0 | 322 | 71 |

Major Street Volume: 591
Minor Approach Volume: 672
Minor Approach Volume Threshold: 600

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 | 0 1 | 0 1 | 1 | 0 0 | 0 1 | 0 | 0 0 | 0 0 |
| Initial Vol: | 269 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 205 | 0 | 0 | 0 |

Major Street Volume: 590
Minor Approach Volume: 334
Minor Approach Volume Threshold: 601

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 | 0 1 | 0 1 | 1 | 0 0 | 0 1 | 0 | 0 0 | 0 0 |
| Initial Vol: | 291 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 276 | 0 | 0 | 0 |

Major Street Volume: 596
Minor Approach Volume: 368
Minor Approach Volume Threshold: 597

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 225 | | 229 | | 134 | 147 | | 0 | | 0 | 0 | | 0 | | 203 | 0 | | 120 | |

Major Street Volume: 735
Minor Approach Volume: 323
Minor Approach Volume Threshold: 302

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 196 | | 343 | | 202 | 147 | | 0 | | 0 | 0 | | 0 | | 277 | 0 | | 162 | |

Major Street Volume: 888
Minor Approach Volume: 439
Minor Approach Volume Threshold: 251

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 425 | | 16 | 2 | 404 | | 0 | 0 | 0 | | 0 | 27 | 0 | | 3 |

Major Street Volume: 847
Minor Approach Volume: 30
Minor Approach Volume Threshold: 264

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 510 | | 2 | 1 | 478 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 3 |

Major Street Volume: 991
Minor Approach Volume: 3
Minor Approach Volume Threshold: 222

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 256 | 665 | | 0 | 0 | 387 | | 56 | 43 | | 0 | 143 | 0 | | 0 | 0 |

Major Street Volume: 1364
Minor Approach Volume: 186
Minor Approach Volume Threshold: 241

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 206 | 562 | | 0 | 0 | 492 | | 49 | 50 | | 0 | 200 | 0 | | 0 | 0 |

Major Street Volume: 1309
Minor Approach Volume: 250
Minor Approach Volume Threshold: 258

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 159 | | 187 | | 455 | 115 | | 0 | | 0 | | 0 | | 0 | 149 | | 0 | | 767 |

Major Street Volume: 916
Minor Approach Volume: 916
Minor Approach Volume Threshold: 412

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 122 | | 175 | | 545 | 127 | | 0 | | 0 | | 0 | | 0 | 125 | | 0 | | 664 |

Major Street Volume: 969
Minor Approach Volume: 789
Minor Approach Volume Threshold: 388

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 | 0 0 0 | 1 | 0 | 1 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 416 | 510 | 820 | 0 |

Major Street Volume: 1972
Minor Approach Volume: 221
Minor Approach Volume Threshold: 82 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 | 0 | 0 | 0 1 | 0 | 0 | 0 0 0 | 1 | 0 | 1 0 | 1 | 0 |
| Initial Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 515 | 564 | 694 | 0 |

Major Street Volume: 2023
Minor Approach Volume: 227
Minor Approach Volume Threshold: 71 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 0 | 0 | 0 0 | 0 1 | 0 |
| Initial Vol: | 663 | 0 | 498 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 667 | 142 |

Major Street Volume: 1161
Minor Approach Volume: 1161
Minor Approach Volume Threshold: 310

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 1 0 | 1 0 | 0 | 0 0 | 0 1 | 0 |
| Initial Vol: | 540 | 6 | 606 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 723 | 138 |

Major Street Volume: 1226
Minor Approach Volume: 1152
Minor Approach Volume Threshold: 286

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour- Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Initial Vol: | 271 | 89 | 3 | 30 | 65 | 390 | 371 | 134 | 230 | 4 | 148 | 33 |

Major Street Volume: 848
Minor Approach Volume: 735
Minor Approach Volume Threshold: 263

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Buildout plus Alternative B
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Initial Vol: | 265 | 75 | 3 | 30 | 68 | 458 | 474 | 134 | 230 | 4 | 148 | 33 |

Major Street Volume: 899
Minor Approach Volume: 838
Minor Approach Volume Threshold: 248

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 728 | 152 | 47 | 652 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |

Major Street Volume: 1579
Minor Approach Volume: 141
Minor Approach Volume Threshold: 178

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 702 | 135 | 41 | 694 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |

Major Street Volume: 1572
Minor Approach Volume: 164
Minor Approach Volume Threshold: 180

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 40 | 0 | 77 | 0 | 138 | 411 | 158 | 716 | 0 |

Major Street Volume: 1423
Minor Approach Volume: 117
Minor Approach Volume Threshold: 222

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 50 | 0 | 76 | 0 | 142 | 436 | 173 | 555 | 0 |

Major Street Volume: 1306
Minor Approach Volume: 126
Minor Approach Volume Threshold: 259

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 552 | 0 | 222 | 0 | 0 | 0 | 70 | 100 | 0 | 0 | 280 | 60 |

Major Street Volume: 510
Minor Approach Volume: 774
Minor Approach Volume Threshold: 664

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 424 | 0 | 237 | 0 | 0 | 0 | 73 | 121 | 0 | 0 | 311 | 68 |

Major Street Volume: 573
Minor Approach Volume: 661
Minor Approach Volume Threshold: 614

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 0 1 | 0 | 1 | 1 0 | 0 | 0 1 | 0 0 | 0 | 0 |
| Initial Vol: | 262 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 198 | 0 | 0 | 0 |

Major Street Volume: 583
Minor Approach Volume: 327
Minor Approach Volume Threshold: 606

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 0 1 | 0 | 1 | 1 0 | 0 | 0 1 | 0 0 | 0 | 0 |
| Initial Vol: | 277 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 261 | 0 | 0 | 0 |

Major Street Volume: 582
Minor Approach Volume: 353
Minor Approach Volume Threshold: 607

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 225 | | 217 | | 127 | 147 | | 0 | | 0 | 0 | | 0 | | 192 | 0 | | 113 | |

Major Street Volume: 716
Minor Approach Volume: 305
Minor Approach Volume Threshold: 308

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 196 | | 318 | | 186 | 147 | | 0 | | 0 | 0 | | 0 | | 253 | 0 | | 149 | |

Major Street Volume: 847
Minor Approach Volume: 402
Minor Approach Volume Threshold: 264

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 413 | | 16 | 2 | 392 | | 0 | 0 | 0 | | 0 | 27 | 0 | | 3 |

Major Street Volume: 823
Minor Approach Volume: 30
Minor Approach Volume Threshold: 271

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 1 |
| Initial Vol: | 0 | 484 | | 2 | 1 | 454 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 3 |

Major Street Volume: 941
Minor Approach Volume: 3
Minor Approach Volume Threshold: 236

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 255 | 665 | | 0 | 0 | 387 | | 56 | 43 | | 0 | 143 | 0 | | 0 | 0 |

Major Street Volume: 1363
Minor Approach Volume: 186
Minor Approach Volume Threshold: 241

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 205 | 561 | | 0 | 0 | 492 | | 49 | 50 | | 0 | 199 | 0 | | 0 | 0 |

Major Street Volume: 1307
Minor Approach Volume: 249
Minor Approach Volume Threshold: 259

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 159 | | 187 | | 454 | 115 | | 0 | | 0 | 0 | | 0 | | 149 | 0 | | 766 | |

Major Street Volume: 915
Minor Approach Volume: 915
Minor Approach Volume Threshold: 412

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 122 | | 175 | | 543 | 127 | | 0 | | 0 | 0 | | 0 | | 125 | 0 | | 663 | |

Major Street Volume: 967
Minor Approach Volume: 788
Minor Approach Volume Threshold: 389

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 415 | 499 | 819 | 0 |

Major Street Volume: 1959
Minor Approach Volume: 221
Minor Approach Volume Threshold: 85 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 513 | 542 | 693 | 0 |

Major Street Volume: 1998
Minor Approach Volume: 227
Minor Approach Volume Threshold: 76 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 1 | 0 0 | 0 | 0 0 | 1 0 |
| Initial Vol: | 663 | 0 | 486 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 656 | 142 |

Major Street Volume: 1150
Minor Approach Volume: 1149
Minor Approach Volume Threshold: 314

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 1 | 0 0 | 0 | 0 0 | 1 0 |
| Initial Vol: | 540 | 6 | 580 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 700 | 138 |

Major Street Volume: 1203
Minor Approach Volume: 1126
Minor Approach Volume Threshold: 295

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Initial Vol: | 271 | 89 | 3 | 30 | 65 | 379 | 359 | 134 | 230 | 4 | 148 | 33 |

Major Street Volume: 837
Minor Approach Volume: 723
Minor Approach Volume Threshold: 267

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative C
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | |
| Initial Vol: | 265 | 75 | 3 | 30 | 68 | 435 | 448 | 134 | 230 | 4 | 148 | 33 |

Major Street Volume: 876
Minor Approach Volume: 812
Minor Approach Volume Threshold: 255

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 725 | 152 | 47 | 648 | 0 | 0 | 0 | 0 | 107 | 0 | 34 |

Major Street Volume: 1572
Minor Approach Volume: 141
Minor Approach Volume Threshold: 180

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 0 1 | 1 | 0 | 0 1 | 1 | 0 0 | 0 0 | 0 | 0 0 | 1 0 | 0 | 0 1 |
| Initial Vol: | 0 | 698 | 135 | 41 | 690 | 0 | 0 | 0 | 0 | 124 | 0 | 40 |

Major Street Volume: 1564
Minor Approach Volume: 164
Minor Approach Volume Threshold: 182

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 37 | 0 | 77 | 0 | 137 | 409 | 148 | 712 | 0 |

Major Street Volume: 1406
Minor Approach Volume: 114
Minor Approach Volume Threshold: 228

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 1 0 0 1 0 | | | 0 0 1 1 0 | | | 1 0 2 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 47 | 0 | 76 | 0 | 141 | 434 | 162 | 551 | 0 |

Major Street Volume: 1288
Minor Approach Volume: 123
Minor Approach Volume Threshold: 265

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 0 |
| Initial Vol: | 552 | 0 | 208 | 0 | 0 | 0 | 70 | 94 | 0 | 0 | 268 | 57 |

Major Street Volume: 489
Minor Approach Volume: 760
Minor Approach Volume Threshold: 682

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 0 |
| Initial Vol: | 424 | 0 | 222 | 0 | 0 | 0 | 73 | 115 | 0 | 0 | 296 | 65 |

Major Street Volume: 549
Minor Approach Volume: 646
Minor Approach Volume Threshold: 632

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 0 1 | 0 | 1 | 1 0 | 0 | 0 1 | 0 0 | 0 | 0 0 |
| Initial Vol: | 246 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 178 | 0 | 0 | 0 |

Major Street Volume: 567
Minor Approach Volume: 307
Minor Approach Volume Threshold: 618

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 0 1 | 0 | 1 | 1 0 | 0 | 0 1 | 0 0 | 0 | 0 0 |
| Initial Vol: | 259 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 240 | 0 | 0 | 0 |

Major Street Volume: 564
Minor Approach Volume: 332
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER
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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 225 | | 183 | 108 | 147 | | 0 | 0 | | 0 | 0 | 165 | | 0 | 97 |

Major Street Volume: 663
Minor Approach Volume: 262
Minor Approach Volume Threshold: 329

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 0 | 0 | 0 | 1 0 | 0 | 1 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 1! | 0 0 |
| Initial Vol: | 0 | 196 | | 282 | 166 | 147 | | 0 | 0 | | 0 | 0 | 223 | | 0 | 131 |

Major Street Volume: 791
Minor Approach Volume: 354
Minor Approach Volume Threshold: 282

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 379 | | 16 | | 2 | 365 | | 0 | | 0 | 0 | | 0 | | 27 | 0 | | 3 | |

Major Street Volume: 762
Minor Approach Volume: 30
Minor Approach Volume Threshold: 292

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 449 | | 2 | | 1 | 424 | | 0 | | 0 | 0 | | 0 | | 0 | 0 | | 3 | |

Major Street Volume: 876
Minor Approach Volume: 3
Minor Approach Volume Threshold: 255

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 254 | 664 | | 0 | 0 | 387 | | 56 | 43 | | 0 | 142 | 0 | | 0 | 0 |

Major Street Volume: 1361
Minor Approach Volume: 185
Minor Approach Volume Threshold: 242

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 204 | 561 | | 0 | 0 | 491 | | 49 | 50 | | 0 | 197 | 0 | | 0 | 0 |

Major Street Volume: 1305
Minor Approach Volume: 247
Minor Approach Volume Threshold: 260

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 159 | | 187 | | 452 | 115 | | 0 | | 0 | 0 | | 0 | | 149 | 0 | | 765 | |

Major Street Volume: 913
Minor Approach Volume: 914
Minor Approach Volume Threshold: 413

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 122 | | 175 | | 542 | 127 | | 0 | | 0 | 0 | | 0 | | 125 | 0 | | 661 | |

Major Street Volume: 966
Minor Approach Volume: 786
Minor Approach Volume Threshold: 389

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 413 | 473 | 818 | 0 |

Major Street Volume: 1930
Minor Approach Volume: 221
Minor Approach Volume Threshold: 91 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 512 | 513 | 691 | 0 |

Major Street Volume: 1966
Minor Approach Volume: 227
Minor Approach Volume Threshold: 83 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 1 | 0 0 | 0 | 0 0 | 1 0 |
| Initial Vol: | 663 | 0 | 453 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 629 | 142 |

Major Street Volume: 1123
Minor Approach Volume: 1116
Minor Approach Volume Threshold: 324

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 1 | 0 0 | 0 | 0 0 | 1 0 |
| Initial Vol: | 540 | 6 | 545 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 670 | 138 |

Major Street Volume: 1173
Minor Approach Volume: 1091
Minor Approach Volume Threshold: 305

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 271 | | 89 | | 3 | 30 | | 65 | | 351 | 326 | | 134 | | 230 | 4 | | 148 | | 33 |

Major Street Volume: 809
Minor Approach Volume: 690
Minor Approach Volume Threshold: 276

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative D
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 265 | | 75 | | 3 | 30 | | 68 | | 404 | 413 | | 134 | | 230 | 4 | | 148 | | 33 |

Major Street Volume: 845
Minor Approach Volume: 777
Minor Approach Volume Threshold: 264

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 720 | | 152 | | 47 | 636 | | 0 | | 0 | 0 | | 0 | | 107 | 0 | | 34 | |

Major Street Volume: 1555
Minor Approach Volume: 141
Minor Approach Volume Threshold: 184

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #2 Cloverdale Blvd/Lake St

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 682 | | 135 | | 41 | 672 | | 0 | | 0 | 0 | | 0 | | 124 | 0 | | 40 | |

Major Street Volume: 1530
Minor Approach Volume: 164
Minor Approach Volume Threshold: 191

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 | 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 1 | 1 0 | 1 0 | 2 | 0 0 |
| Initial Vol: | 0 | 0 | 0 | 36 | 0 | 77 | 0 | 137 | 395 | 220 | 704 | 0 |

Major Street Volume: 1456
Minor Approach Volume: 113
Minor Approach Volume Threshold: 213

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #4 US 101 South Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 | 0 | 0 | 1 0 | 0 | 1 0 | 0 0 | 1 | 1 0 | 1 0 | 2 | 0 0 |
| Initial Vol: | 0 | 0 | 0 | 41 | 0 | 76 | 0 | 138 | 415 | 183 | 532 | 0 |

Major Street Volume: 1268
Minor Approach Volume: 117
Minor Approach Volume Threshold: 272

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 552 | 0 | 205 | 0 | 0 | 0 | 70 | 93 | 0 | 0 | 331 | 71 |

Major Street Volume: 565
Minor Approach Volume: 757
Minor Approach Volume Threshold: 620

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #5 US 101 North Ramps/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 2 | 0 0 | 0 | 0 1 | 1 0 |
| Initial Vol: | 424 | 0 | 202 | 0 | 0 | 0 | 73 | 108 | 0 | 0 | 297 | 65 |

Major Street Volume: 543
Minor Approach Volume: 626
Minor Approach Volume Threshold: 637

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 0 1 | 0 | 1 | 1 0 | 0 | 0 1 | 0 0 | 0 | 0 |
| Initial Vol: | 325 | 141 | 0 | 0 | 107 | 73 | 129 | 0 | 174 | 0 | 0 | 0 |

Major Street Volume: 646
Minor Approach Volume: 303
Minor Approach Volume Threshold: 562

SIGNAL WARRANT DISCLAIMER

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #6 Asti (Frontage) Rd/Citrus Fair Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 1 0 1 | 0 | 0 | 0 0 1 | 0 | 1 | 1 0 | 0 | 0 1 | 0 0 | 0 | 0 |
| Initial Vol: | 261 | 124 | 0 | 0 | 106 | 75 | 92 | 0 | 213 | 0 | 0 | 0 |

Major Street Volume: 566
Minor Approach Volume: 305
Minor Approach Volume Threshold: 619

SIGNAL WARRANT DISCLAIMER

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 225 | | 177 | | 104 | 147 | | 0 | | 0 | 0 | | 0 | | 299 | 0 | | 175 | |

Major Street Volume: 653
Minor Approach Volume: 474
Minor Approach Volume Threshold: 333

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 Asti (Frontage) Rd/Project Access

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 0 | 196 | | 236 | | 138 | 147 | | 0 | | 0 | 0 | | 0 | | 226 | 0 | | 132 | |

Major Street Volume: 717
Minor Approach Volume: 358
Minor Approach Volume Threshold: 308

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 0 0 0 | 0 | 0 | 1! 0 0 |
| Initial Vol: | 0 | 373 | 16 | 2 | 499 | 0 | 0 | 0 | 0 | 27 | 0 | 3 |

Major Street Volume: 890
Minor Approach Volume: 30
Minor Approach Volume Threshold: 250

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #8 Asti (Frontage) Rd/Santana Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Lanes: | 0 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 0 0 0 | 0 | 0 | 0 0 1 |
| Initial Vol: | 0 | 403 | 2 | 1 | 427 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

Major Street Volume: 833
Minor Approach Volume: 3
Minor Approach Volume Threshold: 268

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 247 | 662 | | 0 | 0 | 384 | | 56 | 43 | | 0 | 135 | 0 | | 0 | 0 |

Major Street Volume: 1349
Minor Approach Volume: 178
Minor Approach Volume Threshold: 245

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 Cloverdale Blvd/Treadway Dr

Future Volume Alternative: Peak Hour Warrant NOT Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Uncontrolled | | | | Uncontrolled | | | | Stop Sign | | | | Stop Sign | | | |
| Lanes: | 1 | 0 | 0 | 1 0 | 1 | 0 | 1 | 0 1 | 0 | 1 | 0 | 0 1 | 0 | 0 | 0 | 0 0 |
| Initial Vol: | 194 | 558 | | 0 | 0 | 488 | | 49 | 50 | | 0 | 188 | 0 | | 0 | 0 |

Major Street Volume: 1289
Minor Approach Volume: 238
Minor Approach Volume Threshold: 265

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 159 | | 187 | | 443 | 115 | | 0 | | 0 | 0 | | 0 | | 149 | 0 | | 755 | |

Major Street Volume: 904
Minor Approach Volume: 904
Minor Approach Volume Threshold: 417

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 Cloverdale Blvd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Initial Vol: | 0 | 122 | | 175 | | 529 | 127 | | 0 | | 0 | 0 | | 0 | | 125 | 0 | | 648 | |

Major Street Volume: 953
Minor Approach Volume: 773
Minor Approach Volume Threshold: 395

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 126 | 0 | 95 | 0 | 226 | 404 | 616 | 808 | 0 |

Major Street Volume: 2054
Minor Approach Volume: 221
Minor Approach Volume Threshold: 65 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 101S Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 0 0 0 0 | | | 0 1 0 0 1 | | | 0 0 0 1 0 | | | 1 0 1 0 0 | | |
| Initial Vol: | 0 | 0 | 0 | 121 | 0 | 106 | 0 | 250 | 499 | 528 | 678 | 0 |

Major Street Volume: 1955
Minor Approach Volume: 227
Minor Approach Volume Threshold: 86 [less than minimum of 150]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 1 | 0 0 | 0 | 0 0 | 1 0 |
| Initial Vol: | 663 | 0 | 446 | 0 | 0 | 0 | 115 | 237 | 0 | 0 | 762 | 142 |

Major Street Volume: 1256
Minor Approach Volume: 1109
Minor Approach Volume Threshold: 276

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #12 101N Ramps/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Lanes: | 0 1 | 0 | 0 1 | 0 | 0 0 | 0 0 | 1 | 0 1 | 0 0 | 0 | 0 0 | 1 0 |
| Initial Vol: | 540 | 6 | 498 | 0 | 0 | 0 | 129 | 236 | 0 | 0 | 672 | 138 |

Major Street Volume: 1175
Minor Approach Volume: 1044
Minor Approach Volume Threshold: 305

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

PM Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 271 | | 89 | | 3 | 30 | | 65 | | 485 | 319 | | 134 | | 230 | 4 | | 148 | | 33 |

Major Street Volume: 943
Minor Approach Volume: 683
Minor Approach Volume Threshold: 235

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.





Midday Peak Hour - Buildout plus Alternative E
Cloverdale Rancheria Casino EIS Traffic Analysis
City of Cloverdale

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #13 Asti (Frontage) Rd/South Interchange

Future Volume Alternative: Peak Hour Warrant Met

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R | L | - | T | - | R |
| Control: | Uncontrolled | | | | | Uncontrolled | | | | | Stop Sign | | | | | Stop Sign | | | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 1! | 0 | 0 |
| Initial Vol: | 265 | | 75 | | 3 | 30 | | 68 | | 407 | 366 | | 134 | | 230 | 4 | | 148 | | 33 |

Major Street Volume: 848
Minor Approach Volume: 730
Minor Approach Volume Threshold: 263

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

# APPENDIX B

Collision Analysis

## Intersection Collision Rate Calculation
## for the
## Cloverdale Rancheria Casino EIS Traffic Analysis

**Study Intersection # 1:** Cloverdale Boulevard & 1st Street

**Date of Count:** Wednesday, May 15, 2005

**Number of Collisions:** 11
**ADT:** 11400
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** FOUR-LEGGED
**Control Type:** SIGNALS
**Area:** URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\ \text{MILLION}}{\text{ADT} \times 365\ \text{DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{11 \times 1{,}000{,}000}{11{,}400 \times 365 \times 5}$$

**collision rate = 0.53 c/mve**

statewide average collision rate* = 0.43 c/mve

---

**Study Intersection # 2:** Cloverdale Boulevard & Lake Street

**Date of Count:** Wednesday, May 15, 2005

**Number of Collisions:** 6
**ADT:** 10900
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\ \text{MILLION}}{\text{ADT} \times 365\ \text{DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{6 \times 1{,}000{,}000}{10{,}900 \times 365 \times 5}$$

**collision rate = 0.30 c/mve**

statewide average collision rate* = 0.14 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)

c/mve = collisions per million vehicles entering intersection

* *2006 Collision Data on California State Highways*, Caltrans

## Intersection Collision Rate Calculation
## for the
## Cloverdale Rancheria Casino EIS Traffic Analysis

**Study Intersection # 3:** Cloverdale Boulevard & Citrus Fair Drive

**Date of Count:** Wednesday, May 15, 2005

**Number of Collisions:** 6
**ADT:** 12300
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** FOUR-LEGGED
**Control Type:** SIGNALS
**Area:** URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{6 \times 1{,}000{,}000}{12{,}300 \times 365 \times 5}$$

**collision rate = 0.27** c/mve

statewide average collision rate* = 0.43 c/mve

---

**Study Intersection # 4:** Citrus Fair Boulevard & US 101 SB RAMP

**Date of Count:** Wednesday, September 10, 2007

**Number of Collisions:** 0
**ADT:** 5200
**Start Date:** October 31, 2002
**End Date:** October 31, 2005
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{0 \times 1{,}000{,}000}{5{,}200 \times 365 \times 5}$$

**collision rate = 0.00** c/mve

statewide average collision rate* = 0.14 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)

c/mve = collisions per million vehicles entering intersection

* *2006 Collision Data on California State Highways*, Caltrans

## Intersection Collision Rate Calculation
## for the
## Cloverdale Rancheria Casino EIS Traffic Analysis

**Study Intersection # 5:** Citrus Fair Boulevard & US 101 NB Ramp

**Date of Count:** Wednesday, September 10, 2007

**Number of Collisions:** 1
**ADT:** 4100
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1 \times 1{,}000{,}000}{4{,}100 \times 365 \times 5}$$

**collision rate = 0.13 c/mve**

statewide average collision rate* = 0.14 c/mve

---

**Study Intersection # 6:** Citrus Fair Drive & Asti Road

**Date of Count:** Wednesday, September 10, 2007

**Number of Collisions:** 1
**ADT:** 2000
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** URBAN

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1 \times 1{,}000{,}000}{2{,}000 \times 365 \times 5}$$

**collision rate = 0.27 c/mve**

statewide average collision rate* = 0.14 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)

c/mve = collisions per million vehicles entering intersection

* *2006 Collision Data on California State Highways*, Caltrans

## Intersection Collision Rate Calculation
## for the
## Cloverdale Rancheria Casino EIS Traffic Analysis

**Study Intersection # 8:** Asti Road & Santana Road

**Date of Count:** Wednesday, September 10, 2007

**Number of Collisions:** 1
**ADT:** 1300
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1 \times 1{,}000{,}000}{1{,}300 \times 365 \times 5}$$

**collision rate = 0.42 c/mve**

statewide average collision rate* = 0.22 c/mve

---

**Study Intersection # 9:** Asti Road & South Interchange Connectio

**Date of Count:** Wednesday, May 15, 2005

**Number of Collisions:** 2
**ADT:** 1700
**Start Date:** October 31, 2002
**End Date:** October 31, 2005
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{2 \times 1{,}000{,}000}{1{,}700 \times 365 \times 5}$$

**collision rate = 0.64 c/mve**

statewide average collision rate* = 0.22 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)

c/mve = collisions per million vehicles entering intersection

* *2006 Collision Data on California State Highways*, Caltrans

## Intersection Collision Rate Calculation
## for the
## Cloverdale Rancheria Casino EIS Traffic Analysis

**Study Intersection # 10:** US 101 NB Ramp & Interchange S. Connection

**Date of Count:** Wednesday, September 10, 2007

**Number of Collisions:** 3
**ADT:** 5200
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\ \text{MILLION}}{\text{ADT} \times 365\ \text{DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{3 \times 1{,}000{,}000}{5{,}200 \times 365 \times 5}$$

**collision rate = 0.32** c/mve

statewide average collision rate* = 0.22 c/mve

---

**Study Intersection # 11:** US 101 SB Ramp & S.Interchange Connection

**Date of Count:** Wednesday, September 10, 2007

**Number of Collisions:** 4
**ADT:** 6900
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\ \text{MILLION}}{\text{ADT} \times 365\ \text{DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{4 \times 1{,}000{,}000}{6{,}900 \times 365 \times 5}$$

**collision rate = 0.32** c/mve

statewide average collision rate* = 0.22 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)

c/mve = collisions per million vehicles entering intersection

* *2006 Collision Data on California State Highways*, Caltrans

## Intersection Collision Rate Calculation
## for the
## Cloverdale Rancheria Casino EIS Traffic Analysis

**Study Intersection # 12:** Cloverdale Boulevard & S.Interchange

**Date of Count:** Wednesday, September 10, 2007

**Number of Collisions:** 4
**ADT:** 8700
**Start Date:** October 31, 2002
**End Date:** October 31, 2007
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\ \text{MILLION}}{\text{ADT} \times 365\ \text{DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{4 \times 1{,}000{,}000}{8{,}700 \times 365 \times 5}$$

**collision rate = 0.25 c/mve**

statewide average collision rate* = 0.22 c/mve

---

**Study Intersection # 13:** Cloverdale Boulevard & Treadway Drive

**Date of Count:** Wednesday, May 15, 2005

**Number of Collisions:** 4
**ADT:** 8200
**Start Date:** October 31, 2002
**End Date:** October 31, 2005
**Number of Years:** 5

**Intersection Type:** TEE
**Control Type:** STOP & YIELD SIGNS
**Area:** RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\ \text{MILLION}}{\text{ADT} \times 365\ \text{DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{4 \times 1{,}000{,}000}{8{,}200 \times 365 \times 5}$$

**collision rate = 0.27 c/mve**

statewide average collision rate* = 0.22 c/mve

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)

c/mve = collisions per million vehicles entering intersection

* *2006 Collision Data on California State Highways*, Caltrans

# APPENDIX C

Freeway Segment Analysis

**Table C-1**
**Summary of PM Peak Hour Segment Level of Service Calculations – Alternative A**

| Freeway Segment | Existing Conditions | | | Short-Term Conditions | | | Short-Term plus Project | | | Buildout Conditions | | | Buildout plus Project | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS |
| Sonoma-Mendocino County Line to JCT SR 128 W | | | | | | | | | | | | | | | |
| North | 350 | 65.5 | A | 375 | 65.5 | A | 391 | 65.5 | A | 458 | 65.5 | A | 474 | 65.5 | A |
| South | 252 | 65.5 | A | 286 | 65.5 | A | 304 | 65.5 | A | 392 | 65.5 | A | 401 | 65.5 | A |
| JCT SR 128 W to Citrus Fair Dr | | | | | | | | | | | | | | | |
| North | 375 | 65.5 | A | 403 | 65.5 | A | 419 | 65.5 | A | 492 | 65.5 | A | 507 | 65.5 | A |
| South | 254 | 65.5 | A | 289 | 65.5 | A | 308 | 65.5 | A | 389 | 65.5 | A | 407 | 65.5 | A |
| Citrus Fair Dr to S Cloverdale Interchange | | | | | | | | | | | | | | | |
| North | 502 | 65.5 | A | 538 | 65.5 | A | 610 | 65.5 | A | 657 | 65.5 | A | 729 | 65.5 | B |
| South | 292 | 65.5 | A | 326 | 65.5 | A | 389 | 65.5 | A | 424 | 65.5 | A | 487 | 65.5 | A |
| S Cloverdale Interchange to Dutcher Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 642 | 65.5 | A | 688 | 65.5 | A | 919 | 65.5 | B | 840 | 65.5 | B | 1081 | 65.5 | B |
| South | 343 | 65.5 | A | 374 | 65.5 | A | 400 | 65.5 | A | 463 | 65.5 | A | 670 | 65.5 | A |
| Dutcher Creek Rd Interchange to Asti Interchange | | | | | | | | | | | | | | | |
| North | 628 | 65.5 | A | 674 | 65.5 | A | 915 | 65.5 | B | 822 | 65.5 | B | 1063 | 65.5 | B |
| South | 357 | 65.5 | A | 399 | 65.5 | A | 606 | 65.5 | A | 520 | 65.5 | A | 727 | 65.5 | B |
| Asti Interchange to JCT SR 128 E | | | | | | | | | | | | | | | |
| North | 632 | 65.5 | A | 678 | 65.5 | A | 919 | 65.5 | B | 828 | 65.5 | B | 1068 | 65.5 | B |
| South | 353 | 65.5 | A | 400 | 65.5 | A | 607 | | A | 535 | 65.5 | A | 742 | 65.5 | B |
| JCT SR 128 E to S Geyserville | | | | | | | | | | | | | | | |
| North | 625 | 65.5 | A | 670 | 65.5 | A | 899 | 65.5 | B | 817 | 65.5 | B | 1046 | 65.5 | B |
| South | 361 | 65.5 | A | 406 | 65.5 | A | 603 | 65.5 | A | 537 | 65.5 | A | 733 | 65.5 | B |
| S Geyserville to Independence Ln Interchange | | | | | | | | | | | | | | | |
| North | 681 | 65.5 | A | 759 | 65.5 | B | 987 | 65.5 | B | 926 | 65.5 | B | 1154 | 65.5 | C |
| South | 442 | 65.5 | A | 485 | 65.5 | A | 681 | 65.5 | A | 609 | 65.5 | A | 805 | 65.5 | B |
| Independence Ln Interchange to Lytton Spring Rd | | | | | | | | | | | | | | | |
| North | 741 | 65.5 | B | 795 | 65.5 | B | 1024 | 65.5 | B | 970 | 65.5 | B | 1199 | 65.5 | C |
| South | 463 | 65.5 | A | 506 | 65.5 | A | 703 | 65.5 | A | 630 | 65.5 | A | 827 | 65.5 | B |
| Lytton Spring Rd to Dry Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 806 | 65.5 | B | 832 | 65.5 | B | 1094 | 65.5 | B | 1055 | 65.5 | B | 1284 | 65.5 | C |
| South | 506 | 65.5 | A | 552 | 65.5 | A | 748 | 65.5 | B | 679 | 65.5 | A | 876 | 65.5 | B |

Notes: $V_p$ = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

**Table C-2**
**Summary of PM Peak Hour Segment Level of Service Calculations – Alternative B**

| Freeway Segment | Existing Conditions | | | Short-Term Conditions | | | Short-Term plus Project | | | Buildout Conditions | | | Buildout plus Project | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS |
| Sonoma-Mendocino County Line to JCT SR 128 W | | | | | | | | | | | | | | | |
| North | 350 | 65.5 | A | 375 | 65.5 | A | 388 | 65.5 | A | 458 | 65.5 | A | 471 | 65.5 | A |
| South | 252 | 65.5 | A | 286 | 65.5 | A | 299 | 65.5 | A | 392 | 65.5 | A | 396 | 65.5 | A |
| JCT SR 128 W to Citrus Fair Dr | | | | | | | | | | | | | | | |
| North | 375 | 65.5 | A | 403 | 65.5 | A | 415 | 65.5 | A | 492 | 65.5 | A | 504 | 65.5 | A |
| South | 254 | 65.5 | A | 289 | 65.5 | A | 303 | 65.5 | A | 389 | 65.5 | A | 402 | 65.5 | A |
| Citrus Fair Dr to S Cloverdale Interchange | | | | | | | | | | | | | | | |
| North | 502 | 65.5 | A | 538 | 65.5 | A | 592 | 65.5 | A | 657 | 65.5 | A | 710 | 65.5 | A |
| South | 292 | 65.5 | A | 326 | 65.5 | A | 374 | 65.5 | A | 424 | 65.5 | A | 462 | 65.5 | A |
| S Cloverdale Interchange to Dutcher Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 642 | 65.5 | A | 688 | 65.5 | A | 864 | 65.5 | B | 840 | 65.5 | B | 1019 | 65.5 | B |
| South | 343 | 65.5 | A | 374 | 65.5 | A | 534 | 65.5 | A | 463 | 65.5 | A | 622 | 65.5 | A |
| Dutcher Creek Rd Interchange to Asti Interchange | | | | | | | | | | | | | | | |
| North | 628 | 65.5 | A | 674 | 65.5 | A | 853 | 65.5 | B | 822 | 65.5 | B | 1001 | 65.5 | B |
| South | 357 | 65.5 | A | 399 | 65.5 | A | 558 | 65.5 | A | 520 | 65.5 | A | 679 | 65.5 | A |
| Asti Interchange to JCT SR 128 E | | | | | | | | | | | | | | | |
| North | 632 | 65.5 | A | 678 | 65.5 | A | 857 | 65.5 | B | 828 | 65.5 | B | 1007 | 65.5 | B |
| South | 353 | 65.5 | A | 400 | 65.5 | A | 559 | 65.5 | A | 535 | 65.5 | A | 694 | 65.5 | A |
| JCT SR 128 E to S Geyserville | | | | | | | | | | | | | | | |
| North | 625 | 65.5 | A | 670 | 65.5 | A | 840 | 65.5 | B | 817 | 65.5 | B | 987 | 65.5 | B |
| South | 361 | 65.5 | A | 406 | 65.5 | A | 558 | 65.5 | A | 537 | 65.5 | A | 688 | 65.5 | A |
| S Geyserville to Independence Ln Interchange | | | | | | | | | | | | | | | |
| North | 681 | 65.5 | A | 759 | 65.5 | B | 929 | 65.5 | B | 926 | 65.5 | B | 1096 | 65.5 | B |
| South | 442 | 65.5 | A | 485 | 65.5 | A | 637 | 65.5 | A | 609 | 65.5 | A | 760 | 65.5 | B |
| Independence Ln Interchange to Lytton Spring Rd | | | | | | | | | | | | | | | |
| North | 741 | 65.5 | B | 795 | 65.5 | B | 965 | 65.5 | B | 970 | 65.5 | B | 1140 | 65.5 | B |
| South | 463 | 65.5 | A | 506 | 65.5 | A | 657 | 65.5 | A | 630 | 65.5 | A | 781 | 65.5 | B |
| Lytton Spring Rd to Dry Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 806 | 65.5 | B | 832 | 65.5 | B | 832 | 65.5 | B | 1055 | 65.5 | B | 1225 | 65.5 | C |
| South | 506 | 65.5 | A | 552 | 65.5 | A | 552 | 65.5 | A | 679 | 65.5 | A | 830 | 65.5 | B |

Notes: $V_p$ = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

**Table C-3**
**Summary of PM Peak Hour Segment Level of Service Calculations – Alternative C**

| Freeway Segment | Existing Conditions | | | Short-Term Conditions | | | Short-Term plus Project | | | Buildout Conditions | | | Buildout plus Project | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS |
| Sonoma-Mendocino County Line to JCT SR 128 W | | | | | | | | | | | | | | | |
| North | 350 | 65.5 | A | 375 | 65.5 | A | 388 | 65.5 | A | 458 | 65.5 | A | 471 | 65.5 | A |
| South | 252 | 65.5 | A | 286 | 65.5 | A | 299 | 65.5 | A | 392 | 65.5 | A | 395 | 65.5 | A |
| JCT SR 128 W to Citrus Fair Dr | | | | | | | | | | | | | | | |
| North | 375 | 65.5 | A | 403 | 65.5 | A | 415 | 65.5 | A | 492 | 65.5 | A | 504 | 65.5 | A |
| South | 254 | 65.5 | A | 289 | 65.5 | A | 302 | 65.5 | A | 389 | 65.5 | A | 402 | 65.5 | A |
| Citrus Fair Dr to S Cloverdale Interchange | | | | | | | | | | | | | | | |
| North | 502 | 65.5 | A | 538 | 65.5 | A | 589 | 65.5 | A | 657 | 65.5 | A | 708 | 65.5 | A |
| South | 292 | 65.5 | A | 326 | 65.5 | A | 371 | 65.5 | A | 424 | 65.5 | A | 469 | 65.5 | A |
| S Cloverdale Interchange to Dutcher Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 642 | 65.5 | A | 688 | 65.5 | A | 858 | 65.5 | B | 840 | 65.5 | B | 1009 | 65.5 | B |
| South | 343 | 65.5 | A | 374 | 65.5 | A | 524 | 65.5 | A | 463 | 65.5 | A | 613 | 65.5 | A |
| Dutcher Creek Rd Interchange to Asti Interchange | | | | | | | | | | | | | | | |
| North | 628 | 65.5 | A | 674 | 65.5 | A | 843 | 65.5 | B | 822 | 65.5 | B | 992 | 65.5 | B |
| South | 357 | 65.5 | A | 399 | 65.5 | A | 549 | 65.5 | A | 520 | 65.5 | A | 670 | 65.5 | A |
| Asti Interchange to JCT SR 128 E | | | | | | | | | | | | | | | |
| North | 632 | 65.5 | A | 678 | 65.5 | A | 848 | 65.5 | B | 828 | 65.5 | B | 997 | 65.5 | B |
| South | 353 | 65.5 | A | 400 | 65.5 | A | 550 | 65.5 | A | 535 | 65.5 | A | 685 | 65.5 | A |
| JCT SR 128 E to S Geyserville | | | | | | | | | | | | | | | |
| North | 625 | 65.5 | A | 670 | 65.5 | A | 831 | 65.5 | B | 817 | 65.5 | B | 987 | 65.5 | B |
| South | 361 | 65.5 | A | 406 | 65.5 | A | 549 | 65.5 | A | 537 | 65.5 | A | 679 | 65.5 | A |
| S Geyserville to Independence Ln Interchange | | | | | | | | | | | | | | | |
| North | 681 | 65.5 | A | 759 | 65.5 | B | 920 | 65.5 | B | 926 | 65.5 | B | 1086 | 65.5 | B |
| South | 442 | 65.5 | A | 485 | 65.5 | A | 628 | 65.5 | A | 609 | 65.5 | A | 752 | 65.5 | B |
| Independence Ln Interchange to Lytton Spring Rd | | | | | | | | | | | | | | | |
| North | 741 | 65.5 | B | 795 | 65.5 | B | 956 | 65.5 | B | 970 | 65.5 | B | 1131 | 65.5 | B |
| South | 463 | 65.5 | A | 506 | 65.5 | A | 649 | 65.5 | A | 630 | 65.5 | A | 772 | 65.5 | B |
| Lytton Spring Rd to Dry Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 806 | 65.5 | B | 832 | 65.5 | B | 1031 | 65.5 | B | 1055 | 65.5 | B | 1216 | 65.5 | C |
| South | 506 | 65.5 | A | 552 | 65.5 | A | 697 | 65.5 | A | 679 | 65.5 | A | 822 | 65.5 | B |

Notes: $V_p$ = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

**Table C-4**
**Summary of PM Peak Hour Segment Level of Service Calculations – Alternative D**

| Freeway Segment | Existing Conditions | | | Short-Term Conditions | | | Short-Term plus Project | | | Buildout Conditions | | | Buildout plus Project | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS |
| Sonoma-Mendocino County Line to JCT SR 128 W | | | | | | | | | | | | | | | |
| North | 350 | 65.5 | A | 375 | 65.5 | A | 385 | 65.5 | A | 458 | 65.5 | A | 468 | 65.5 | A |
| South | 252 | 65.5 | A | 286 | 65.5 | A | 297 | 65.5 | A | 392 | 65.5 | A | 393 | 65.5 | A |
| JCT SR 128 W to Citrus Fair Dr | | | | | | | | | | | | | | | |
| North | 375 | 65.5 | A | 403 | 65.5 | A | 413 | 65.5 | A | 492 | 65.5 | A | 501 | 65.5 | A |
| South | 254 | 65.5 | A | 289 | 65.5 | A | 300 | 65.5 | A | 389 | 65.5 | A | 400 | 65.5 | A |
| Citrus Fair Dr to S Cloverdale Interchange | | | | | | | | | | | | | | | |
| North | 502 | 65.5 | A | 538 | 65.5 | A | 581 | 65.5 | A | 657 | 65.5 | A | 700 | 65.5 | A |
| South | 292 | 65.5 | A | 326 | 65.5 | A | 365 | 65.5 | A | 424 | 65.5 | A | 463 | 65.5 | A |
| S Cloverdale Interchange to Dutcher Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 642 | 65.5 | A | 688 | 65.5 | A | 831 | 65.5 | B | 840 | 65.5 | B | 983 | 65.5 | B |
| South | 343 | 65.5 | A | 374 | 65.5 | A | 504 | 65.5 | A | 463 | 65.5 | A | 592 | 65.5 | A |
| Dutcher Creek Rd Interchange to Asti Interchange | | | | | | | | | | | | | | | |
| North | 628 | 65.5 | A | 674 | 65.5 | A | 817 | 65.5 | B | 822 | 65.5 | B | 966 | 65.5 | B |
| South | 357 | 65.5 | A | 399 | 65.5 | A | 528 | 65.5 | A | 520 | 65.5 | A | 649 | 65.5 | A |
| Asti Interchange to JCT SR 128 E | | | | | | | | | | | | | | | |
| North | 632 | 65.5 | A | 678 | 65.5 | A | 822 | 65.5 | B | 828 | 65.5 | B | 971 | 65.5 | B |
| South | 353 | 65.5 | A | 400 | 65.5 | A | 529 | 65.5 | A | 535 | 65.5 | A | 664 | 65.5 | A |
| JCT SR 128 E to S Geyserville | | | | | | | | | | | | | | | |
| North | 625 | 65.5 | A | 670 | 65.5 | A | 806 | 65.5 | B | 817 | 65.5 | B | 954 | 65.5 | B |
| South | 361 | 65.5 | A | 406 | 65.5 | A | 529 | 65.5 | A | 537 | 65.5 | A | 660 | 65.5 | A |
| S Geyserville to Independence Ln Interchange | | | | | | | | | | | | | | | |
| North | 681 | 65.5 | A | 759 | 65.5 | B | 895 | 65.5 | B | 926 | 65.5 | B | 1062 | 65.5 | B |
| South | 442 | 65.5 | A | 485 | 65.5 | A | 608 | 65.5 | A | 609 | 65.5 | A | 732 | 65.5 | B |
| Independence Ln Interchange to Lytton Spring Rd | | | | | | | | | | | | | | | |
| North | 741 | 65.5 | B | 795 | 65.5 | B | 931 | 65.5 | B | 970 | 65.5 | B | 1106 | 65.5 | B |
| South | 463 | 65.5 | A | 506 | 65.5 | A | 629 | 65.5 | A | 630 | 65.5 | A | 753 | 65.5 | B |
| Lytton Spring Rd to Dry Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 806 | 65.5 | B | 832 | 65.5 | B | 1001 | 65.5 | B | 1055 | 65.5 | B | 1191 | 65.5 | C |
| South | 506 | 65.5 | A | 552 | 65.5 | A | 674 | 65.5 | A | 679 | 65.5 | A | 802 | 65.5 | B |

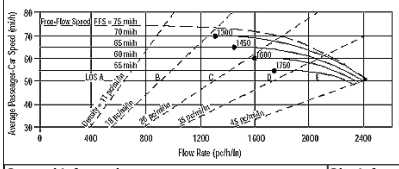
Notes: $V_p$ = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

**Table C-5**
**Summary of PM Peak Hour Segment Level of Service Calculations – Alternative E**

| Freeway Segment | Existing Conditions | | | Short-Term Conditions | | | Short-Term plus Project | | | Buildout Conditions | | | Buildout plus Project | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS | $V_p$ | Speed | LOS |
| Sonoma-Mendocino County Line to JCT SR 128 W | | | | | | | | | | | | | | | |
| North | 350 | 65.5 | A | 375 | 65.5 | A | 427 | 65.5 | A | 458 | 65.5 | A | 510 | 65.5 | A |
| South | 252 | 65.5 | A | 286 | 65.5 | A | 316 | 65.5 | A | 392 | 65.5 | A | 413 | 65.5 | A |
| JCT SR 128 W to Citrus Fair Dr | | | | | | | | | | | | | | | |
| North | 375 | 65.5 | A | 403 | 65.5 | A | 455 | 65.5 | A | 492 | 65.5 | A | 544 | 65.5 | A |
| South | 254 | 65.5 | A | 289 | 65.5 | A | 320 | 65.5 | A | 389 | 65.5 | A | 419 | 65.5 | A |
| Citrus Fair Dr to S Cloverdale Interchange | | | | | | | | | | | | | | | |
| North | 502 | 65.5 | A | 538 | 65.5 | A | 538 | 65.5 | A | 657 | 65.5 | A | 657 | 65.5 | A |
| South | 292 | 65.5 | A | 326 | 65.5 | A | 326 | 65.5 | A | 424 | 65.5 | A | 424 | 65.5 | A |
| S Cloverdale Interchange to Dutcher Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 642 | 65.5 | A | 688 | 65.5 | A | 749 | 65.5 | B | 840 | 65.5 | B | 901 | 65.5 | B |
| South | 343 | 65.5 | A | 374 | 65.5 | A | 478 | 65.5 | A | 463 | 65.5 | A | 567 | 65.5 | A |
| Dutcher Creek Rd Interchange to Asti Interchange | | | | | | | | | | | | | | | |
| North | 628 | 65.5 | A | 674 | 65.5 | A | 735 | 65.5 | B | 822 | 65.5 | B | 883 | 65.5 | B |
| South | 357 | 65.5 | A | 399 | 65.5 | A | 503 | 65.5 | A | 520 | 65.5 | A | 624 | 65.5 | A |
| Asti Interchange to JCT SR 128 E | | | | | | | | | | | | | | | |
| North | 632 | 65.5 | A | 678 | 65.5 | A | 739 | 65.5 | B | 828 | 65.5 | B | 889 | 65.5 | B |
| South | 353 | 65.5 | A | 400 | 65.5 | A | 504 | 65.5 | A | 535 | 65.5 | A | 639 | 65.5 | A |
| JCT SR 128 E to S Geyserville | | | | | | | | | | | | | | | |
| North | 625 | 65.5 | A | 670 | 65.5 | A | 728 | 65.5 | B | 817 | 65.5 | B | 875 | 65.5 | B |
| South | 361 | 65.5 | A | 406 | 65.5 | A | 505 | 65.5 | A | 537 | 65.5 | A | 635 | 65.5 | A |
| S Geyserville to Independence Ln Interchange | | | | | | | | | | | | | | | |
| North | 681 | 65.5 | A | 759 | 65.5 | A | 817 | 65.5 | B | 926 | 65.5 | B | 984 | 65.5 | B |
| South | 442 | 65.5 | A | 485 | 65.5 | A | 584 | 65.5 | A | 609 | 65.5 | A | 708 | 65.5 | A |
| Independence Ln Interchange to Lytton Spring Rd | | | | | | | | | | | | | | | |
| North | 741 | 65.5 | B | 795 | 65.5 | B | 853 | 65.5 | B | 970 | 65.5 | B | 1033 | 65.5 | B |
| South | 463 | 65.5 | A | 506 | 65.5 | A | 584 | 65.5 | A | 630 | 65.5 | A | 729 | 65.5 | B |
| Lytton Spring Rd to Dry Creek Rd Interchange | | | | | | | | | | | | | | | |
| North | 806 | 65.5 | B | 832 | 65.5 | B | 923 | 65.5 | B | 1055 | 65.5 | B | 1113 | 65.5 | B |
| South | 506 | 65.5 | A | 552 | 65.5 | A | 650 | 65.5 | A | 679 | 65.5 | A | 802 | 65.5 | B |

Notes: $V_p$ = Freeway flow rate measured in passenger cars per hour per mixed-flow lane (pc/h/ln); Speed is in miles per hour (mph); LOS = Level of Service

## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *640* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *350* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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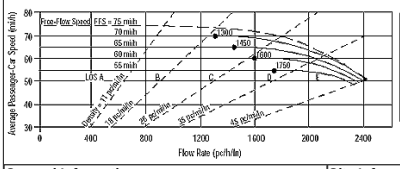
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *460* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *252* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *3.8* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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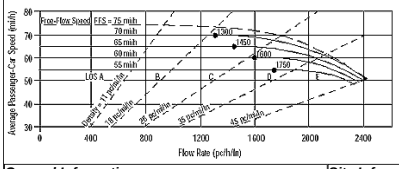
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1473* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *806* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.3* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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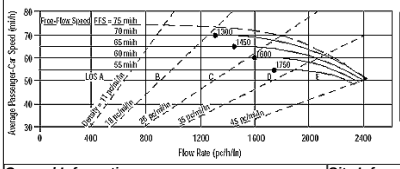
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *927* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *507* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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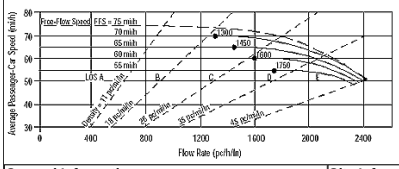
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *686* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *375* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *5.7* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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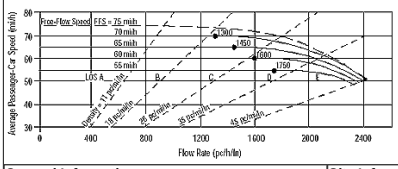
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *464* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *254* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *3.9* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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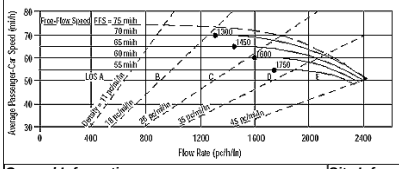
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *917* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *502* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *7.7* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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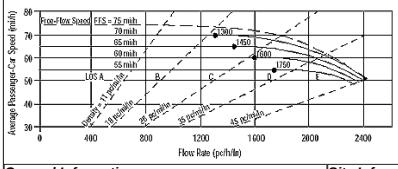
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *533* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *292* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *4.5* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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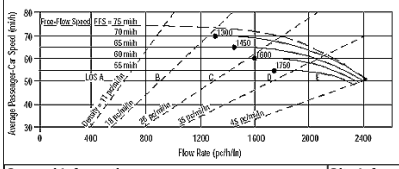
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1173* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *642* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.8* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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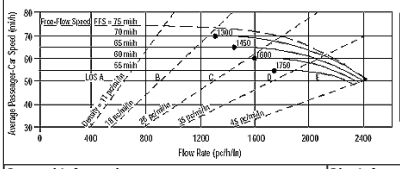
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *627* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *343* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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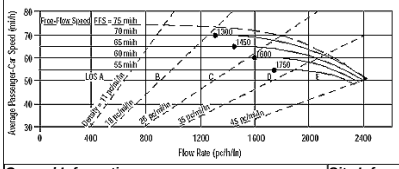
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1148* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *628* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.6* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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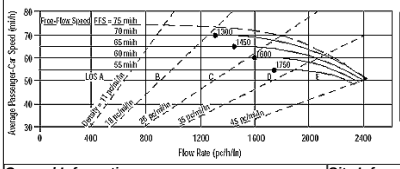
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *652* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *357* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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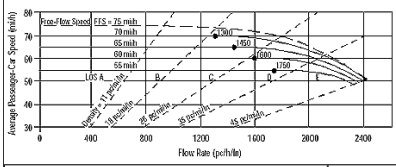
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Asti Inter/Jct Rte 128 E* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1155* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *632* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *9.6* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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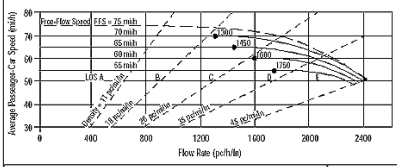
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Asti Inter/Jct Rte 128 E* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *645* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *353* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *5.4* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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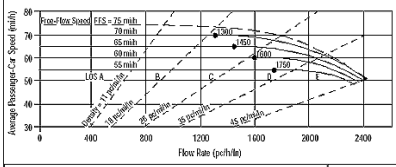
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 E/S.Geyserville* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1141* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *625* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *9.5* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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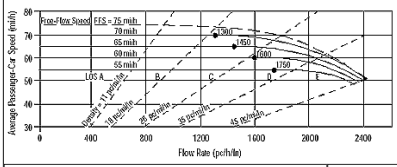
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 E/S.Geyserville* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *659* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *361* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *5.5* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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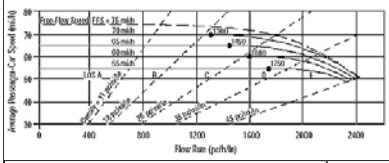
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1293* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *1.000* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ | *681* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ | | pc/h |
| $D = v_p / S$ | *10.4* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | $D = v_p / S$ | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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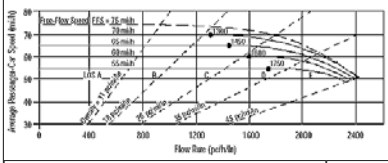
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *807* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ | *442* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ | | pc/h |
| $D = v_p / S$ | *6.7* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | $D = v_p / S$ | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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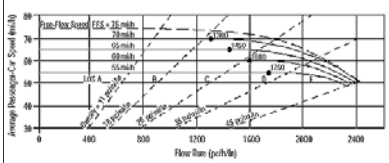


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1354* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ | *741* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ | | pc/h |
| $D = v_p / S$ | *11.3* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | $D = v_p / S$ | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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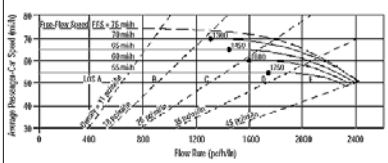
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *846* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ | *463* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ | | pc/h |
| $D = v_p / S$ | *7.1* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | $D = v_p / S$ | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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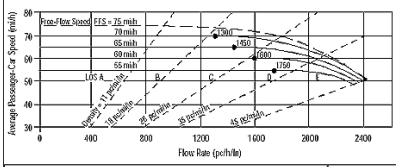
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *686* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *375* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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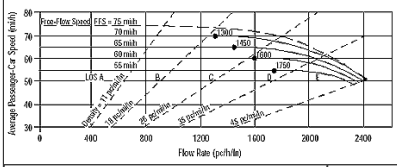
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *522* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *286* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *4.4* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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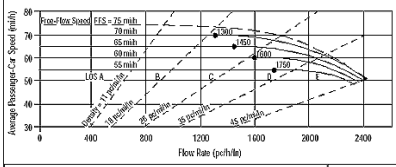
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1580* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *1.000* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *832* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.7* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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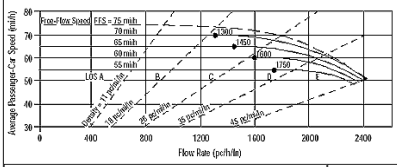
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1008* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *552* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.4* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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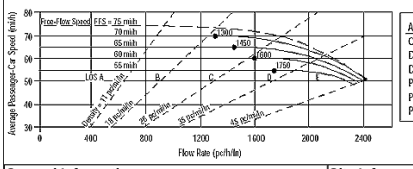
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *759* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *415* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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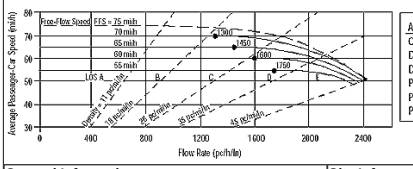
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *528* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *289* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *4.4* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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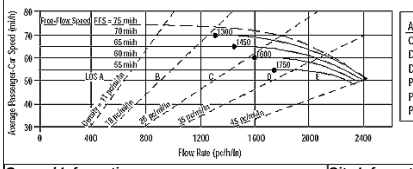
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *983* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *538* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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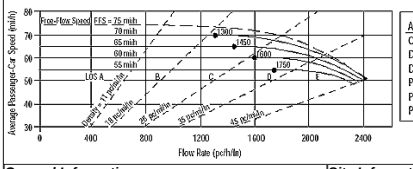
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *596* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *326* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.0* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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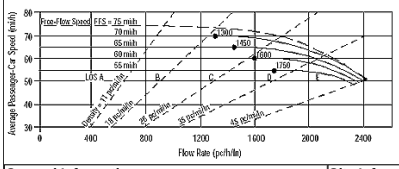
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1257* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *688* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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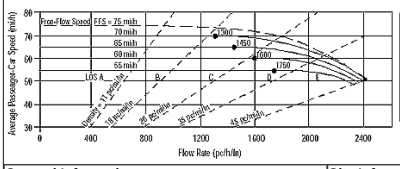
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *684* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *374* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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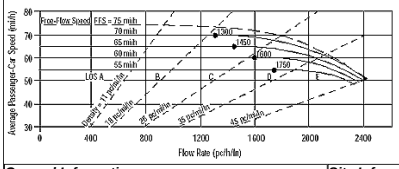
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1231* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *674* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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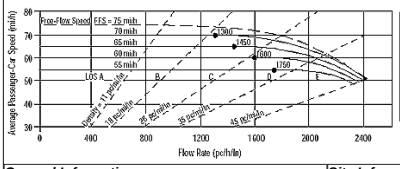
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *729* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *399* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.1* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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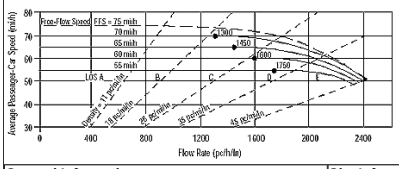
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1239* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *678* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.4* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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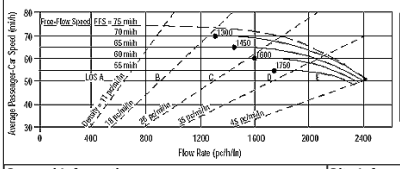
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *731* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *731* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *11.2* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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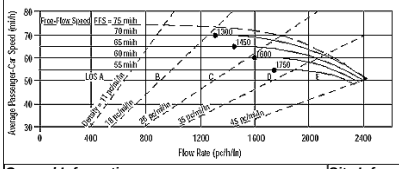
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1224* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *670* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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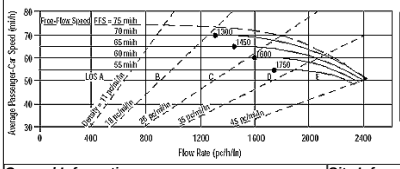
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *742* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *406* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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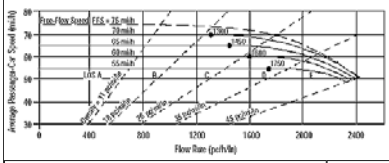
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1386* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | |
|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | |
| $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ | *759* | pc/h/ln | Design LOS | |
| S | *65.5* | mi/h | $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ | pc/h |
| $D = v_p / S$ | *11.6* | pc/mi/ln | S | mi/h |
| LOS | *B* | | $D = v_p / S$ | pc/mi/ln |
| | | | Required Number of Lanes, N | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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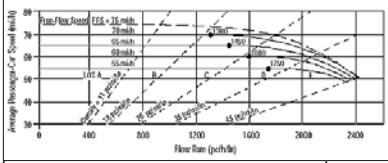
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *886* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | |
|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | |
| $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ | *485* | pc/h/ln | Design LOS | |
| S | *65.5* | mi/h | $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ | pc/h |
| $D = v_p / S$ | *7.4* | pc/mi/ln | S | mi/h |
| LOS | *A* | | $D = v_p / S$ | pc/mi/ln |
| | | | Required Number of Lanes, N | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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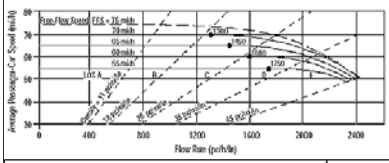
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1452* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | |
|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | |
| $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ | *795* | pc/h/ln | Design LOS | |
| S | *65.5* | mi/h | $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ | pc/h |
| $D = v_p / S$ | *12.1* | pc/mi/ln | S | mi/h |
| LOS | *B* | | $D = v_p / S$ | pc/mi/ln |
| | | | Required Number of Lanes, N | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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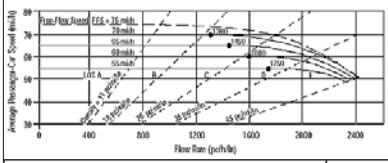
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *925* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | |
|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | |
| $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ | *506* | pc/h/ln | Design LOS | |
| S | *65.5* | mi/h | $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ | pc/h |
| $D = v_p / S$ | *7.7* | pc/mi/ln | S | mi/h |
| LOS | *A* | | $D = v_p / S$ | pc/mi/ln |
| | | | Required Number of Lanes, N | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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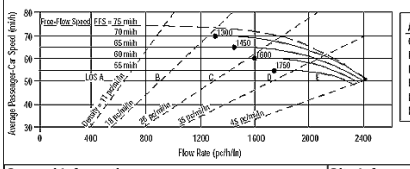
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | County Line/Jct Rte 128 W |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 715 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 391 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 6.0 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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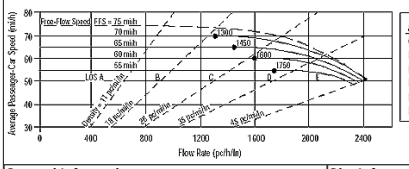
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | County Line/Jct Rte 128 W |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+ Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 556 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 304 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 4.6 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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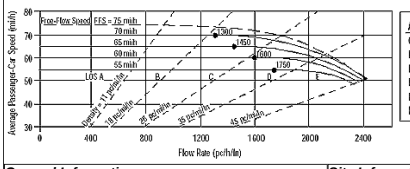
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Lytton Spring Rd/Dry Crk Rd |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1998 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 1094 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 16.7 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | B | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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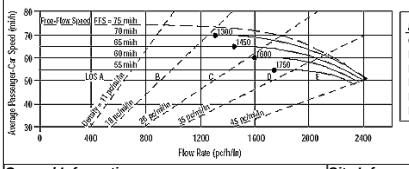
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Lytton Spring Rd/Dry Crk Rd |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1367 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 748 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 11.4 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | B | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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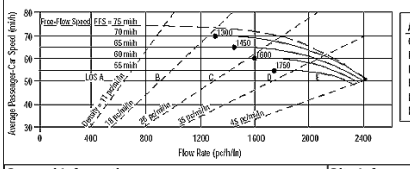
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 W/Citrus Fair Dr |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+ Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 765 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 419 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 6.4 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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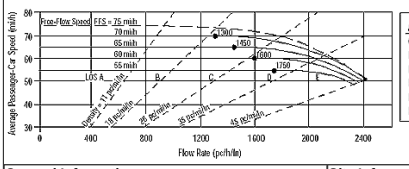
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 W/Citrus Fair Dr |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 562 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 308 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 4.7 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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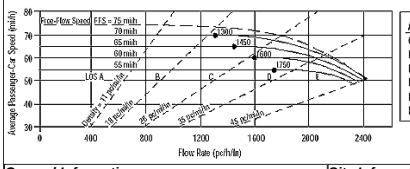
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Citrus Fair Dr/S.Clo Inter |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1115 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 610 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 9.3 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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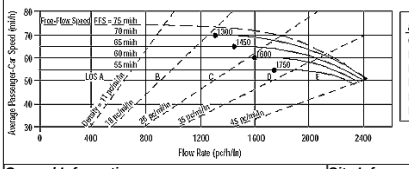
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Citrus Fair Dr/S.Clo Inter |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 710 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 389 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 5.9 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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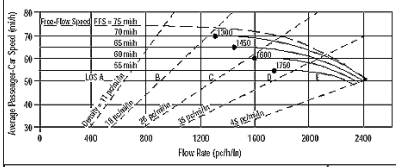
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1697* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *929* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *14.2* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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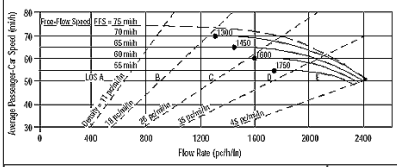
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1062* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *581* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.9* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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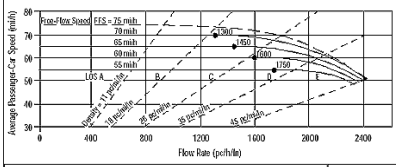
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1671* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *915* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *14.0* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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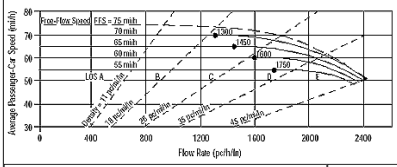


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1107* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *606* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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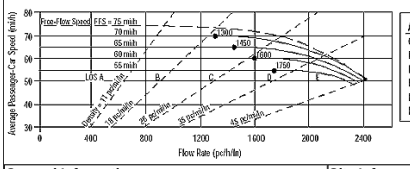
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Asti Inter/Jct Rte 128 E* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1679* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *919* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *14.0* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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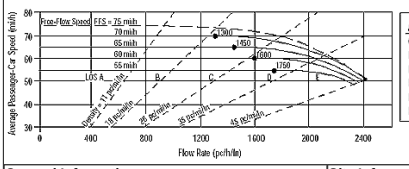
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Asti Inter/Jct Rte 128 E* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1109* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *607* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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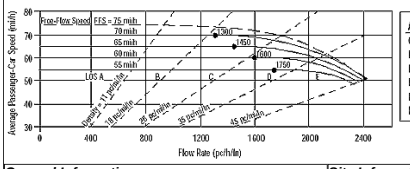
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 E/S.Geyserville* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1642* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *899* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.7* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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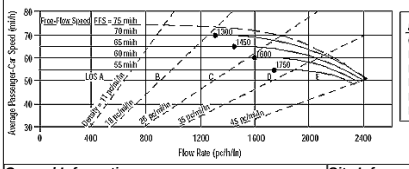
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 E/S.Geyserville* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1101* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *603* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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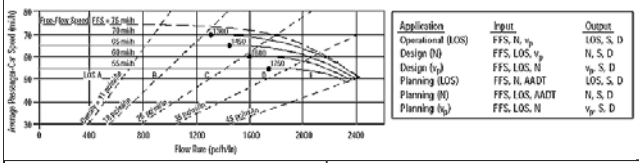
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1804* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *987* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *15.1* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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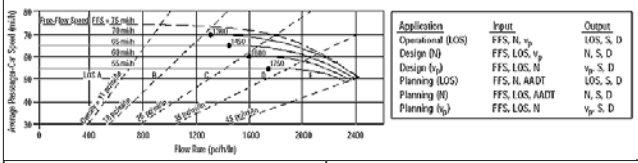


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1245* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *681* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *10.4* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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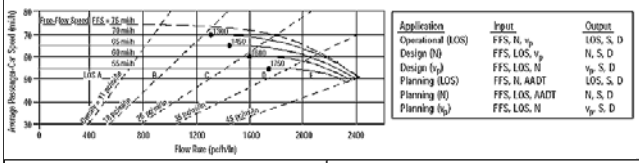


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1870* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1024* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *15.6* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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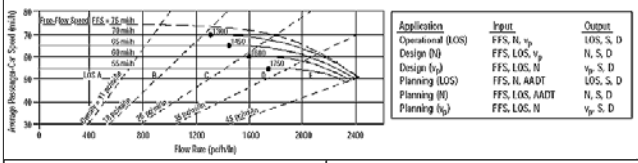


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt A* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1284* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *703* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *10.7* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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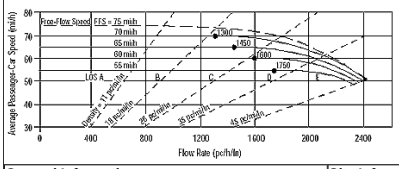


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *709* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *388* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.9* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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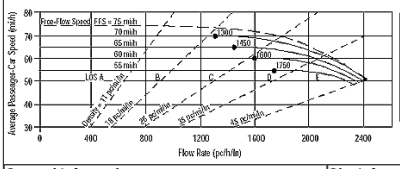


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+ Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *547* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *299* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *4.6* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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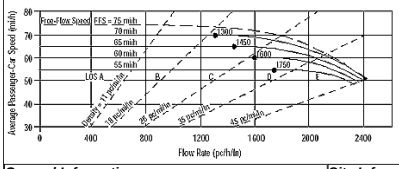
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1890* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1035* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *15.8* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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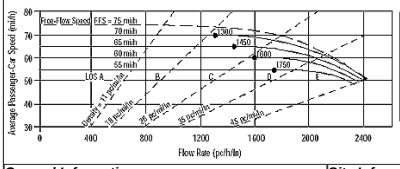
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1284* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *703* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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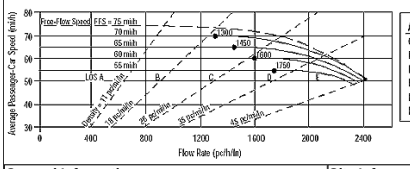
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 W/Citrus Fair Dr |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt B | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 553 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 303 | pc/h/ln | Design LOS | | |
| S | 65.5 | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | 4.6 | pc/mi/ln | S | | mi/h |
| LOS | A | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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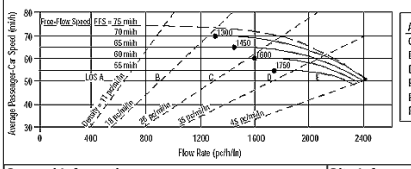


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 W/Citrus Fair Dr |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt B | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 553 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 303 | pc/h/ln | Design LOS | | |
| S | 65.5 | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | 4.6 | pc/mi/ln | S | | mi/h |
| LOS | A | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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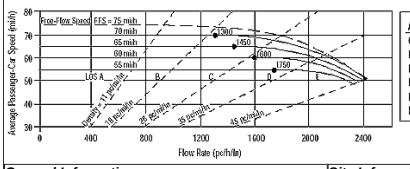
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Citrus Fair Dr/S.Clo Inter |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt A | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1081 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 592 | pc/h/ln | Design LOS | | |
| S | 65.5 | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | 9.0 | pc/mi/ln | S | | mi/h |
| LOS | A | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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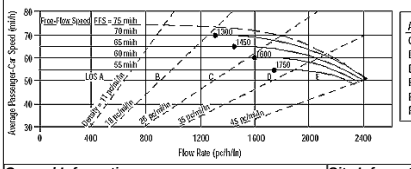
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Citrus Fair Dr/S.Clo Inter |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt B | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 683 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 374 | pc/h/ln | Design LOS | | |
| S | 65.5 | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | 5.7 | pc/mi/ln | S | | mi/h |
| LOS | A | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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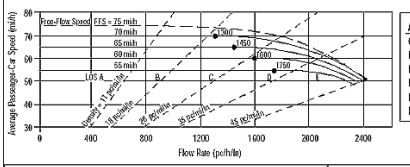
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1584* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *867* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *13.2* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *B* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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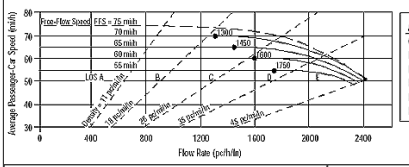
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *975* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *534* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *8.2* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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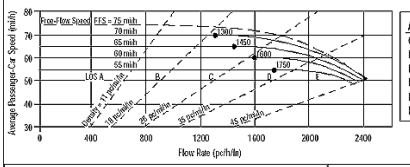
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1558* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *853* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *13.0* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *B* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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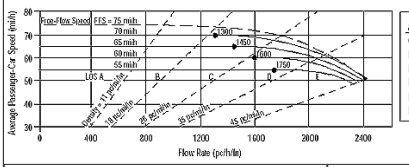


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1020* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *558* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *8.5* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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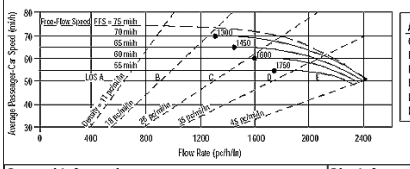
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1566* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *857* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.1* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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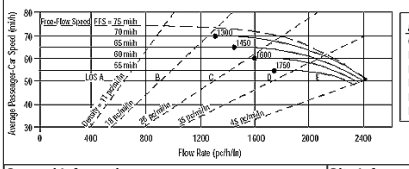


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1022* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *559* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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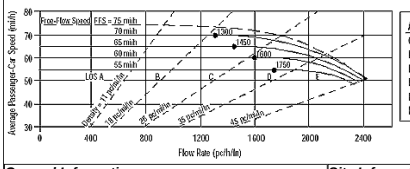
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1534* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *840* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.8* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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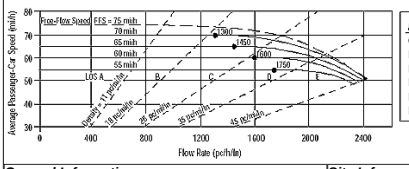
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1019* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *558* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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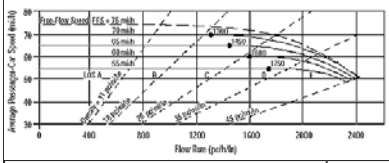
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1697* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *929* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *14.2* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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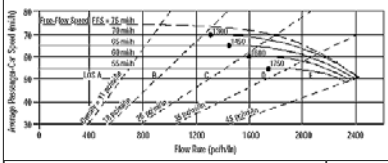
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1163* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *637* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *9.7* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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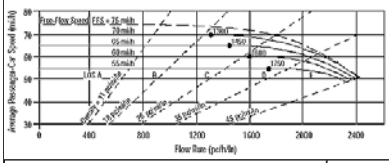
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1763* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *965* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *14.7* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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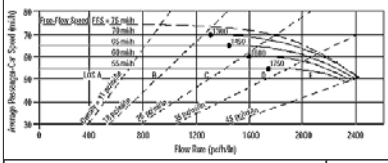
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt B* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1201* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *657* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *10.0* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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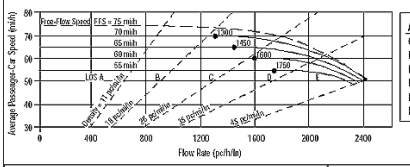
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt C* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *709* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *388* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *5.9* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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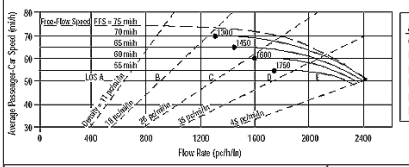
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+ Alt C* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *546* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *299* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *4.6* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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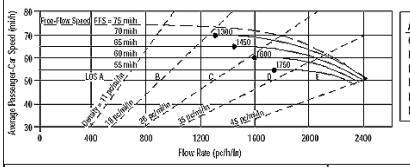
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt C* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1874* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *9* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.957* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1031* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *15.7* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *B* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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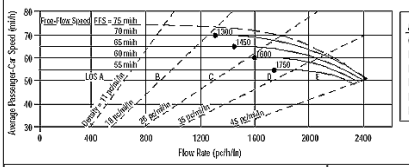


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt C* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1274* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *697* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *10.6* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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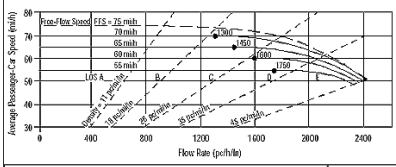
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+ Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *759* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *415* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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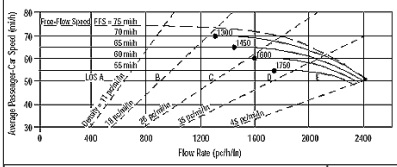
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *552* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *302* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *4.6* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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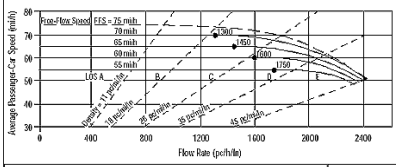
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Citrus Fair Dr/S.Clo Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1076* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *589* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.0* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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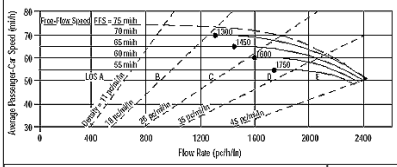
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Citrus Fair Dr/S.Clo Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *678* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *371* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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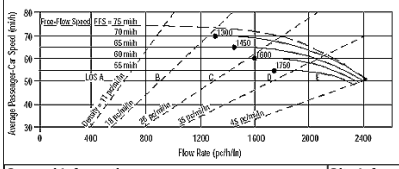


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1567* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *858* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.1* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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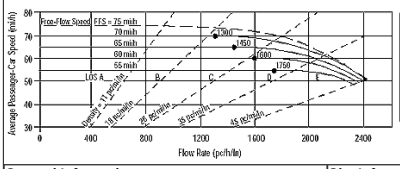
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *958* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *524* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.0* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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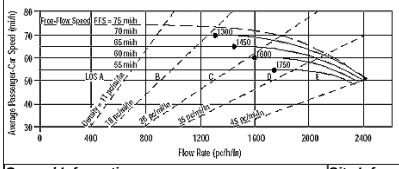
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1541* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *843* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.9* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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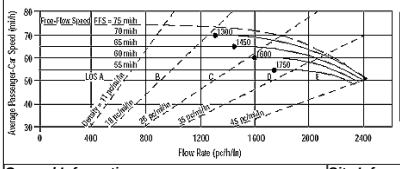
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1003* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *549* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.4* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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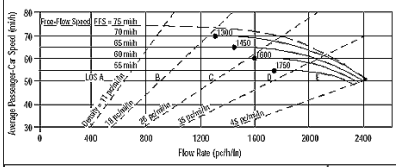
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Asti Inter/Jct Rte 128 E |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt C | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1549 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 848 | pc/h/ln | Design LOS $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 12.9 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | B | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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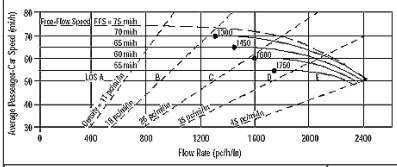


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Asti Inter/Jct Rte 128 E |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt C | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1005 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 550 | pc/h/ln | Design LOS $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 8.4 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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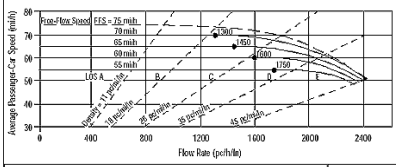


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 E/S.Geyserville |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt C | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1518 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 831 | pc/h/ln | Design LOS $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 12.7 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | B | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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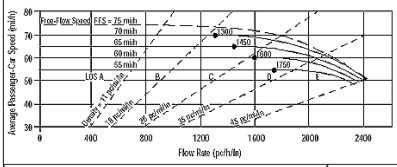


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 E/S.Geyserville |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt C | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1003 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 549 | pc/h/ln | Design LOS $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 8.4 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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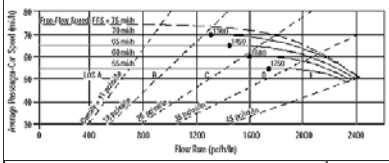
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt C* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1680* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *920* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *14.0* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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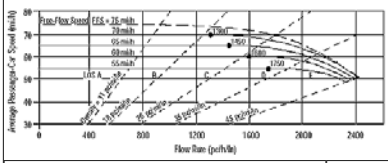
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt C* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1147* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *628* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *9.6* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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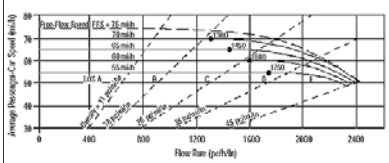
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt C* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1746* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *956* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *14.6* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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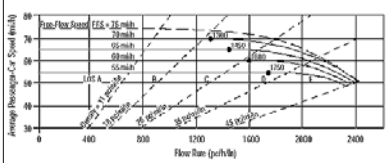
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt C* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1185* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *649* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *9.9* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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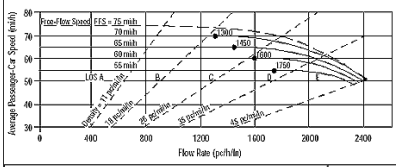
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *704* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *385* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.9* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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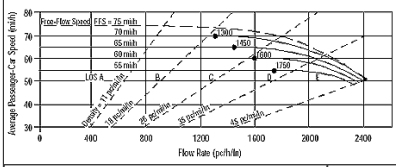
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+ Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *542* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *297* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *4.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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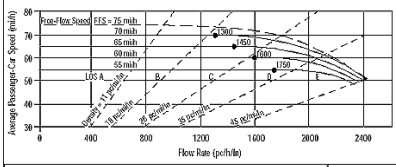
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1829* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1001* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *15.3* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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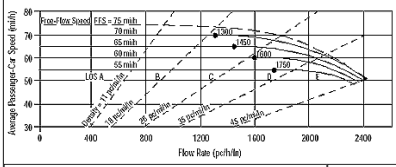
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1232* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *674* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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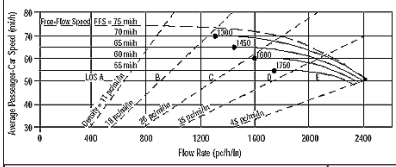
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 W/Citrus Fair Dr |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+ Alt D | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 754 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 413 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 6.3 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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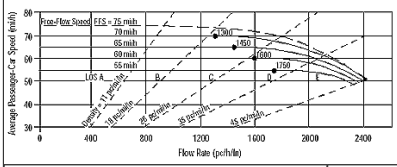
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 W/Citrus Fair Dr |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt D | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 548 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 300 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 4.6 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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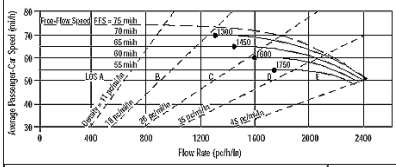
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Citrus Fair Dr/S.Clo Inter |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt D | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1062 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 581 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 8.9 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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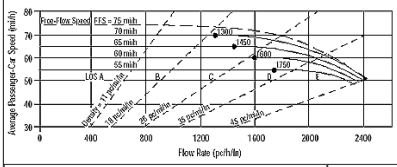
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Citrus Fair Dr/S.Clo Inter |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt D | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 667 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 365 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 5.6 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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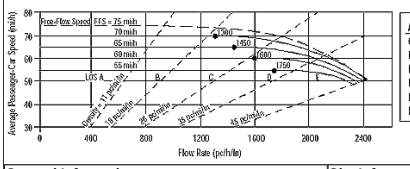
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1519* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *831* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.7* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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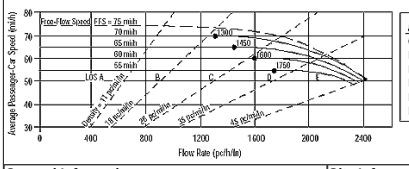
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *920* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | *70.0* | mi/h |
| Base free-flow Speed, BFFS | | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | | mi/h |
| $f_{LC}$ | | mi/h |
| $f_{ID}$ | | mi/h |
| $f_N$ | | mi/h |
| FFS | *70.0* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *504* | pc/h/ln |
| S | *70.0* | mi/h |
| D = $v_p$ / S | *7.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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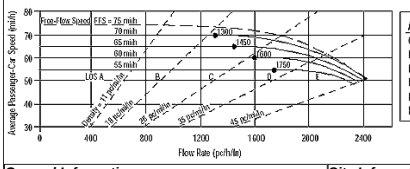
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1493* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *817* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.5* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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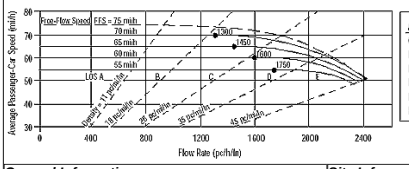


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *965* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *528* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.1* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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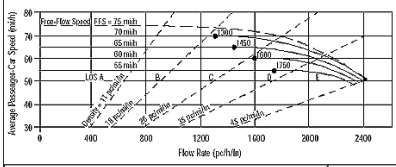
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1501* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *822* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.5* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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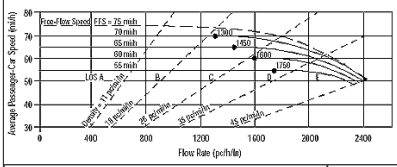
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *967* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *529* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.1* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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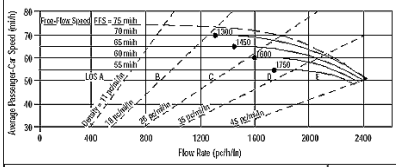
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1472* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *806* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.3* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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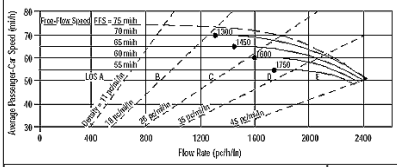
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *966* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *529* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.1* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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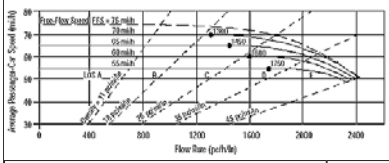


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt D* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1635* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *895* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *13.7* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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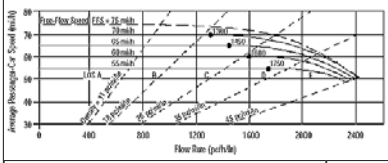
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt D* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1111* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *608* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *9.3* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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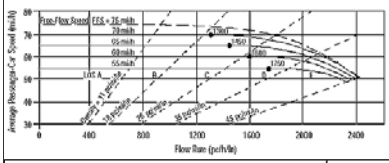
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt D* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1701* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *931* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *14.2* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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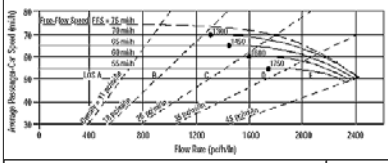
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt D* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1149* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *629* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *9.6* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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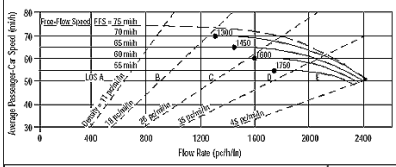
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt E* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *781* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *427* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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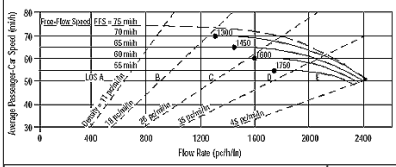
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+ Alt E* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *578* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *316* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *4.8* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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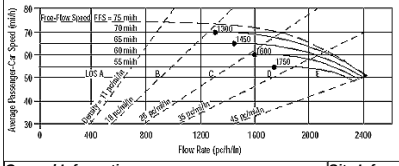
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt E* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1686* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *923* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *14.1* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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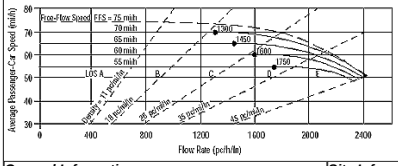
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt E* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1188* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *650* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.9* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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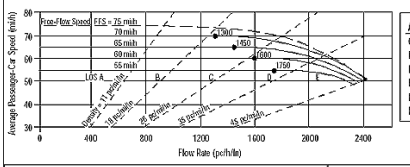
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 W/Citrus Fair Dr |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+ Alt E | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 831 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 455 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 6.9 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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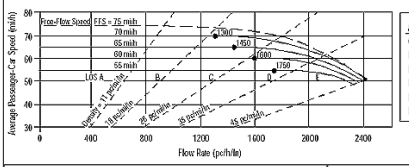


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 W/Citrus Fair Dr |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt E | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 584 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 320 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 4.9 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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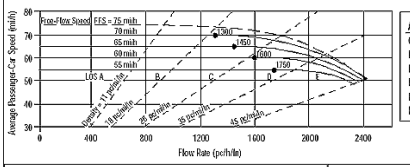


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Citrus Fair Dr/S.Clo Inter |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt E | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 983 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 538 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 8.2 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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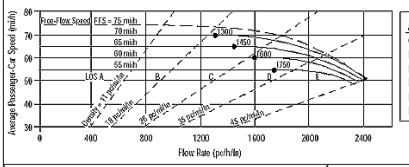


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Citrus Fair Dr/S.Clo Inter |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour+Alt E | Analysis Year | 2015 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 596 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 326 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 5.0 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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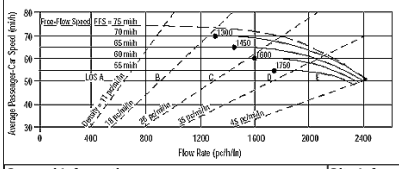


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt E* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1369* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *749* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *11.4* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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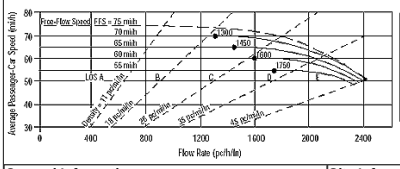
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt E* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *874* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *478* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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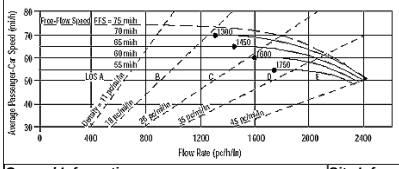
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt E* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1343* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *735* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *11.2* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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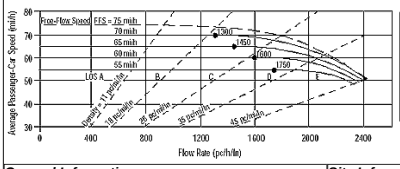
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour+Alt E* | Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *919* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *503* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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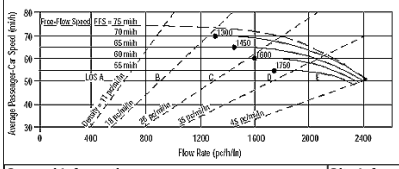


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1351* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *739* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *11.3* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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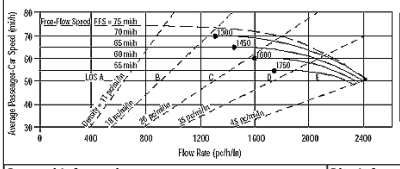


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *921* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *504* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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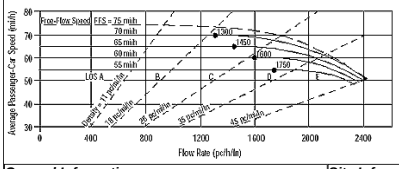
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1330* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *728* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *11.1* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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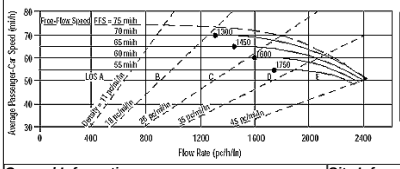
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *923* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *505* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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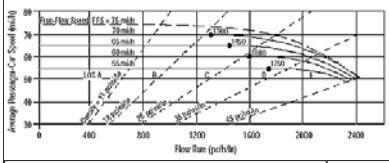
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *S.Geyserville/Independance Lne* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1492* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *817* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.5* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

Design LOS

| | |
|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| S | mi/h |
| D = $v_p$ / S | pc/mi/ln |

Required Number of Lanes, N

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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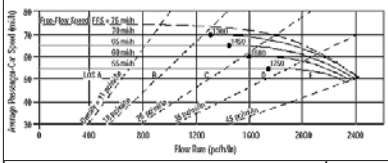
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *S.Geyserville/Independance Lne* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1067* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *584* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.9* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

Design LOS

| | |
|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| S | mi/h |
| D = $v_p$ / S | pc/mi/ln |

Required Number of Lanes, N

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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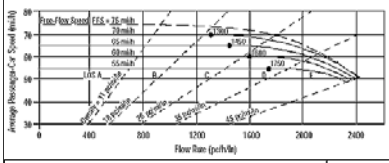
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Independance Lne/Lytton Sp Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1558* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *853* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.0* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

Design LOS

| | |
|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| S | mi/h |
| D = $v_p$ / S | pc/mi/ln |

Required Number of Lanes, N

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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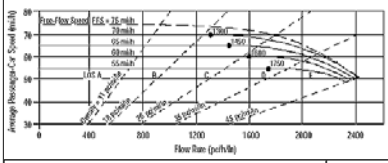
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour+Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Independance Lne/Lytton Sp Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2015* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1067* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *584* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.9* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

Design LOS

| | |
|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| S | mi/h |
| D = $v_p$ / S | pc/mi/ln |

Required Number of Lanes, N

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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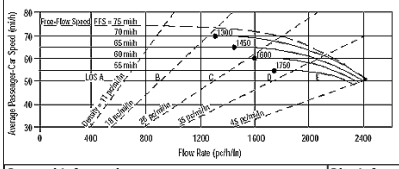
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *837* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *458* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *7.0* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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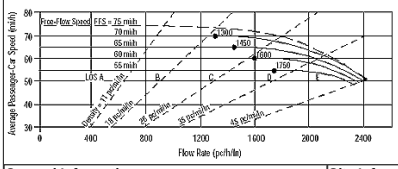
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *698* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *382* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *5.8* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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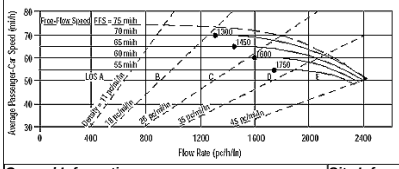
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1928* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1055* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *16.1* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *B* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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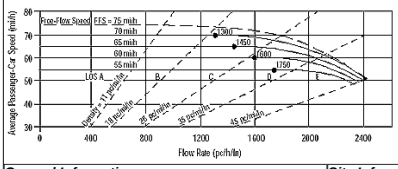
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1241* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *679* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *10.4* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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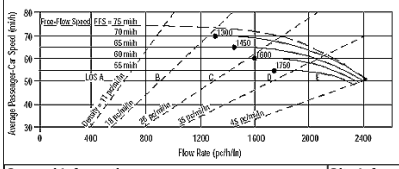
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *898* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *492* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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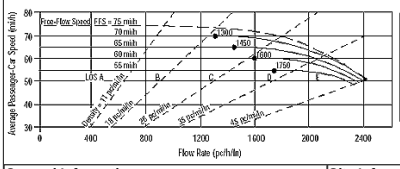
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2008* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *710* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *389* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *5.9* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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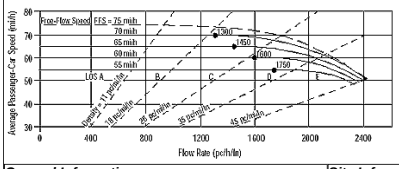
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Citrus Fair Dr/S.Clo Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1200* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *657* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.0* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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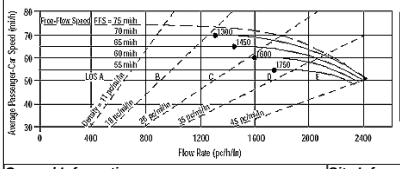
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Citrus Fair Dr/S.Clo Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *775* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *424* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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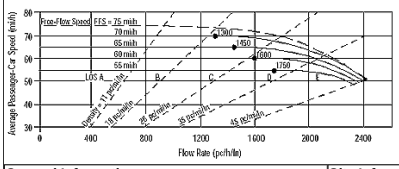
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/NB |
| From/To | S.Clo Inter/Dutcher Crk Dr |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | 1534 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 840 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 12.8 | pc/mi/ln |
| LOS | B | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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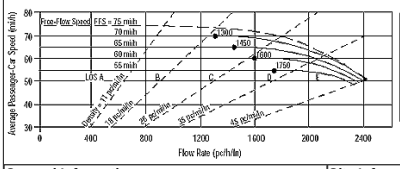
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/SB |
| From/To | S.Clo Inter/Dutcher Crk Dr |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | 846 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 463 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 7.1 | pc/mi/ln |
| LOS | A | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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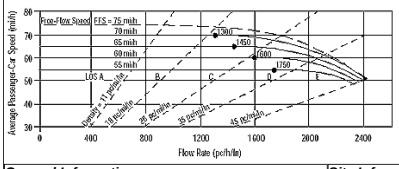
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/NB |
| From/To | Dutcher Crk Dr/Asti Inter |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | 1502 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 822 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 12.5 | pc/mi/ln |
| LOS | B | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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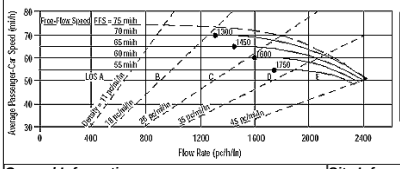
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/SB |
| From/To | Dutcher Crk Dr/Asti Inter |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | 950 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 520 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 7.9 | pc/mi/ln |
| LOS | A | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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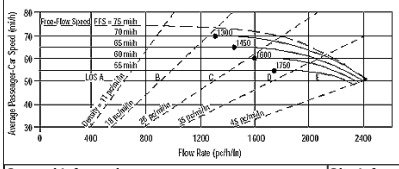
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1512* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *828* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.6* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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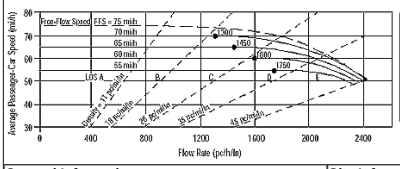
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *977* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *535* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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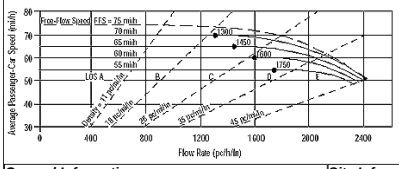
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1493* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *817* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.5* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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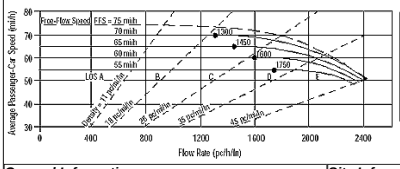
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *981* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *537* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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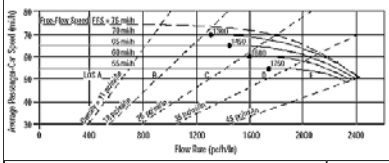
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *S.Geyserville/Independance Lne* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1691* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *926* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *14.1* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

Design LOS

| | |
|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h/ln |
| S | mi/h |
| D = $v_p$ / S | pc/mi/ln |

Required Number of Lanes, N

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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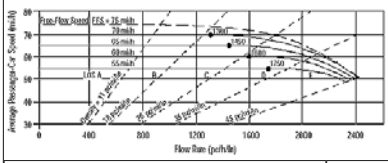
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *S.Geyserville/Independance Lne* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1112* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *609* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

Design LOS

| | |
|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| S | mi/h |
| D = $v_p$ / S | pc/mi/ln |

Required Number of Lanes, N

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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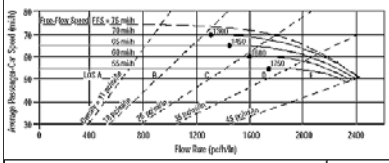
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Independance Lne/Lytton Sp Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1772* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *970* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *14.8* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

Design LOS

| | |
|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| S | mi/h |
| D = $v_p$ / S | pc/mi/ln |

Required Number of Lanes, N

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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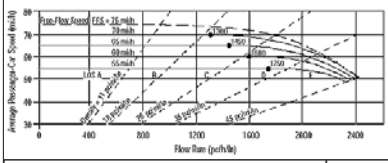
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Independance Lne/Lytton Sp Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1151* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *630* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.6* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

Design LOS

| | |
|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| S | mi/h |
| D = $v_p$ / S | pc/mi/ln |

Required Number of Lanes, N

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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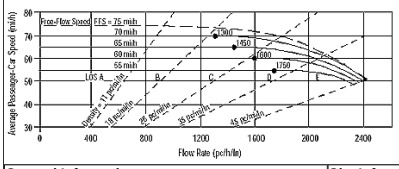


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *866* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *474* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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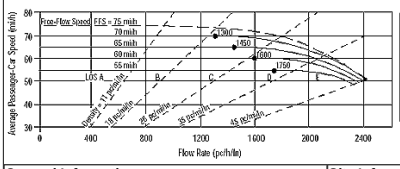
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *732* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *401* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.1* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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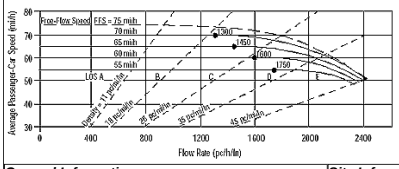
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *2346* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1284* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *19.6* | pc/mi/ln |
| LOS | *C* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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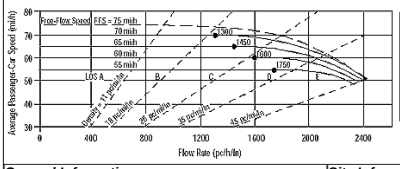
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1600* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *876* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.4* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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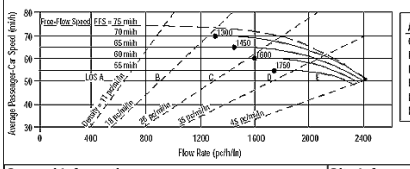
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *927* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *507* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *7.7* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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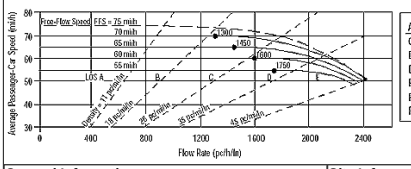
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *744* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *407* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *6.2* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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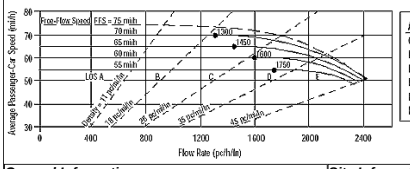


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1332* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *729* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *11.1* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *B* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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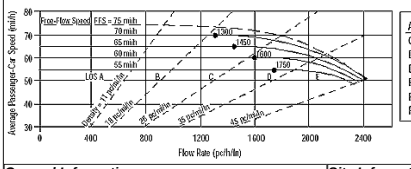


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *889* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *487* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *7.4* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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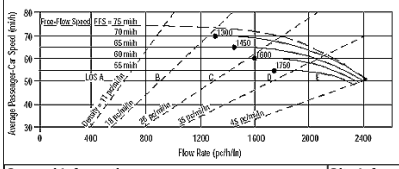


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt A* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1974* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1081* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *16.5* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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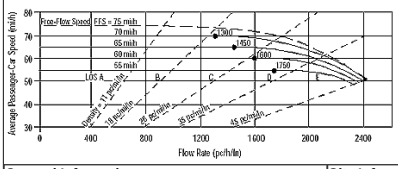
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt A* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1224* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *670* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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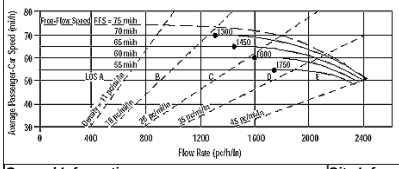


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt A* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1942* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1063* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *16.2* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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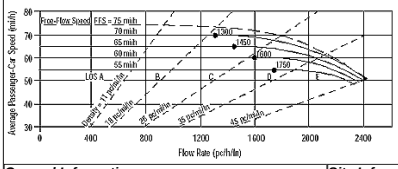


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt A* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1328* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *727* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *11.1* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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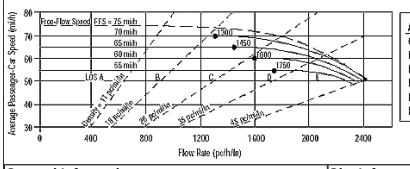
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Asti Inter/Jct Rte 128 E* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1952* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1068* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *16.3* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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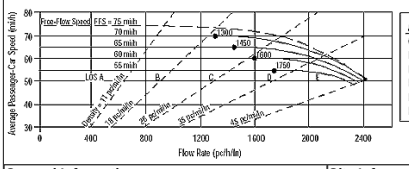
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Asti Inter/Jct Rte 128 E* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1355* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *742* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *11.3* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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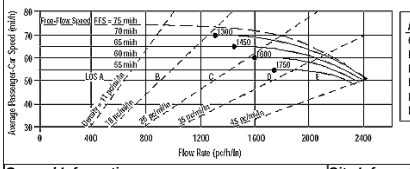
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 E/S.Geyserville* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1911* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1046* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *16.0* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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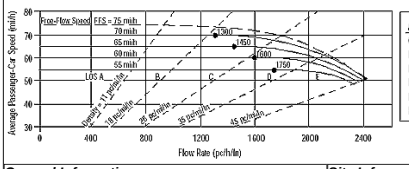


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 E/S.Geyserville* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1340* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *733* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *11.2* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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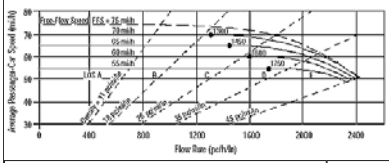


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *2109* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1154* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *17.6* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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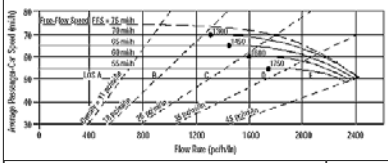
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1471* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *805* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *12.3* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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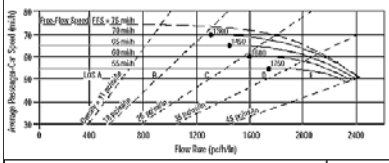
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *2190* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1199* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *18.3* | pc/mi/ln | S | | mi/h |
| LOS | *C* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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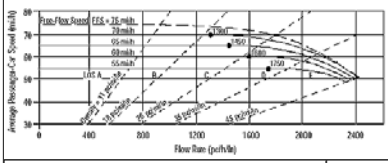
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt A* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1510* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *827* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *12.6* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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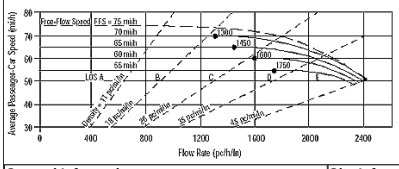
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *860* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *471* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *7.2* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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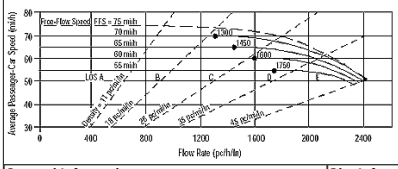
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *723* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *396* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *6.0* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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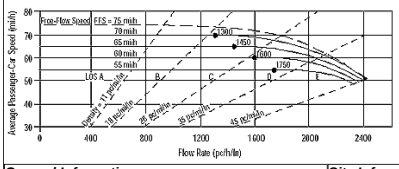
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *2238* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1225* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *18.7* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *C* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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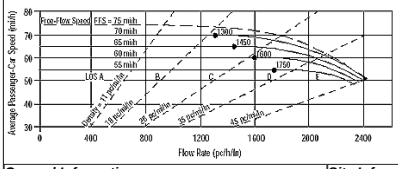
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1517* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *830* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *12.7* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *B* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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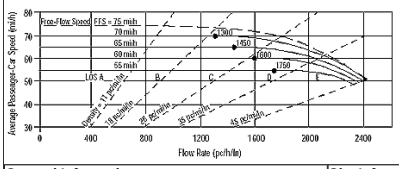
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *921* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *504* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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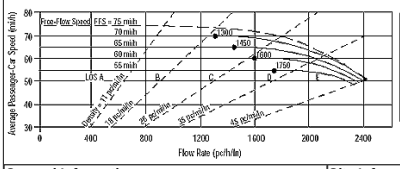
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *735* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *402* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.1* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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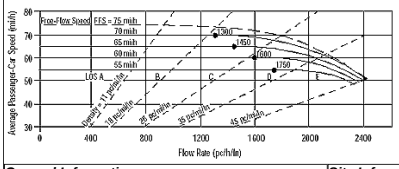
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1298* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *710* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.8* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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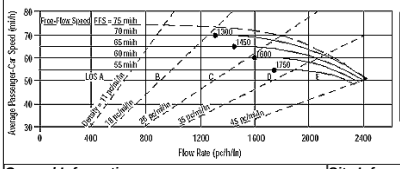
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *862* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *472* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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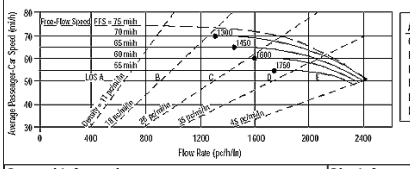
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1861* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1019* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *15.6* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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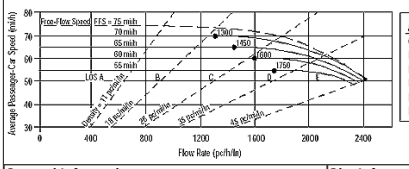
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1137* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *622* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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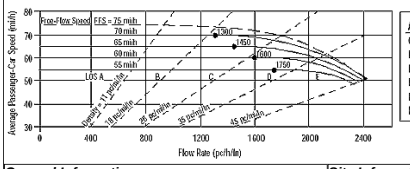
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1829* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1001* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *15.3* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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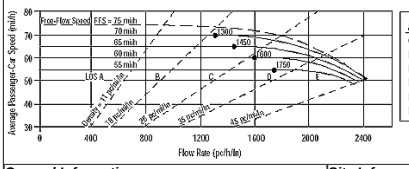
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt B* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1241* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | | |
|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *679* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.4* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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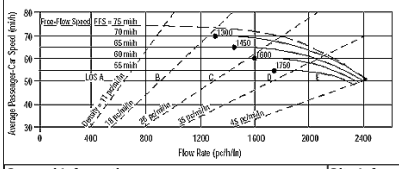
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour + Alt B |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/NB |
| From/To | Asti Inter/Jct Rte 128 E |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | 1839 | veh/h | Peak-Hour Factor, PHF | 0.95 | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 | |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi | |
| Driver type adjustment | 1.00 | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 | |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 1007 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 15.4 | pc/mi/ln |
| LOS | B | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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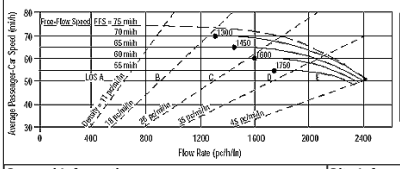
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour + Alt B |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/SB |
| From/To | Asti Inter/Jct Rte 128 E |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | 1268 | veh/h | Peak-Hour Factor, PHF | 0.95 | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 | |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi | |
| Driver type adjustment | 1.00 | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 | |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 694 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 10.6 | pc/mi/ln |
| LOS | A | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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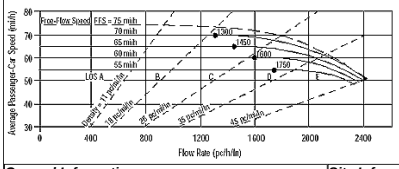
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour + Alt B |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/NB |
| From/To | Jct Rte 128 E/S.Geyserville |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | 1804 | veh/h | Peak-Hour Factor, PHF | 0.95 | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 | |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi | |
| Driver type adjustment | 1.00 | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 | |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 987 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 15.1 | pc/mi/ln |
| LOS | B | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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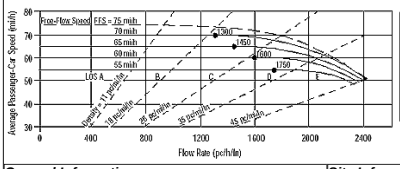
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour + Alt B |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/SB |
| From/To | Jct Rte 128 E/S.Geyserville |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | 1257 | veh/h | Peak-Hour Factor, PHF | 0.95 | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 | |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi | |
| Driver type adjustment | 1.00 | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 | |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 688 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 10.5 | pc/mi/ln |
| LOS | A | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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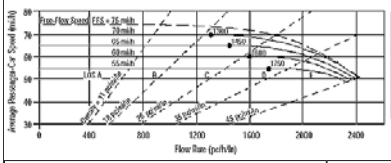
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | | |
|---|---|---|---|---|---|
| Volume, V | *2002* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1096* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *16.7* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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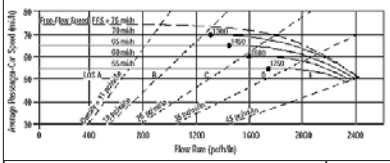


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1389* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *760* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *11.6* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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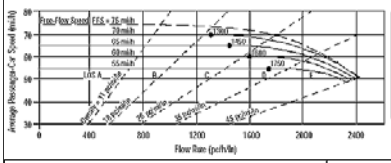
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | | |
|---|---|---|---|---|---|
| Volume, V | *2082* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1140* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *17.4* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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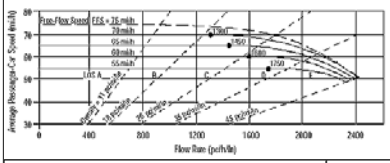
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt B* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1427* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *781* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *11.9* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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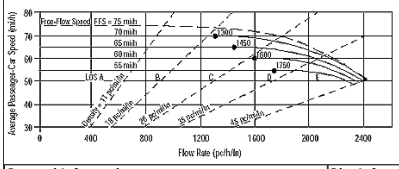
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *860* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *471* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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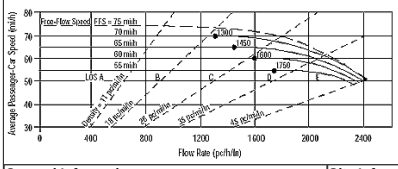
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *722* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *395* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.0* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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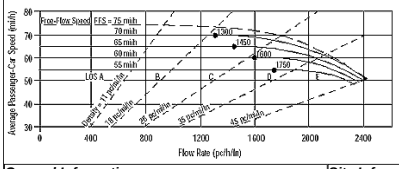
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *2222* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1216* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *18.6* | pc/mi/ln |
| LOS | *C* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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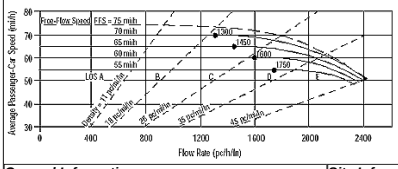
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1501* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *822* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.5* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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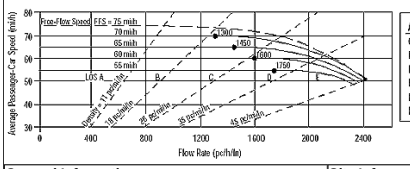
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt C* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *921* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *504* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *7.7* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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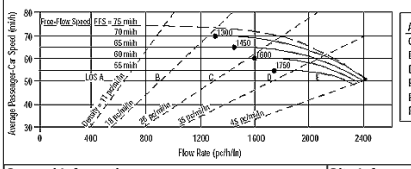
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt C* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *734* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *402* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *6.1* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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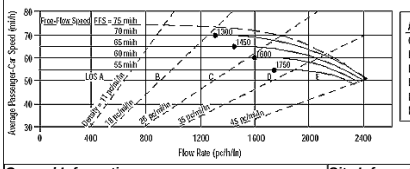
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt C* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1293* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *708* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *10.8* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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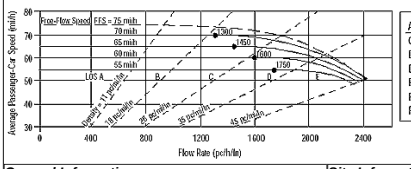
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt C* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *857* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *469* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *7.2* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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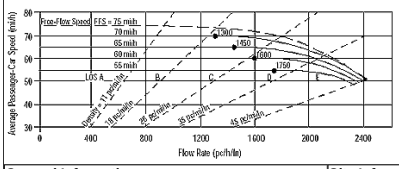
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1844* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1009* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *15.4* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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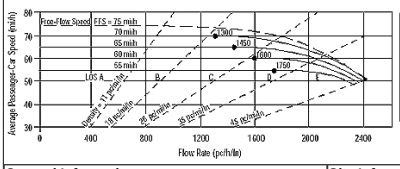
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1120* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *613* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.4* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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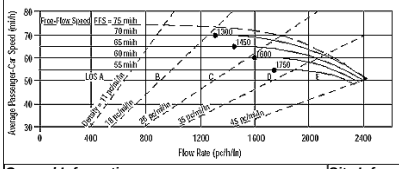
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1812* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *992* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *15.1* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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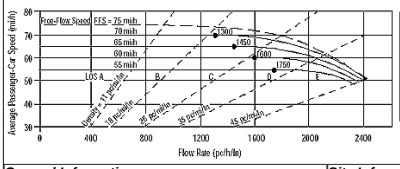
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1224* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *670* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.2* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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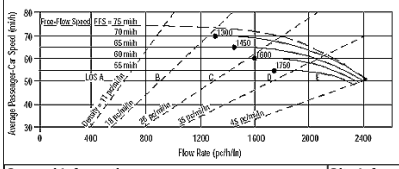
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1822* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | l/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *997* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *15.2* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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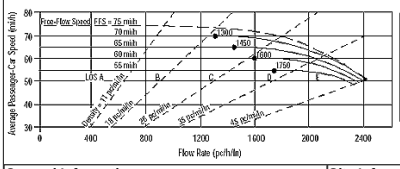
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1251* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | l/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *685* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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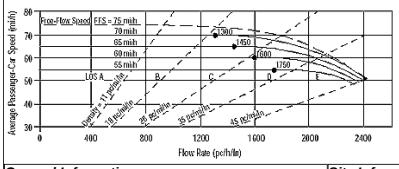
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1767* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | l/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *967* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *14.8* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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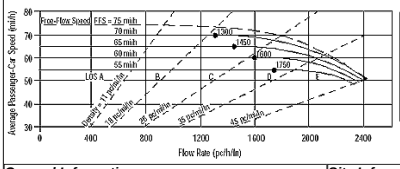
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt C* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1241* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | l/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *679* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *10.4* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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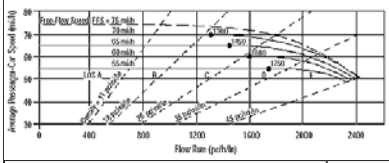
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | | Site Information | |
|---|---|---|---|---|
| Analyst | VCA | | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | | From/To | S.Geyserville/Independance Lne |
| Date Performed | 11/12/2008 | | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour + Alt C | | Analysis Year | 2035 |
| Project Description | Cloverdale Rancheria Casino | | | |
| ☑ Oper.(LOS) | ☐ Des.(N) | | ☐ Planning Data | |
| **Flow Inputs** | | | | |
| Volume, V | 1986 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |
| **Calculate Flow Adjustments** | | | | |
| $f_p$ | 1.00 | | $E_R$ | 1.2 |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |
| **Speed Inputs** | | | **Calc Speed Adj and FFS** | |
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | |
| **LOS and Performance Measures** | | | **Design (N)** | |
| Operational (LOS) | | | Design (N) | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 1087 | pc/h/ln | Design LOS | |
| S | 65.5 | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| D = $v_p$ / S | 16.6 | pc/mi/ln | S | mi/h |
| LOS | B | | D = $v_p$ / S | pc/mi/ln |
| | | | Required Number of Lanes, N | |
| **Glossary** | | | **Factor Location** | |
| N - Number of lanes | S - Speed | | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | | |

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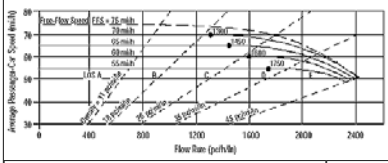
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | | Site Information | |
|---|---|---|---|---|
| Analyst | VCA | | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | | From/To | S.Geyserville/Independance Lne |
| Date Performed | 11/12/2008 | | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour + Alt C | | Analysis Year | 2035 |
| Project Description | Cloverdale Rancheria Casino | | | |
| ☑ Oper.(LOS) | ☐ Des.(N) | | ☐ Planning Data | |
| **Flow Inputs** | | | | |
| Volume, V | 1373 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |
| **Calculate Flow Adjustments** | | | | |
| $f_p$ | 1.00 | | $E_R$ | 1.2 |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |
| **Speed Inputs** | | | **Calc Speed Adj and FFS** | |
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | |
| **LOS and Performance Measures** | | | **Design (N)** | |
| Operational (LOS) | | | Design (N) | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 752 | pc/h/ln | Design LOS | |
| S | 65.5 | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| D = $v_p$ / S | 11.5 | pc/mi/ln | S | mi/h |
| LOS | B | | D = $v_p$ / S | pc/mi/ln |
| | | | Required Number of Lanes, N | |
| **Glossary** | | | **Factor Location** | |
| N - Number of lanes | S - Speed | | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | | |

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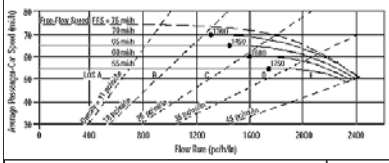
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | | Site Information | |
|---|---|---|---|---|
| Analyst | VCA | | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | | From/To | Independance Lne/Lytton Sp Rd |
| Date Performed | 11/12/2008 | | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour + Alt C | | Analysis Year | 2035 |
| Project Description | Cloverdale Rancheria Casino | | | |
| ☑ Oper.(LOS) | ☐ Des.(N) | | ☐ Planning Data | |
| **Flow Inputs** | | | | |
| Volume, V | 2066 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |
| **Calculate Flow Adjustments** | | | | |
| $f_p$ | 1.00 | | $E_R$ | 1.2 |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |
| **Speed Inputs** | | | **Calc Speed Adj and FFS** | |
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | |
| **LOS and Performance Measures** | | | **Design (N)** | |
| Operational (LOS) | | | Design (N) | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 1131 | pc/h/ln | Design LOS | |
| S | 65.5 | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| D = $v_p$ / S | 17.3 | pc/mi/ln | S | mi/h |
| LOS | B | | D = $v_p$ / S | pc/mi/ln |
| | | | Required Number of Lanes, N | |
| **Glossary** | | | **Factor Location** | |
| N - Number of lanes | S - Speed | | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | | |

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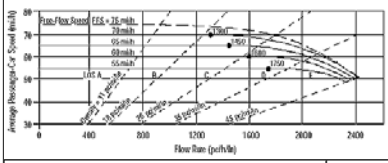
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | | Site Information | |
|---|---|---|---|---|
| Analyst | VCA | | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | | From/To | Independance Lne/Lytton Sp Rd |
| Date Performed | 11/12/2008 | | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour + Alt C | | Analysis Year | 2035 |
| Project Description | Cloverdale Rancheria Casino | | | |
| ☑ Oper.(LOS) | ☐ Des.(N) | | ☐ Planning Data | |
| **Flow Inputs** | | | | |
| Volume, V | 1411 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |
| **Calculate Flow Adjustments** | | | | |
| $f_p$ | 1.00 | | $E_R$ | 1.2 |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |
| **Speed Inputs** | | | **Calc Speed Adj and FFS** | |
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | |
| **LOS and Performance Measures** | | | **Design (N)** | |
| Operational (LOS) | | | Design (N) | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 772 | pc/h/ln | Design LOS | |
| S | 65.5 | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | pc/h |
| D = $v_p$ / S | 11.8 | pc/mi/ln | S | mi/h |
| LOS | B | | D = $v_p$ / S | pc/mi/ln |
| | | | Required Number of Lanes, N | |
| **Glossary** | | | **Factor Location** | |
| N - Number of lanes | S - Speed | | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | | |

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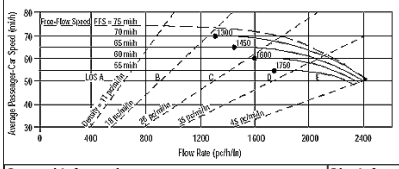
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *855* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *468* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.1* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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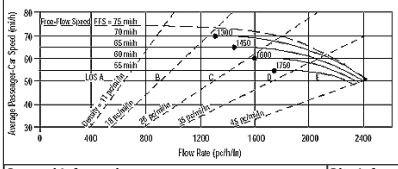
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *County Line/Jct Rte 128 W* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *718* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *393* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.0* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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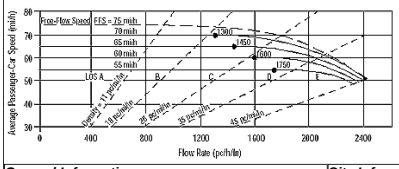
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *2176* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1191* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *18.2* | pc/mi/ln |
| LOS | *C* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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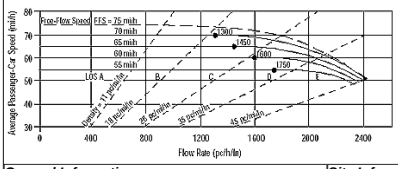
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | |
|---|---|---|---|---|
| Volume, V | *1465* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

### Calculate Flow Adjustments

| | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *802* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.2* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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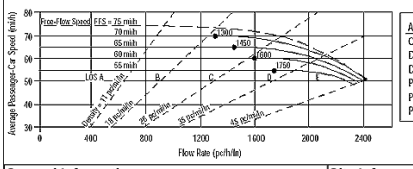
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour + Alt D |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/NB |
| From/To | Jct Rte 128 W/Citrus Fair Dr |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | 916 | veh/h | Peak-Hour Factor, PHF | 0.95 | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 | |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi | |
| Driver type adjustment | 1.00 | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 | |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 501 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 7.6 | pc/mi/ln |
| LOS | A | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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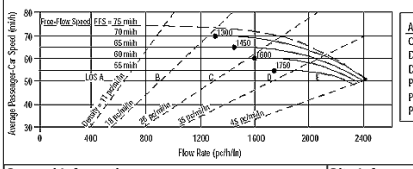
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour + Alt D |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/SB |
| From/To | Jct Rte 128 W/Citrus Fair Dr |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | 730 | veh/h | Peak-Hour Factor, PHF | 0.95 | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 | |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi | |
| Driver type adjustment | 1.00 | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 | |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 400 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 6.1 | pc/mi/ln |
| LOS | A | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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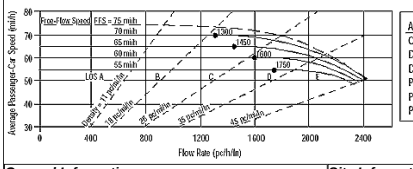
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour + Alt |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/NB |
| From/To | Citrus Fair Dr/S.Clo Inter |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | 1279 | veh/h | Peak-Hour Factor, PHF | 0.95 | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 | |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi | |
| Driver type adjustment | 1.00 | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 | |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 700 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 10.7 | pc/mi/ln |
| LOS | A | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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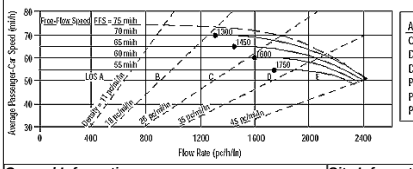
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | VCA |
| Agency or Company | W-TRANS |
| Date Performed | 11/12/2008 |
| Analysis Time Period | PM Peak Hour + Alt D |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | US 101/SB |
| From/To | Citrus Fair Dr/S.Clo Inter |
| Jurisdiction | City of Cloverdale |
| Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | 846 | veh/h | Peak-Hour Factor, PHF | 0.95 | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 | |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi | |
| Driver type adjustment | 1.00 | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | 1.00 | | $E_R$ | 1.2 | |
| $E_T$ | 1.5 | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | 12.0 | ft |
| Rt-Shoulder Lat. Clearance | 6.0 | ft |
| Interchange Density | 0.50 | I/mi |
| Number of Lanes, N | 2 | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | 0.0 | mi/h |
| $f_{LC}$ | 0.0 | mi/h |
| $f_{ID}$ | 0.0 | mi/h |
| $f_N$ | 4.5 | mi/h |
| FFS | 65.5 | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 463 | pc/h/ln |
| S | 65.5 | mi/h |
| D = $v_p$ / S | 7.1 | pc/mi/ln |
| LOS | A | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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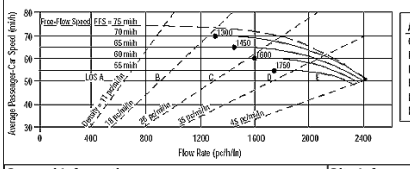
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1796* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *983* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *15.0* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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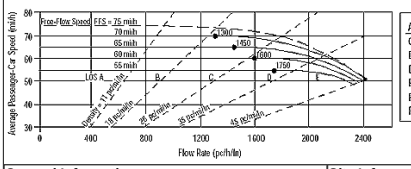
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1082* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *592* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.0* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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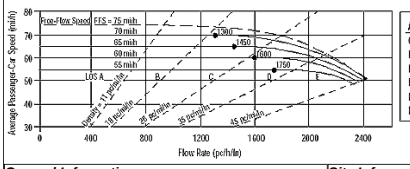


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1764* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | *70.0* | mi/h |
| Base free-flow Speed, BFFS | | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | | mi/h |
| $f_{LC}$ | | mi/h |
| $f_{ID}$ | | mi/h |
| $f_N$ | | mi/h |
| FFS | *70.0* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *966* | pc/h/ln |
| S | *70.0* | mi/h |
| D = $v_p$ / S | *13.8* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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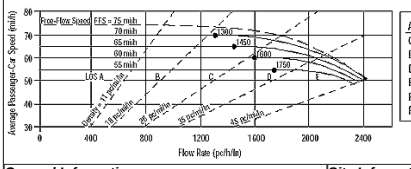
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | | | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Dutcher Crk Dr/Asti Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1186* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *649* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.9* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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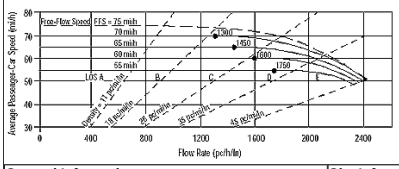


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Asti Inter/Jct Rte 128 E |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour + Alt D | Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1774 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 971 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 14.8 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | B | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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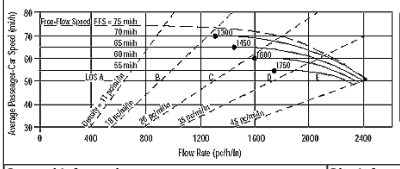


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Asti Inter/Jct Rte 128 E |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour + Alt D | Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1213 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 664 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 10.1 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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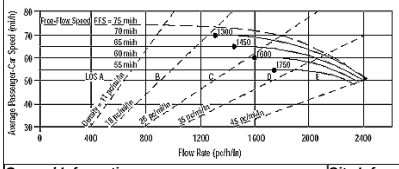


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/NB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 E/S.Geyserville |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour + Alt D | Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1742 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 954 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 14.6 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | B | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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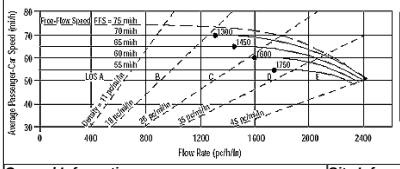


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | VCA | Highway/Direction of Travel | US 101/SB |
| Agency or Company | W-TRANS | From/To | Jct Rte 128 E/S.Geyserville |
| Date Performed | 11/12/2008 | Jurisdiction | City of Cloverdale |
| Analysis Time Period | PM Peak Hour + Alt D | Analysis Year | 2035 |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | 1205 | veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | 8 |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | 0 |
| Peak-Hr Direction Prop, D | | | General Terrain: | Level |
| DDHV = AADT x K x D | | veh/h | Grade % Length | mi |
| Driver type adjustment | 1.00 | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | 1.00 | $E_R$ | 1.2 |
| $E_T$ | 1.5 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.962 |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | 12.0 | ft | $f_{LW}$ | 0.0 | mi/h |
| Rt-Shoulder Lat. Clearance | 6.0 | ft | $f_{LC}$ | 0.0 | mi/h |
| Interchange Density | 0.50 | I/mi | $f_{ID}$ | 0.0 | mi/h |
| Number of Lanes, N | 2 | | $f_N$ | 4.5 | mi/h |
| FFS (measured) | | mi/h | FFS | 65.5 | mi/h |
| Base free-flow Speed, BFFS | 70.0 | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | 660 | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | 65.5 | mi/h | S | | mi/h |
| D = $v_p$ / S | 10.1 | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | A | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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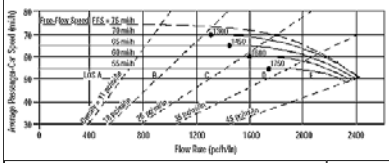


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | | Site Information | |
|---|---|---|---|---|
| Analyst | *VCA* | | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | | Analysis Year | *2035* |
| Project Description | Cloverdale Rancheria Casino | | | |

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1940* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1062* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *16.2* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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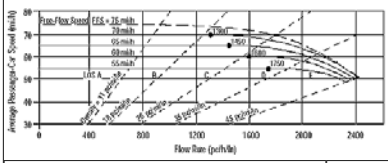


| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | | Site Information | |
|---|---|---|---|---|
| Analyst | *VCA* | | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | | Analysis Year | *2035* |
| Project Description | Cloverdale Rancheria Casino | | | |

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1337* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *732* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *11.2* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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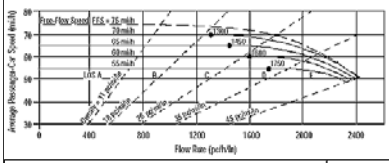
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | | Site Information | |
|---|---|---|---|---|
| Analyst | *VCA* | | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | | Analysis Year | *2035* |
| Project Description | Cloverdale Rancheria Casino | | | |

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *2021* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1106* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *16.9* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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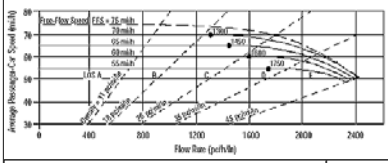
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| General Information | | | Site Information | |
|---|---|---|---|---|
| Analyst | *VCA* | | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt D* | | Analysis Year | *2035* |
| Project Description | Cloverdale Rancheria Casino | | | |

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| Flow Inputs | | | | |
|---|---|---|---|---|
| Volume, V | *1375* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| Calculate Flow Adjustments | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| Speed Inputs | | | Calc Speed Adj and FFS | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | l/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| LOS and Performance Measures | | | Design (N) | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *753* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *11.5* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| Glossary | | Factor Location | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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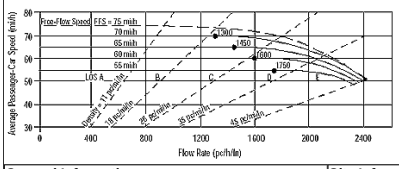
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *932* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *510* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *7.8* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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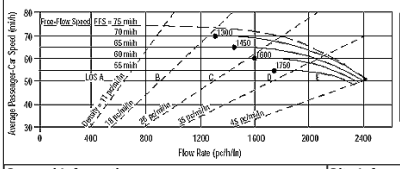
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *County Line/Jct Rte 128 W* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *754* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *413* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *6.3* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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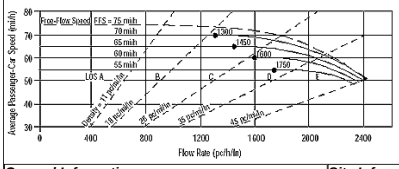
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *2034* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1113* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *17.0* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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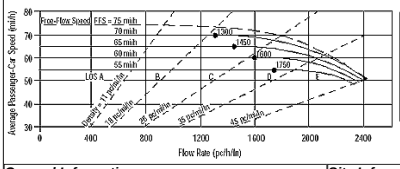
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt D* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Lytton Spring Rd/Dry Crk Rd* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1465* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *802* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *12.2* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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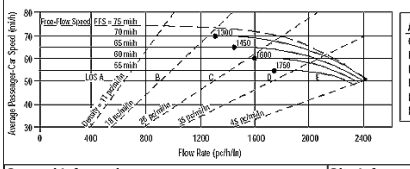
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt E* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *993* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *544* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *8.3* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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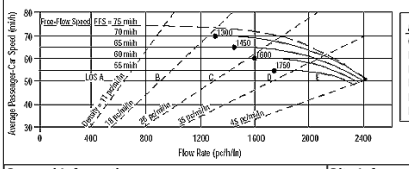
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Jct Rte 128 W/Citrus Fair Dr* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt E* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *766* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *419* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *6.4* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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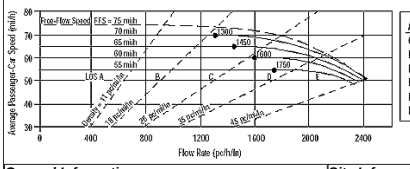
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt E* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1200* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *657* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *10.0* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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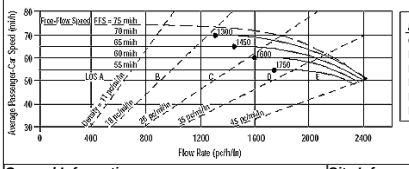
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Citrus Fair Dr/S.Clo Inter* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt E* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *775* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *424* | pc/h/ln | Design LOS<br>$v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | *65.5* | mi/h | S | | mi/h |
| D = $v_p$ / S | *6.5* | pc/mi/ln | D = $v_p$ / S | | pc/mi/ln |
| LOS | *A* | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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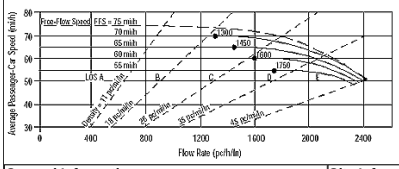
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1646* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *901* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.8* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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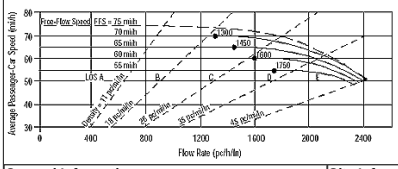
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *S.Clo Inter/Dutcher Crk Dr* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1036* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *567* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *8.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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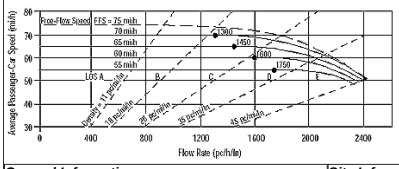
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1614* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *883* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.5* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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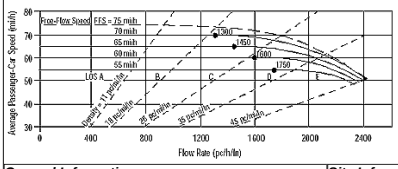
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Dutcher Crk Dr/Asti Inter* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1140* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *624* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.5* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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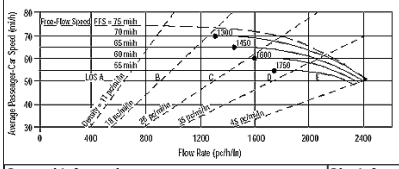
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1624* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *889* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.6* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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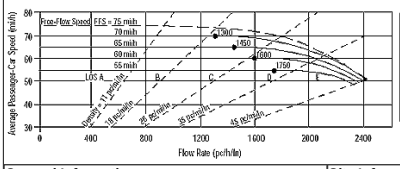
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Asti Inter/Jct Rte 128 E* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1167* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *639* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.8* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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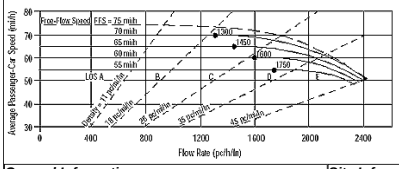
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/NB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1599* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *875* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *13.4* | pc/mi/ln |
| LOS | *B* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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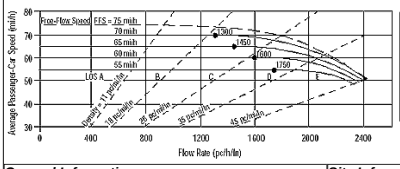
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

### General Information

| | |
|---|---|
| Analyst | *VCA* |
| Agency or Company | *W-TRANS* |
| Date Performed | *11/12/2008* |
| Analysis Time Period | *PM Peak Hour + Alt E* |

### Site Information

| | |
|---|---|
| Highway/Direction of Travel | *US 101/SB* |
| From/To | *Jct Rte 128 E/S.Geyserville* |
| Jurisdiction | *City of Cloverdale* |
| Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

### Flow Inputs

| | | | | | |
|---|---|---|---|---|---|
| Volume, V | *1161* | veh/h | Peak-Hour Factor, PHF | *0.95* | |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* | |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* | |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* | |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* | |
| Driver type adjustment | *1.00* | | Up/Down % | | |

### Calculate Flow Adjustments

| | | | | | |
|---|---|---|---|---|---|
| $f_p$ | *1.00* | | $E_R$ | *1.2* | |
| $E_T$ | *1.5* | | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* | |

### Speed Inputs

| | | |
|---|---|---|
| Lane Width | *12.0* | ft |
| Rt-Shoulder Lat. Clearance | *6.0* | ft |
| Interchange Density | *0.50* | I/mi |
| Number of Lanes, N | *2* | |
| FFS (measured) | | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h |

### Calc Speed Adj and FFS

| | | |
|---|---|---|
| $f_{LW}$ | *0.0* | mi/h |
| $f_{LC}$ | *0.0* | mi/h |
| $f_{ID}$ | *0.0* | mi/h |
| $f_N$ | *4.5* | mi/h |
| FFS | *65.5* | mi/h |

### LOS and Performance Measures

Operational (LOS)

| | | |
|---|---|---|
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *635* | pc/h/ln |
| S | *65.5* | mi/h |
| D = $v_p$ / S | *9.7* | pc/mi/ln |
| LOS | *A* | |

### Design (N)

Design (N)

| | | |
|---|---|---|
| Design LOS | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| S | | mi/h |
| D = $v_p$ / S | | pc/mi/ln |
| Required Number of Lanes, N | | |

### Glossary

| | |
|---|---|
| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| $v_p$ - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

### Factor Location

| | |
|---|---|
| $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |

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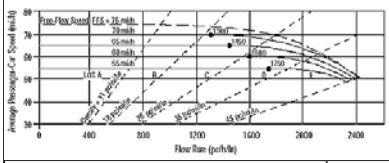
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt E* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1798* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *984* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *15.0* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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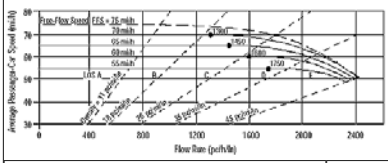
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *S.Geyserville/Independance Lne* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt E* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1293* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *708* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *10.8* | pc/mi/ln | S | | mi/h |
| LOS | *A* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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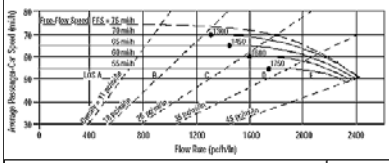
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/NB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt E* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1887* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *1033* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *15.8* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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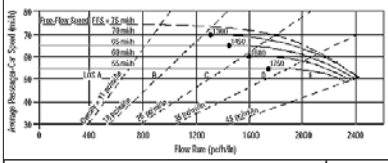
## BASIC FREEWAY SEGMENTS WORKSHEET




| Application | Input | Output |
|---|---|---|
| Operational (LOS) | FFS, N, $v_p$ | LOS, S, D |
| Design (N) | FFS, LOS, $v_p$ | N, S, D |
| Design ($v_p$) | FFS, LOS, N | $v_p$, S, D |
| Planning (LOS) | FFS, N, AADT | LOS, S, D |
| Planning (N) | FFS, LOS, AADT | N, S, D |
| Planning ($v_p$) | FFS, LOS, N | $v_p$, S, D |

| ***General Information*** | | ***Site Information*** | |
|---|---|---|---|
| Analyst | *VCA* | Highway/Direction of Travel | *US 101/SB* |
| Agency or Company | *W-TRANS* | From/To | *Independance Lne/Lytton Sp Rd* |
| Date Performed | *11/12/2008* | Jurisdiction | *City of Cloverdale* |
| Analysis Time Period | *PM Peak Hour + Alt E* | Analysis Year | *2035* |

Project Description Cloverdale Rancheria Casino

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

| ***Flow Inputs*** | | | | |
|---|---|---|---|---|
| Volume, V | *1331* | veh/h | Peak-Hour Factor, PHF | *0.95* |
| AADT | | veh/day | %Trucks and Buses, $P_T$ | *8* |
| Peak-Hr Prop. of AADT, K | | | %RVs, $P_R$ | *0* |
| Peak-Hr Direction Prop, D | | | General Terrain: | *Level* |
| DDHV = AADT x K x D | | veh/h | Grade % Length | *mi* |
| Driver type adjustment | *1.00* | | Up/Down % | |

| **Calculate Flow Adjustments** | | | |
|---|---|---|---|
| $f_p$ | *1.00* | $E_R$ | *1.2* |
| $E_T$ | *1.5* | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | *0.962* |

| **Speed Inputs** | | | **Calc Speed Adj and FFS** | | |
|---|---|---|---|---|---|
| Lane Width | *12.0* | ft | $f_{LW}$ | *0.0* | mi/h |
| Rt-Shoulder Lat. Clearance | *6.0* | ft | $f_{LC}$ | *0.0* | mi/h |
| Interchange Density | *0.50* | I/mi | $f_{ID}$ | *0.0* | mi/h |
| Number of Lanes, N | *2* | | $f_N$ | *4.5* | mi/h |
| FFS (measured) | | mi/h | FFS | *65.5* | mi/h |
| Base free-flow Speed, BFFS | *70.0* | mi/h | | | |

| **LOS and Performance Measures** | | | **Design (N)** | | |
|---|---|---|---|---|---|
| Operational (LOS) | | | Design (N) | | |
| $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | *729* | pc/h/ln | Design LOS | | |
| S | *65.5* | mi/h | $v_p$ = (V or DDHV) / (PHF x N x $f_{HV}$ x $f_p$) | | pc/h |
| D = $v_p$ / S | *11.1* | pc/mi/ln | S | | mi/h |
| LOS | *B* | | D = $v_p$ / S | | pc/mi/ln |
| | | | Required Number of Lanes, N | | |

| **Glossary** | | **Factor Location** | |
|---|---|---|---|
| N - Number of lanes | S - Speed | $E_R$ - Exhibits23-8, 23-10 | $f_{LW}$ - Exhibit 23-4 |
| V - Hourly volume | D - Density | $E_T$ - Exhibits 23-8, 23-10, 23-11 | $f_{LC}$ - Exhibit 23-5 |
| $v_p$ - Flow rate | FFS - Free-flow speed | $f_p$ - Page 23-12 | $f_N$ - Exhibit 23-6 |
| LOS - Level of service | BFFS - Base free-flow speed | LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design hour volume | | | |

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# Appendix H
## Preliminary Utilities Study

ESA

# PRELIMINARY UTILITIES STUDY

**For**

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

**January 2009**

Prepared for:

**ESA**
8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826

Prepared by:

**Adobe Associates, Inc.**
**1220 North Dutton Avenue**
**Santa Rosa, California 95401**
**Phone: (707) 541-2300**

# TABLE OF CONTENTS

## Preliminary Utilities Study


| | Page Number |
|---|---|
| Sanitary Sewer | 1 |
| Domestic Water | 2 |
| Reclaimed Water Supply | 2-3 |
| Storm Drainage | 3 |
| Gas | 4 |
| Electric | 4 |
| Cable Television | 4 |
| Telephone | 4 |

Exhibits

Preliminary Utility Plan – Alternatives A-D

Preliminary Utility Plan – Alternative E

## Preliminary Utilities

Site utilities addressed in this section include the utilities within the 69.8-acre project boundary located between Highway 101 and the Russian River along the east boundary. Water supply facilities located east of the railroad track are addressed in the Water Supply section of this report. Wastewater facilities including reclaimed water facilities east of the railroad tracks are addressed in the Wastewater Treatment and Disposal section of this report.

**Sanitary Sewer:**
The City of Cloverdale owns and maintains an existing public sanitary sewer main which runs along the southern project boundary and bisects the 69.8 acre project site paralleling the railroad tracks north to the City's wastewater treatment plant. A Municipal Services Agreement (MSA), between the City and the Cloverdale Rancheria would be required for the project to access the public sanitary sewer system. The wastewater treatment plant and the sanitary sewer mains adjacent to the project both have the capacity to serve the project for Alternatives A-E.

Sanitary sewer service can be provided by the project without dependence on public sewer facilities. Sufficient area and site conditions exist on the project site to construct adequate private wastewater treatment and disposal facilities.

Proposed private sanitary improvements include the construction of approximately 2,500 lineal feet of an 8-inch pipe system along the southern and northeastern site boundaries parallel to the public system. The sanitary sewer collection system would convey flows to a point near the northwest end of the garage structure and turn northeasterly across the railroad tracks to the proposed wastewater treatment system east of the railroad tracks. Refer to the exhibit titled, "Preliminary Utility Plan Alternatives A-D" for onsite private sanitary facilities. Wastewater treatment and disposal is discussed in this report under the section titled, "Wastewater Treatment and Disposal."

Alternative E private sanitary sewer facilities are proposed originating in the circular driveway near the most west retail buildings. This centrally located network of 8-inch diameter sanitary sewer pipes has adequate capacity to serve the proposed commercial, retail, and warehouse uses. The sewer network combines to a single 8-inch pipe near the most easterly end of the circular drive and continues northeasterly to the project boundary then northwesterly to the location of the railroad crossing and continues to the proposed waste water treatment plant. Refer to the exhibit titled, "Preliminary Utility Plan Alternative E" for onsite sanitary facilities.

The private sanitary sewer crossing of the railroad tracks will require an encroachment permit from the railroad to install the pipe within the railroad right-of-way and under the tracks. Pipe construction under the tracks will utilize directional drilling or bore and jack as a method of installation.

Sanitary sewer pipe crossing of Porterfield Creek is proposed via a suspended pipe over the creek. Support structures for the overcrossing are proposed to be constructed outside of the creek banks.

**Domestic Water:**
A private water supply system is proposed by this project. Water will be pumped from a new well located near the most easterly point of the vineyard property located on the east side of the project. A discussion of the water supply, treatment, demands, and offsite facilities is found in this report in the section titled, "Water Supply."

Onsite water will be supplied directly from the proposed water tank located southwest of the proposed wastewater treatment plant. Refer to exhibit titled, "Preliminary Utility Plan Alternatives (A-E)" for the onsite distribution pipe layout. The distribution system will serve only domestic water demands of the project and excludes irrigation and fire protection uses. Onsite fire and irrigation supply is discussed in the reclaimed water supply subsection below.

A 6-inch distribution main is proposed to supply water to the outside perimeter of the building mass. Originating from the water tank, and through a railroad under-crossing near the midpoint of the north garage structure, the domestic main line will skirt the northeast project boundary under the proposed service road located between the proposed buildings and the railroad. At the southeast corner of the site, this domestic main will follow the southern project boundary westerly to a point near the west end of the building mass requiring domestic water supply. Proposed water distribution piping is approximately 2,500 lineal feet in length.

A suspended domestic water pipe crossing over Porterfield Creek is proposed. Support structures for the overcrossing are proposed to be constructed outside of the creek banks.

An existing 8-inch water line owned by the South Cloverdale Water District traverses the project site from west to east. Domestic water supply is not available to the project from the South Cloverdale Water District facilities. Relocation of approximately 1,750 feet of this existing waterline is necessary to improve the proposed building massing within the project and access to the project. The relocated waterline will be placed along the southern boundary and northeastern boundary as shown in the exhibit titled, "Preliminary Utility Plan Alternatives A-D."

Public water may be an option for this project site. While the project lies outside of the City boundary, the City does have adequate public facilities to serve the project. Public water service may be provided if two conditions are met. First, a Municipal Services Agreement (MSA) would be required between the City and the Cloverdale Rancheria. Second, a 12-inch or possible 16-inch public water main would need to be constructed along Asti Road from north of the City wastewater treatment plant to Santana Drive, a distance of approximately 3,400 lineal feet.

**Reclaimed Water Supply:**
Reclaimed water supply for the project would be provided using tertiary level treated wastewater from the private wastewater treatment facilities located on the northeastern portion of the site. Reclaimed water is proposed for fire protection and irrigation uses. Fire protection uses include fire sprinklers systems used within the buildings as well as the fire hydrants located outside of the buildings. Irrigation use of the reclaimed water includes the landscape plantings and water features, which may include ponds or fountains.

Reclaimed water would be supplied through a 12-inch pipe originating at the pump house on the offsite wastewater treatment storage pond. Onsite distribution is proposed through a 12-inch loop main constructed around the circumference of the building mass as shown on the exhibit titled, "Preliminary Utility Plan Alternatives (A-E)."

Landscape irrigation supply to localized planting areas or zones will be served directly from the looped reclaimed 4-inch irrigation water main. A 40,000 gallon reclaimed irrigation water storage tank is proposed and located near the domestic water supply tank adjacent to the private wastewater treatment plant.

**Storm Drainage:**
The proposed use of porous concrete surfaces aids in the reduction of storm drain infrastructure improvements including inlet structures, outlet structures, manholes and piping. Overall site drainage is discussed in the section titled, "Preliminary Drainage Plan – Alternative (A-E)." Existing outfall locations and new upland drainage release systems are proposed for project alternatives A-E, eliminating the impact of constructing drainage outfall structures, pipes, and energy dissipaters within the creek banks.

Onsite storm drain improvements include subterranean storm water detention facilities which are provided by constructing a network of parallel large diameter pipes with a small diameter pipe and outlet structure designed to restrict outflows to pre-development conditions.

Storm drain system improvements are the same for alternatives A-D. Offsite storm water runs onto the project site from an existing 30-diameter pipe located along the Asti Road frontage. This offsite storm water gravity flows to the east, through the existing wetland mitigation area. Near the east end of this wetland area, a 30-inch storm drain pipe is proposed to collect flows through the wetland preserve and storm water collected within the porous road surface.

The 30-inch storm drain is proposed to connect to the subterranean detention facility to meter flows at the proposed detention facility outlet location. An upland drainage release system is proposed at the northerly most end of the detention facility. This upland release system converts storm water discharges from a concentrated flow to sheet flow prior to being discharged over natural ground to Porterfield Creek.

Onsite subdrain systems are necessary to convey storm water collected within the porous surfaces to the detention facility and will be developed in the design phase of the project.

Sump pumps will be required within the bottom floors of the garage structures to provide drainage for seepage and garage floor cleaning. Sump pump discharges will be treated with a sand/oil separator and discharged to the sanitary sewer system.

**Gas:**
Gas is currently not available near the site. A 6-inch gas main is proposed to extend gas service to the project site from an existing gas main located on the east side of Asti Road approximately 2,500 lineal feet south of Santana Drive. The new gas main would be installed along the east side of Asti Road to Santana Drive and along the north side of Santana Drive to the overhead utility easement near the road knuckle in Santana Drive, a total distance of approximately 3,980 lineal feet. The gas main would reduce from 6-inches to 4-inches and extend north into the site, 1,160 lineal feet along the service road parallel to the railroad track, to the north boundary of the project. Alternative E proposes the use of 2-inch gas service piping to serve the individual buildings, approximately 2,060 lineal feet. Refer to the exhibits titled, "Preliminary Utilities Alternatives (A-E)" for gas and joint utility trench concept layouts.

**Electric:**
The site currently has an overhead 3-phase distribution pole line running through the proposed casino portion of the site. This existing pole line will be removed and placed underground in a joint utility trench with gas, telephone and cable tv. The proposed concept plan is to intercept the existing overhead wires along Santana Drive and extend underground northerly along the rear easement to the north boundary. Refer to the exhibits titled, "Preliminary Utilities Alternatives (A-E)" for electric and joint utility trench concept layouts. It is anticipated that more equipment and materials will be necessary to provide electric service to Alternative E over the quantities needed to provide service to Alternative A.

**Cable Television:**
Cable television is not available near the project site. Overhead cable facilities exist an undetermined distance south of Santana Drive and will require extension to the project site. Two 2-inch conduits will be added to the proposed 6-inch gas main trench, along the east side of Asti Road and Santana Drive, for cable television service to the site. Ducts will also be added to the onsite joint utility trench to provide service to onsite buildings. Alternative E would utilize more substructures and materials than Alternative A. Approximately 5,680 lineal feet of 2-inch conduit and various sized splice boxes are necessary to provide cable television services to the project alternatives.

**Telephone:**
AT&T telephone is currently overhead with power on joint poles. The poles will be removed and wires placed underground in a joint trench. Alternative E would utilize more substructures and materials than Alternative A. Approximately 5,680 lineal feet of 4-inch conduit and various sized splice boxes are necessary to provide telephone service to the project alternatives.

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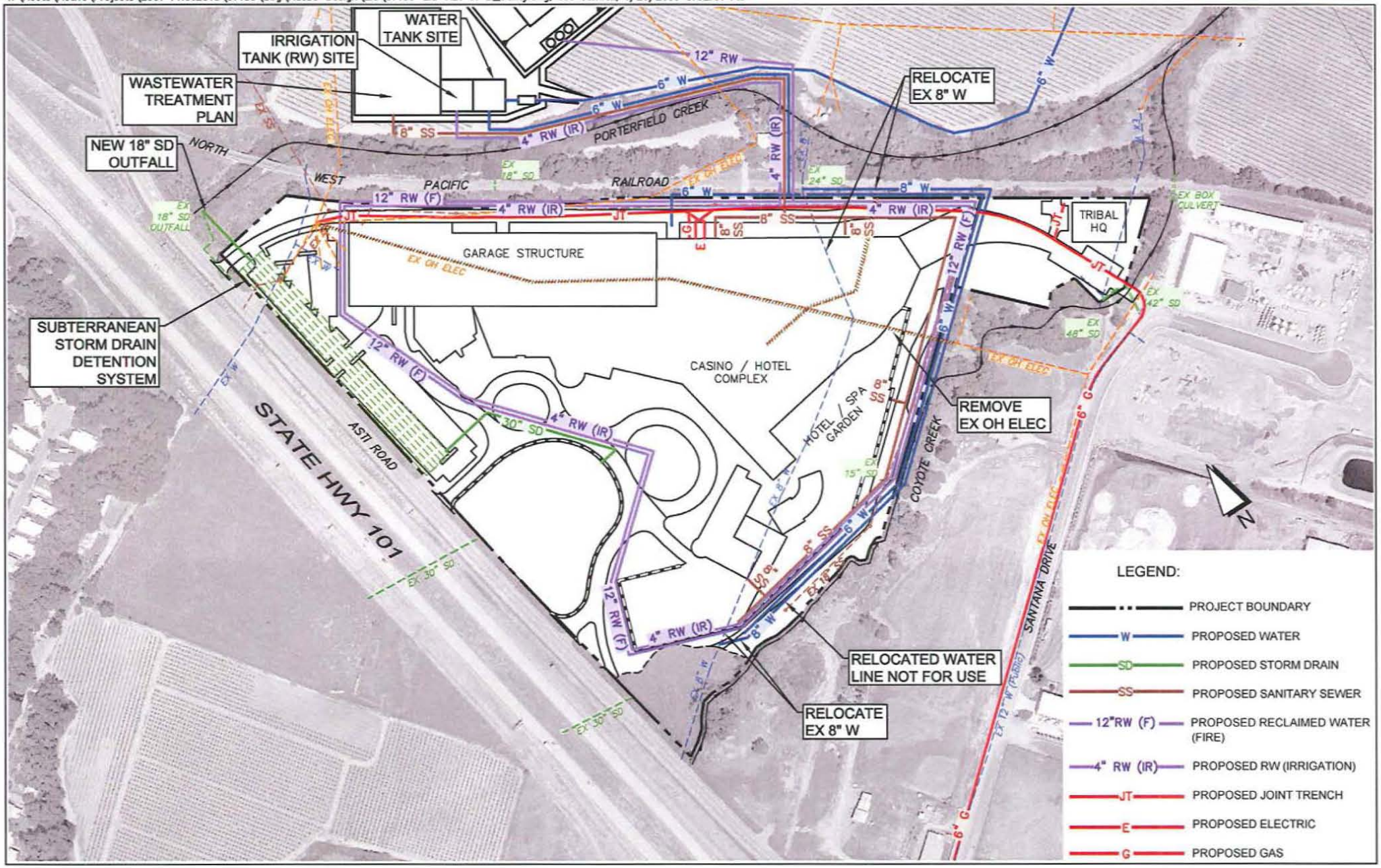


*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY UTILITY PLAN - ALTERNATIVES A-D**

GRAPHIC SCALE: 1" = 300'

0 150 300 600


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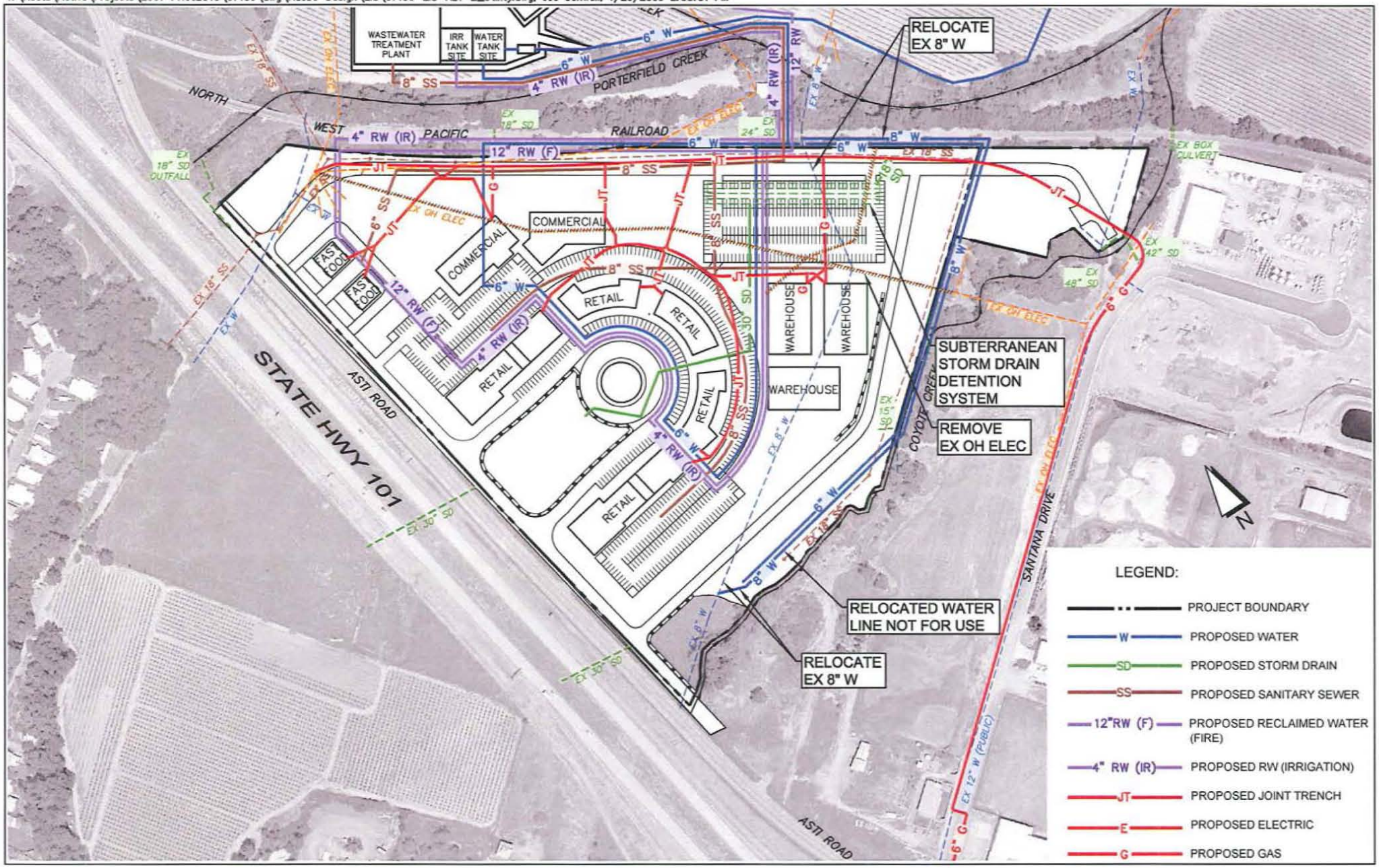


*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY UTILITY PLAN - ALTERNATIVE E**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

# Appendix I
## Water Supply Report

ESA

# WATER SUPPLY REPORT

**For**

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

**April 2009**

Prepared for:

**ESA**
8950 Cal Center Drive
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# TABLE OF CONTENTS

## Water Supply Report


| | Page Number |
|---|---|
| General Comments | 1-2 |
| Water Demand | 2-4 |
| Water Supply Facilities | 4 |

Exhibits

Preliminary Private Water Supply Plan – Alternatives A-E

Attachments

Attachment 1 Water Supply Calculations

**General Comments:**
The Cloverdale Rancheria intends to supply its proposed development with a potable water supply to be developed on lands to be placed into federal trust for the tribe. The water supply would come from one or more groundwater wells located in the easterly portion of the project area.

A potable water supply serving federally recognized tribal lands must comply with the requirements of the 1974 Safe Drinking Water Act. The Safe Drinking Water Act is administered by the Environmental Protection Agency.

The area proposed for water supply development is located to the east of the area where project structures would be located, south of the City of Cloverdale Wastewater Treatment Plant and east of Porterfield Creek. (Refer to the exhibit titled, "Preliminary Private Water Supply Plan- Alternatives A-E"). The area is within the flood plain of the Russian River and is designated Zone A on the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map panels 060375 0120 and 0140. The Russian River, a water body under the jurisdiction of the United States Army Corp. of Engineers, lies 100 to 300 feet east of the proposed tribal lands. A levee with an approximate height of eight feet above adjacent lands to the west contains the channel and floodway of the Russian River.

The area proposed for water supply development is currently planted in vineyards and contains, within its boundaries, approximately eight drilled and hand dug water supply wells. Wells supplying the South Cloverdale Water Company and the Six Acre Water Company operate in this area by easement and water right agreements.

Wells located in this area are generally shallow, less than 80 feet deep, reflecting the depth of highly permeable surface alluvial soils overlying the soil and rock of the Franciscan formation. A total of seven exploratory and monitoring wells have been drilled in the area for the purpose of assessing groundwater availability, depth of permeable soil strata, and as a means of monitoring variations in seasonal depth to groundwater and the variations in direction of subsurface groundwater movement.

The anticipated location of a future water supply well is near the southerly boundary of proposed tribal lands in the area where Porterfield Creek approaches the Russian River. An existing well, the Tyrus Company Well, located in the area of the proposed project water supply well, was subjected to an 8 hour dry weather pump test on December 8, 2008. This well was pumped at the rate of 100 gallons per minute and showed total and constant draw down of 1.7 feet during the test. 100 % drawdown recovery occurred in the test well several minutes after cessation of pumping. The specific capacity of the well is calculated to be 59 gallons per minute per foot of draw down.

The purpose of this well test was to make a preliminary assessment of groundwater availability. The result of the test, while not considered to be a definitive determination of water supply, indicates that the water volume required for any of the development options under consideration may be supplied by a well located in this area.

Although water quality evaluations have not been completed at this date, it is anticipated that the water quality will be similar to the other potable supplies developed on this property. Bacteriological treatment, as well as reduction of mineral content is likely to be required.

**Water Demand:**
Water demand for project alternatives is a function of the water uses of the various project elements. Specific water use in project alternatives is a function of the numbers and types of plumbing fixtures used and the use of water conservation measures and recycling options. It is the intention of Cloverdale Rancheria, in the exercise of any of the project alternatives, to use proven water conservation measures and recycling of treated wastewater where feasible. Water demand calculations for the project alternatives exclude landscape irrigation, assuming that landscape irrigation would use recycled water. In addition, a redundant plumbing system would be constructed to allow recycled water use in toilet flushing.

Calculations for water demand may be found in Attachment 1 titled, "Water Supply Calculations", at the end of this report. Project elements contributing to potable water demand in Alternative A are the casino, hotel, convention center, entertainment center, food and beverage service, spa, and the project employees. These elements are changed in size or eliminated in alternatives B, C, and D. Project elements contributing to water demand for Alternative E are commercial/industrial warehouse, offices, retail and restaurant and employees associated with the various elements. For the commercial/ industrial element, an assumption regarding future potential potable water demand was made. Specifically, a 200,000 case winery was assumed to occupy a portion of the warehouse complex. If alternative E was chosen for construction, a more specific and detailed plan for water demand would be required. Maximum anticipated water demand occurs in Alternative A. Table 1 below shows a tabulation of total annual water demand for development. Table 1A reflects total water demand from on-site water wells with reductions taken for use of recyled water for toilet flushing. Water supply calculations specifically exclude landscape irrigation demands.

**Table 1. Annual Water Demand for Development**

| | | Alternatives | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| Total Yearly Flow | Gallons | 33588528 | 24930416 | 22335953 | 13493231 | 11690085 |
| | Acre-Feet | 103.1 | 76.5 | 68.6 | 41.4 | 35.9 |

**Table 1A. Annual Water Demand for Development (Reduced by Recycling)**

| | | Alternatives | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| Total Yearly Flow | Gallons | 24323060 | 17774359 | 16004970 | 9259516 | 9281085 |
| | Acre-Feet | 74.6 | 54.6 | 49.1 | 28.4 | 28.5 |

Alternatives A through E. Table 2 below shows the corresponding peak daily water demand for each alternative.

**Table 2. Peak Daily Water Demand**

| Alternatives | Peak Daily Flows |
|---|---|
| A | 171490 |
| B | 126700 |
| C | 114460 |
| D | 63920 |
| E | 42426 |

**Table 2A. Peak Daily Water Demand (Reduced by Recycling)**

| Alternatives | Peak Daily Flows |
|---|---|
| A | 126147 |
| B | 92101 |
| C | 82691 |
| D | 44495 |
| E | 33313 |

To determine water supply requirements from on-site wells we assume maximum use of recycled water to minimize the effects of the local aquifer. Peak daily water demand dictates the required well production at any selected pump duty cycle. For the peak daily demand listed in Alternative A, Table 2A, of 126,147 gallons and a pump duty cycle of 24 hours, a pumping rate of 88 gallons per minute is required. This pumping rate is 88% of the rate at which the pump test was conducted on the Tyrus well.

The peak yearly water demand (Alternative A, Table 1A) was calculated to be 74.6 Acre-ft/year. This demand coincides with an average daily demand of 66,639 gallons and a constant withdrawal rate of 46 gallons per minute from the alluvial soils.

**Water Supply Facilities:**
Providing potable water to proposed project Alternatives will require various facilities including a well, a water treatment plant, water storage tanks, a pumping system (including pressurized storage) and a piped delivery system. A separate and redundant pump and piping system will be required for operation of the fire sprinkler system and for the provision of fire suppression water.

Any facilities proposed for location within Zone A of the F.E.M.A. flood insurance rate maps would be constructed above anticipated flood elevations. Although flood elevations have not been determined in Zone A, the 100 year storm frequency water elevations in the Russian River adjacent to proposed tribal lands and east of the levee vary from approximately 283 feet to 287 feet. Corresponding ground elevations on property proposed to be placed into federal trust for Cloverdale Rancheria are 282 feet and 288 feet. We anticipate that pad elevations for water supply facilities located in the northerly portion of the property would be approximately 290 feet. Similarly, control panel and power supply for a well located in the southerly area of proposed tribal lands would need to be located at an approximate elevation of 285 feet.

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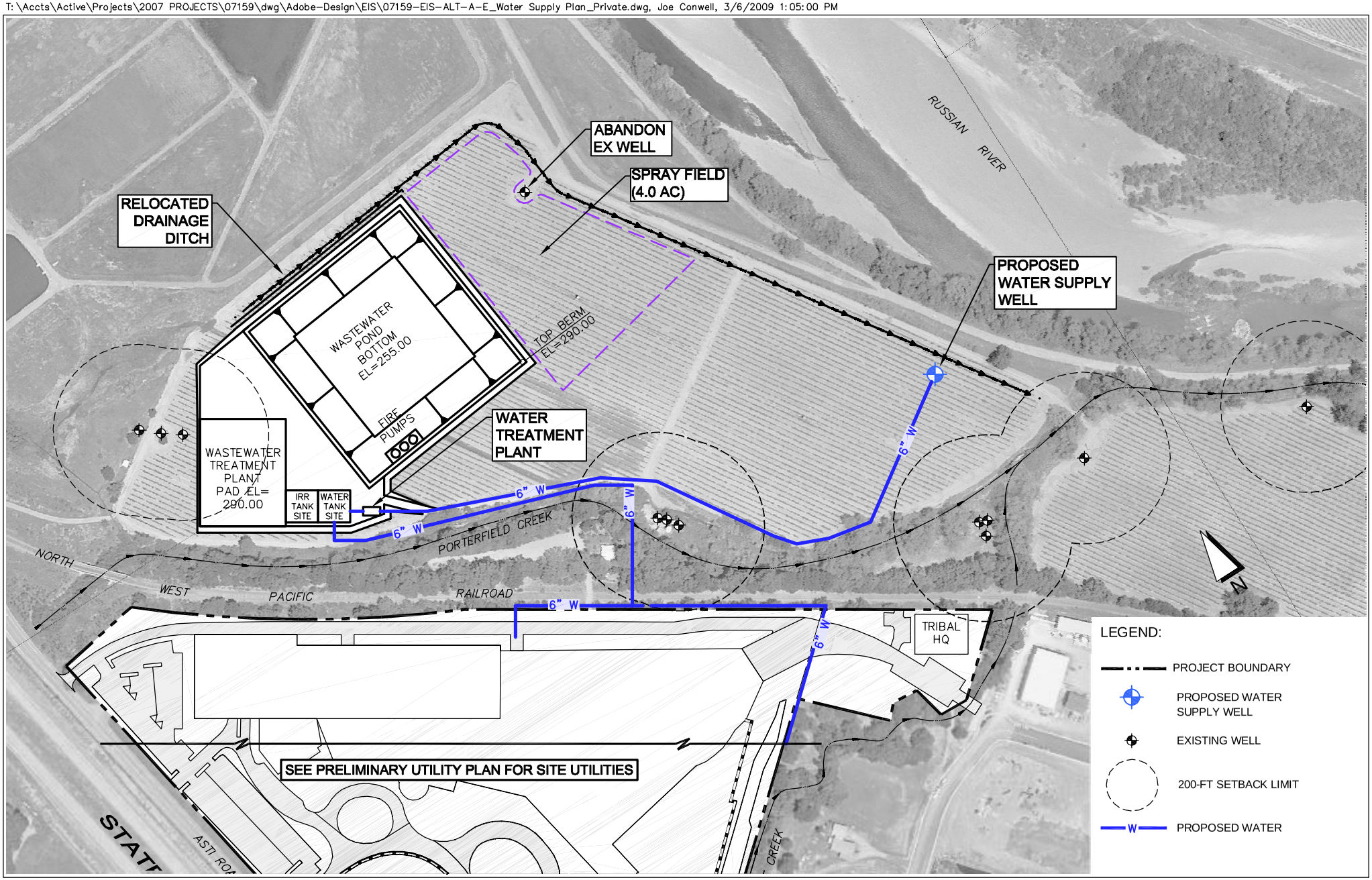


**CLOVERDALE RANCHERIA**

*Cloverdale, CA - Sonoma County*

**PRELIMINARY PRIVATE WATER SUPPLY PLAN - ALTERNATIVES A-E**

GRAPHIC SCALE: 1" = 300'

0 150 300 600


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# Attachment 1

# Water Supply Calculations

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

**March 2009**

# Water Supply Calculations
# Alternative A

## Alternative A:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative A. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

**Design Parameters – Alternative A:**

Percentage of hotel flow used for toilets = 23%
(Value Found in Table 3-3 of the EPA's Onsite Wastewater Treatment Systems Manual)

Percentage of gamer, event center and employee flow used for toilets = 50%
(Assumed)

**Table I – A – Estimated Total Monthly Wastewater Flow**
(Note: This table was taken from the Wastewater Flow Calculations – Alternative A, (Table IX – A) section of this report)

| Estimated Total Monthly Flow | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 538935 | 566862 | 834481 | 52180 | 16450 | 598920 | 2607828 |
| February | 563640 | 531100 | 769097 | 47131 | 19047 | 540960 | 2470975 |
| March | 666010 | 584542 | 859896 | 52180 | 20328 | 598920 | 2781877 |
| April | 676368 | 573253 | 838526 | 50497 | 21333 | 579600 | 2739577 |
| May | 772663 | 599381 | 881227 | 52180 | 23584 | 598920 | 2927954 |
| June | 801540 | 591249 | 863560 | 50497 | 25280 | 579600 | 2911727 |
| July | 837335 | 608379 | 894161 | 52180 | 25557 | 598920 | 3016533 |
| August | 869104 | 612799 | 900515 | 52180 | 26527 | 598920 | 3060045 |
| September | 768600 | 586513 | 856972 | 50497 | 24242 | 579600 | 2866424 |
| October | 806701 | 604117 | 888034 | 52180 | 24622 | 598920 | 2974575 |
| November | 633546 | 567097 | 829962 | 50497 | 19982 | 579600 | 2680683 |
| December | 496955 | 561021 | 826085 | 52180 | 15168 | 598920 | 2550330 |

## Table II – A – Estimated Total Monthly Water Supply Demand

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 23% of hotel flow and 50% of gamer, event center and employee flow)

| Estimated Total Monthly Water Supply | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 414980 | 283431 | 834481 | 26090 | 16450 | 299460 | 1874892 |
| February | 434003 | 265550 | 769097 | 23565 | 19047 | 270480 | 1781742 |
| March | 512828 | 292271 | 859896 | 26090 | 20328 | 299460 | 2010874 |
| April | 520803 | 286627 | 838526 | 25249 | 21333 | 289800 | 1982337 |
| May | 594950 | 299691 | 881227 | 26090 | 23584 | 299460 | 2125001 |
| June | 617186 | 295625 | 863560 | 25249 | 25280 | 289800 | 2116700 |
| July | 644748 | 304190 | 894161 | 26090 | 25557 | 299460 | 2194206 |
| August | 669210 | 306400 | 900515 | 26090 | 26527 | 299460 | 2228202 |
| September | 591822 | 293257 | 856972 | 25249 | 24242 | 289800 | 2081341 |
| October | 621159 | 302058 | 888034 | 26090 | 24622 | 299460 | 2161425 |
| November | 487830 | 283548 | 829962 | 25249 | 19982 | 289800 | 1936371 |
| December | 382655 | 280511 | 826085 | 26090 | 15168 | 299460 | 1829970 |

## Table III – A – Yearly Water Supply Demand

(Sum of months in the previous Table)

| Yearly Water Supply Demand | |
|---|---|
| 24323060 | Gallons |
| 74.65 | Acre - Feet |

## Peak Daily Flow – A:

The peak daily flow calculations assume the hotel is at full capacity, the casino receives two times the average daily gamers, 100% of employees eat a meal, all spa visits occur on the weekend and the entertainment center and convention center are at full capacity.

The following calculations assume:

-Hotel at full capacity
-2 times the average daily amount of gamers
- All spa visits occur on the weekend
-Entertainment center and convention center at full capacity

**Hotel Peak Daily Flow:**

Equation:

$$28182\left(\frac{gal}{day}\right) = (\#\,Rooms)\left(150\frac{gal}{room}\right)(100\% - 23\%)$$

Note: Assumed 23% recycled water

**Gamer Peak Daily Flow:**

Given:

Equation:

$$19140\left(\frac{gal}{day}\right) = (\#\,AverageGamer)\left(5\frac{gal}{day}\right)(2(\,factor\,))(100\% - 50\%)$$

**Spa Peak Daily Flow:**

Given:

Average spa visits per week = annual visits/52 weeks = # visits per week

Assume all visits occur on the weekend which yields

Peak Daily Spa Flow = # visits per week/2 days = # visits X 40 Gal/visit = **2520 gallons**

**Event Centers Peak Daily Flows:**

Equation:

$$5710\left(\frac{gal}{day}\right) = (\#\,EntertVis + \#\,ConvenCenVis)(100\% - 50\%)\left(5\frac{gal}{Visitors}\right)$$

**Employee Peak Daily Flows:**

Equation:

$$12075\left(\frac{gal}{day}\right) = (\#\,MaxEmployees)\left(15\frac{gal}{Employee}\right)(100\% - 50\%)$$

Note: Assumed 50% recycled water

**Food and Beverage Peak Daily Flow:**

- Hotel Guests at 3 Meals a Day
- Gamers at 1 Meal a Day (factor of 2)
- Employees at 1 Meal a Day
- Entertainment Center Visitors at 1 Meal a Day
- Convention Center Visitors at 1 Meal a Day
- 5 gallons/meal

Equation:

$$58520\left(\frac{gal}{day}\right) = \left(hotelGuest * 3 + gamers + employees + entertainment + convention\right)\left(5\frac{gal}{meal}\right)$$

**Table IV – A - Total Peak Daily Flow:**

| Hotel | Gamers | Event Center | Spa Visits | Employees | Food and Beverage | Total Peak Daily Flow |
|---|---|---|---|---|---|---|
| 28182 | 19140 | 5710 | 2520 | 12075 | 58520 | 126147 |

# Water Supply Calculations
# Alternative B

## Alternative B:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative B. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

**Design Parameters – Alternative B:**

Percentage of hotel flow used for toilets = 23%
(Value Found in Table 3-3 of the EPA's Onsite Wastewater Treatment Systems Manual)

Percentage of gamer, event center and employee flow used for toilets = 50%
(Assumed)

**Table I – B – Estimated Total Monthly Wastewater Flow**
(Note: This table was taken from the Wastewater Flow Calculations – Alternative B, (Table IX – B) section of this report)

| Estimated Total Monthly Flow | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 311434 | 484455 | 645033 | 15899 | 9506 | 502200 | 1968527 |
| February | 325710 | 453892 | 591494 | 14361 | 11007 | 453600 | 1850063 |
| March | 384867 | 499565 | 659720 | 15899 | 11747 | 502200 | 2073998 |
| April | 390852 | 489917 | 642119 | 15386 | 12327 | 486000 | 2036601 |
| May | 446498 | 512246 | 672046 | 15899 | 13628 | 502200 | 2162518 |
| June | 463185 | 505297 | 656585 | 15386 | 14609 | 486000 | 2141062 |
| July | 483870 | 519936 | 679521 | 15899 | 14769 | 502200 | 2216195 |
| August | 502228 | 523714 | 683192 | 15899 | 15329 | 502200 | 2242562 |
| September | 444150 | 501249 | 652778 | 15386 | 14008 | 486000 | 2113572 |
| October | 466167 | 516294 | 675980 | 15899 | 14229 | 502200 | 2190769 |
| November | 366107 | 484655 | 637170 | 15386 | 11547 | 486000 | 2000865 |
| December | 287175 | 479463 | 640182 | 15899 | 8765 | 502200 | 1933684 |

## Table II – B – Estimated Total Monthly Water Supply Demand

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 23% of hotel flow and 50% of gamer, event center and employee flow)

| Estimated Total Monthly Water Supply | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 239804 | 242227 | 645033 | 7950 | 9506 | 251100 | 1395620 |
| February | 250797 | 226946 | 591494 | 7180 | 11007 | 226800 | 1314223 |
| March | 296347 | 249782 | 659720 | 7950 | 11747 | 251100 | 1476646 |
| April | 300956 | 244958 | 642119 | 7693 | 12327 | 243000 | 1451054 |
| May | 343803 | 256123 | 672046 | 7950 | 13628 | 251100 | 1544650 |
| June | 356652 | 252648 | 656585 | 7693 | 14609 | 243000 | 1531188 |
| July | 372580 | 259968 | 679521 | 7950 | 14769 | 251100 | 1585887 |
| August | 386715 | 261857 | 683192 | 7950 | 15329 | 251100 | 1606143 |
| September | 341996 | 250625 | 652778 | 7693 | 14008 | 243000 | 1510100 |
| October | 358949 | 258147 | 675980 | 7950 | 14229 | 251100 | 1566354 |
| November | 281902 | 242328 | 637170 | 7693 | 11547 | 243000 | 1423639 |
| December | 221125 | 239732 | 640182 | 7950 | 8765 | 251100 | 1368853 |

## Table III – B – Yearly Water Supply Demand

(Sum of months in the previous Table)

| Yearly Water Supply Demand | |
|---|---|
| 17774359 | Gallons |
| 54.55 | Acre - Feet |

## Peak Daily Flow – B:

The peak daily flow calculations assume the hotel is at full capacity, the casino receives two times the average daily gamers, 100% of employees eat a meal, all spa visits occur on the weekend and the entertainment center and convention center are at full capacity.

The following calculations assume:

-Hotel at full capacity
-2 times the average daily amount of gamers
- All spa visits occur on the weekend
-Entertainment center at full capacity

**Hotel Peak Daily Flow:**

Equation:

$$16286\left(\frac{gal}{day}\right) = (\#\,Rooms)\left(150\frac{gal}{room}\right)(100\% - 23\%)$$

Note: Assumed 23% recycled water

**Gamer Peak Daily Flow:**

Equation:

$$16360\left(\frac{gal}{day}\right) = (\#\,AverageGamer)\left(5\frac{gal}{day}\right)(2(\,factor\,))(100\% - 50\%)$$

**Spa Peak Daily Flow:**

Given:

Average spa visits per week = annual visits/52 weeks = # visits per week

Assume all visits occur on the weekend which yields

Peak Daily Spa Flow = # visits per week/2 days = # visits X 40 Gal/visit = **1480 gallons**

**Event Centers Peak Daily Flows:**

Equation:

$$3250\left(\frac{gal}{day}\right) = (\#\,EntertainmentVisitors)\left(5\frac{gal}{Visitors}\right)(50\%)$$

**Employee Peak Daily Flows:**

Equation:

$$10125\left(\frac{gal}{day}\right) = (\#\,MaxEmployees)\left(15\frac{gal}{Employee}\right)(100\% - 50\%)$$

Note: Assumed 50% recycled water

**Food and Beverage Peak Daily Flow:**

- Hotel Guests at 3 Meals a Day
- Gamers at 1 Meal a Day (factor of 2)
- Employees at 1 Meal a Day
- Entertainment Center Visitors at 1 Meal a Day
- 5 gallons/meal

Equation:

$$44600\left(\frac{gal}{day}\right) = \left(hotelGuest * 3 + gamers + employees + entertainment\right)\left(5\frac{gal}{meal}\right)$$

**Table IV – B - Total Peak Daily Flow:**

| Hotel | Gamers | Event Center | Spa Visits | Employees | Food and Beverage | Total Peak Daily Flow |
|---|---|---|---|---|---|---|
| 16286 | 16360 | 3250 | 1480 | 10125 | 44600 | 92101 |

# Water Supply Calculations
# Alternative C

## Alternative C:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative C. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

**Design Parameters – Alternative C:**

Percentage of hotel flow used for toilets = 23%
(Value Found in Table 3-3 of the EPA's Onsite Wastewater Treatment Systems Manual)

Percentage of gamer, event center and employee flow used for toilets = 50%
(Assumed)

**Table I – C – Estimated Total Monthly Wastewater Flow**
(Note: This table was taken from the Wastewater Flow Calculations – Alternative C, (Table IX – C) section of this report)

| Estimated Total Monthly Flow | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 311434 | 414534 | 564831 | 15899 | 9506 | 435240 | 1751444 |
| February | 325710 | 388382 | 519053 | 14361 | 11007 | 393120 | 1651632 |
| March | 384867 | 427463 | 579518 | 15899 | 11747 | 435240 | 1854733 |
| April | 390852 | 419207 | 564504 | 15386 | 12328 | 421200 | 1823477 |
| May | 446498 | 438314 | 591844 | 15899 | 13628 | 435240 | 1941423 |
| June | 463185 | 432367 | 578970 | 15386 | 14609 | 421200 | 1925718 |
| July | 483870 | 444894 | 599318 | 15899 | 14769 | 435240 | 1993990 |
| August | 502228 | 448126 | 602990 | 15899 | 15330 | 435240 | 2019813 |
| September | 444150 | 428904 | 575163 | 15386 | 14009 | 421200 | 1898812 |
| October | 466167 | 441777 | 595778 | 15899 | 14229 | 435240 | 1969090 |
| November | 366107 | 414705 | 559555 | 15386 | 11547 | 421200 | 1788500 |
| December | 287175 | 410262 | 559979 | 15899 | 8765 | 435240 | 1717321 |

## Table II – C – Estimated Total Monthly Water Supply Demand

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 23% of hotel flow and 50% of gamer, event center and employee flow)

| Estimated Total Monthly Water Supply | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 239804 | 207267 | 564831 | 7950 | 9506 | 217620 | 1246977 |
| February | 250797 | 194191 | 519053 | 7180 | 11007 | 196560 | 1178788 |
| March | 296347 | 213731 | 579518 | 7950 | 11747 | 217620 | 1326913 |
| April | 300956 | 209604 | 564504 | 7693 | 12328 | 210600 | 1305684 |
| May | 343803 | 219157 | 591844 | 7950 | 13628 | 217620 | 1394002 |
| June | 356652 | 216184 | 578970 | 7693 | 14609 | 210600 | 1384709 |
| July | 372580 | 222447 | 599318 | 7950 | 14769 | 217620 | 1434684 |
| August | 386715 | 224063 | 602990 | 7950 | 15330 | 217620 | 1454668 |
| September | 341996 | 214452 | 575163 | 7693 | 14009 | 210600 | 1363913 |
| October | 358949 | 220889 | 595778 | 7950 | 14229 | 217620 | 1415414 |
| November | 281902 | 207353 | 559555 | 7693 | 11547 | 210600 | 1278649 |
| December | 221125 | 205131 | 559979 | 7950 | 8765 | 217620 | 1220570 |

## Table III – C – Yearly Water Supply Demand

(Sum of months in the previous Table)

| Yearly Water Supply Demand | |
|---|---|
| 16004970 | Gallons |
| 49.12 | Acre - Feet |

## Peak Daily Flow – C:

The peak daily flow calculations assume the hotel is at full capacity, the casino receives two times the average daily gamers, 100% of employees eat a meal, all spa visits occur on the weekend and the entertainment center are at full capacity.

The following calculations assume:

-Hotel at full capacity
-2 times the average daily amount of gamers
- All spa visits occur on the weekend
-Entertainment center at full capacity

**Hotel Peak Daily Flow:**

Equation:

$$16286\left(\frac{gal}{day}\right) = (\#\,Rooms)\left(150\frac{gal}{room}\right)(100\% - 23\%)$$

Note: Assumed 23% recycled water

**Gamer Peak Daily Flow:**

Equation:

$$13995\left(\frac{gal}{day}\right) = (\#\,AverageGamer)\left(5\frac{gal}{day}\right)(2(\,factor\,))(100\% - 50\%)$$

**Spa Peak Daily Flow:**

Given:

Average spa visits per week = annual visits/52 weeks = # visits per week

Assume all visits occur on the weekend which yields

Peak Daily Spa Flow = # visits per week/2 days = # visits X 40 Gal/visit = **1480 gallons**

**Event Centers Peak Daily Flows:**

Equation:

$$3250\left(\frac{gal}{day}\right) = (\#\,EntertainmentVisitors)\left(5\frac{gal}{Visitors}\right)(50\%)$$

**Employee Peak Daily Flows:**

Equation:

$$8775\left(\frac{gal}{day}\right) = (\#\,MaxEmployees)\left(15\frac{gal}{Employee}\right)(100\% - 50\%)$$

Note: Assumed 50% recycled water

**Food and Beverage Peak Daily Flow:**

- Hotel Guests at 3 Meals a Day
- Gamers at 1 Meal a Day (factor of 2)
- Employees at 1 Meal a Day
- Entertainment Center Visitors at 1 Meal a Day
- 5 gallons/meal

Equation:

$$39790\left(\frac{gal}{day}\right) = \left(hotelGuest * 3 + gamers + employees + entertainment\right)\left(5\frac{gal}{meal}\right)$$

**Table IV – C - Total Peak Daily Flow:**

| Hotel | Gamers | Event Center | Spa Visits | Employees | Food and Beverage | Total Peak Daily Flow |
|---|---|---|---|---|---|---|
| 16286 | 13995 | 3250 | 595 | 8775 | 39790 | 82691 |

# Water Supply Calculations
# Alternative D

## Alternative D:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative D. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

**Design Parameters – Alternative D:**

Percentage of gamer and employee flow used for toilets = 50%
(Assumed)

**Table I – D – Estimated Total Monthly Wastewater Flow**
(Note: This table was taken from the Wastewater Flow Calculations – Alternative D, (Table VII – D) section of this report)

| Estimated Total Monthly Flow | | | | |
|---|---|---|---|---|
| Months | Gamer Flow | Food and Beverage Flow | Employees Flow | Total Monthly Flow |
| | (Gal/Month) | | | |
| January | 362093 | 418356 | 357120 | 780449 |
| February | 339249 | 377870 | 322560 | 717119 |
| March | 373386 | 418356 | 357120 | 791742 |
| April | 366175 | 404861 | 345600 | 771036 |
| May | 382865 | 418356 | 357120 | 801221 |
| June | 377670 | 404861 | 345600 | 782531 |
| July | 388612 | 418356 | 357120 | 806968 |
| August | 391436 | 418356 | 357120 | 809792 |
| September | 374645 | 404861 | 345600 | 779506 |
| October | 385890 | 418356 | 357120 | 804246 |
| November | 362242 | 404861 | 345600 | 767103 |
| December | 358362 | 418356 | 357120 | 776718 |

**Table II – D – Estimated Total Monthly Water Supply Demand**

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 50% of gamer and employee flow)

| Estimated Total Monthly Water Supply | | | | |
|---|---|---|---|---|
| Months | Gamer Flow | Food and Beverage Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | |
| January | 181046 | 418356 | 178560 | 777962 |
| February | 169625 | 377870 | 161280 | 708774 |
| March | 186693 | 418356 | 178560 | 783609 |
| April | 183087 | 404861 | 172800 | 760748 |
| May | 191432 | 418356 | 178560 | 788348 |
| June | 188835 | 404861 | 172800 | 766496 |
| July | 194306 | 418356 | 178560 | 791222 |
| August | 195718 | 418356 | 178560 | 792634 |
| September | 187323 | 404861 | 172800 | 764983 |
| October | 192945 | 418356 | 178560 | 789861 |
| November | 181121 | 404861 | 172800 | 758782 |
| December | 179181 | 418356 | 178560 | 776097 |

**Table III – D – Yearly Water Supply Demand**

(Sum of months in the previous Table)

| Yearly Water Supply Demand | |
|---|---|
| 9259516 | Gallons |
| 28.42 | Acre - Feet |

## Peak Daily Flow – D:

The peak daily flow calculations assume the casino receives two times the average daily gamers and 100% of employees eat a meal.

**Gamer Peak Daily Flow:**

Equation:

$$12225\left(\frac{gal}{day}\right) = (\#\,AverageGamer)\left(5\frac{gal}{day}\right)(2(\,factor\,))(100\% - 50\%)$$

**Employee Peak Daily Flows:**

Equation:

$$7200\left(\frac{gal}{day}\right) = (\#\,MaxEmployees)\left(15\frac{gal}{Employee}\right)(100\% - 50\%)$$

Note: Assumed 50% recycled water

**Food and Beverage Peak Daily Flow:**

- Gamers at 1 Meal a Day (factor of 2)
- Employees at 1 Meal a Day
- 5 gallons/meal

Equation:

$$25070\left(\frac{gal}{day}\right) = (gamers + employees)\left(5\frac{gal}{meal}\right)$$

**Table IV – D - Total Peak Daily Flow:**

| Gamers | Employees | Food and Beverage | Total Peak Daily Flow |
|---|---|---|---|
| 12225 | 7200 | 25070 | 44495 |

# Water Supply Calculations
# Alternative E

## Alternative E:

Water supply demands are based upon the wastewater flow calculations associates with this report. Water supply requirements from on-site well(s) will be reduced from the wastewater flow estimates by the volume of wastewater recycled for irrigation and toilet use. With the wastewater flow calculations it is important to compile monthly flows for water balance equations whereas with the water supply demand it is important to determine the peak daily flow and total annual flow. Below are the equations, variables and calculations used to estimate the annual water supply and peak daily water supply for the Cloverdale Rancheria Gaming and Hotel project - Alternative E. Since irrigation water is to be recycled, it is not necessary to add it into our water supply demand.

**Design Parameters – Alternative E:**

Percentage of gamer and employee flow used for toilets = 50%
(Assumed)

**Table I – E – Estimated Total Monthly Wastewater Flow**
(Note: This table was taken from the Wastewater Flow Calculations – Alternative E, (Table V – E) section of this report)

| Estimated Total Monthly Flow | | | | |
|---|---|---|---|---|
| Months | Warehouse Flow | Office and Retail Space Flow | Restaurant Flow | Total Monthly Flow |
| | (Gallons/Month) | | | |
| January | 326640 | 325500 | 228315 | 880455 |
| February | 315840 | 294000 | 206220 | 816060 |
| March | 326640 | 325500 | 228315 | 880455 |
| April | 323040 | 315000 | 220950 | 858990 |
| May | 326640 | 325500 | 228315 | 880455 |
| June | 323040 | 315000 | 220950 | 858990 |
| July | 326640 | 325500 | 228315 | 880455 |
| August | 591600 | 325500 | 228315 | 1145415 |
| September | 1068000 | 315000 | 220950 | 1603950 |
| October | 591600 | 325500 | 228315 | 1145415 |
| November | 323040 | 315000 | 220950 | 858990 |
| December | 326640 | 325500 | 228315 | 880455 |

**Table II – E – Estimated Total Monthly Water Supply Demand**

(Note: This table takes the values calculated in the monthly wastewater flow calculations and subtracts out the water that is estimated to be recycled – 50% of employee flow)

| Estimated Total Monthly Water Supply | | | | |
|---|---|---|---|---|
| Month | Warehouse Flow | Office and Retail Space Flow | Restaurant Flow | Total Monthly Flow |
| | (Gal/Month) | | | |
| January | 284790 | 162750 | 228315 | 675855 |
| February | 278040 | 147000 | 206220 | 631260 |
| March | 284790 | 162750 | 228315 | 675855 |
| April | 282540 | 157500 | 220950 | 660990 |
| May | 284790 | 162750 | 228315 | 675855 |
| June | 282540 | 157500 | 220950 | 660990 |
| July | 284790 | 162750 | 228315 | 675855 |
| August | 549750 | 162750 | 228315 | 940815 |
| September | 1027500 | 157500 | 220950 | 1405950 |
| October | 549750 | 162750 | 228315 | 940815 |
| November | 282540 | 157500 | 220950 | 660990 |
| December | 284790 | 162750 | 228315 | 675855 |

**Table III – E – Yearly Water Supply Demand**

(Sum of months in the previous Table)

| Yearly Water Supply Demand | |
|---|---|
| 9281085 | Gallons |
| 28.48 | Acre - Feet |

## Peak Daily Flow – E:

**Industrial Warehouse:**

Given:

- 15 gallons/employee
- 50% Recycled Water for Employees (Toilet Use)
- 200,000 Cases of Wine
- 2.4 gallons of water per case
- 1.5 safety factor
- 60 day harvest period

$$DailyPeakWineryWaste\left(\frac{gal}{day}\right) = \frac{(200000Cases)\left(2.4\frac{gal}{Case}\right)(1.5)}{60} = 12000\left(\frac{gal}{day}\right)$$

$$DailyPeakWarehouseEmployeeFlow\left(\frac{gal}{day}\right) = 300Employees\left(15\frac{gal}{day}\right)(0.5\,\mathrm{Re}\,cycledToilet) = 2250\left(\frac{gal}{day}\right)$$

$$TotalDailyPeakWarehouseFlow\left(\frac{gal}{day}\right) = 12000\left(\frac{gal}{day}\right) + 2250\left(\frac{gal}{day}\right) = 14250\left(\frac{gal}{day}\right)$$

**Commercial Office:**

Given:

- 15 gallons/employee
- 50% Recycled Water for Employees (Toilet Use)

$$DailyPeakOfficeFlow\left(\frac{gal}{day}\right) = \#\,Employees\left(15\frac{gal}{day}\right)(0.5\,\mathrm{Re}\,cyledToilet) = 3750\left(\frac{gal}{day}\right)$$

**Retail Use:**

Given:

- 15 gallons/employee
- 50% Recycled Water for Employees (Toilet Use)

$$DailyPeak\,\mathrm{Re}\,tailFlow\left(\frac{gal}{day}\right) = \#\,Employees\left(15\frac{gal}{day}\right)(0.5\,\mathrm{Re}\,cyledToilet) = 2813\left(\frac{gal}{day}\right)$$

**Restaurant Flow:**

Given:

- 4000 gal/day = Fast Food Meals
- 2075 gal/day = Sit Down Restaurant Meals
- 15 gallons/employee
- 50% Recycled Water for Employees (Toilet Use)
- Peak Factor of 2

$$DailyPeakEmployeeFlow\left(\frac{gal}{day}\right) = \#Employees\left(15\frac{gal}{day}\right)(0.5\,\mathrm{Re}\,cyledToilet) = 150\left(\frac{gal}{day}\right)$$

$$DailyPeak\,\mathrm{Re}\,staurantFlow\left(\frac{gal}{day}\right) = \left(150\left(\frac{gal}{day}\right) + 2075\left(\frac{gal}{day}\right) + 4000\left(\frac{gal}{day}\right)\right) * 2 = 12500\left(\frac{gal}{day}\right)$$

**Table IV – E - Total Peak Daily Flow:**

| Warehouse Flow | Office and Retail Space Flow | Restaurant Flow | Peak Daily Flow |
|---|---|---|---|
| 14250 | 6563 | 12500 | 33313 |

# Water Supply Summary of the Alternatives A – E:

**Table I: Total Annual Water Supply**

| | | Alternatives | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| Total Yearly Flow | Gallons | 24323060 | 17774359 | 16004970 | 9259516 | 9281085 |
| | Acre-Feet | 74.6 | 54.6 | 49.1 | 28.4 | 28.5 |

**Table II: Peak Daily Flow**

| Alternatives | Peak Daily Flows |
|---|---|
| A | 126147 |
| B | 92101 |
| C | 82691 |
| D | 44495 |
| E | 33313 |

# Appendix J
## Wastewater Treatment and Disposal Report

ESA

# WASTEWATER TREATMENT
# AND
# DISPOSAL REPORT

**For**

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

**March 2009**
**Rev June, 2009**

Prepared for:

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## TABLE OF CONTENTS

## Wastewater Treatment and Disposal Report


| | Page Number |
|---|---|
| General Comments | 1 |
| Wastewater Volume | 1-2 |
| Wastewater Treatment | 2-3 |
| Wastewater Recycling | 3 |
| Wastewater Storage | 3-4 |
| Wastewater Discharge | 4-5 |

Exhibit

Preliminary Private Wastewater Plan

Attachments:

Attachment 1 Wastewater Flow Calculations

Attachment 2 Water Balance Calculations

**General Comments**

The Cloverdale Rancheria intends to treat, recycle and dispose of wastewater generated by its proposed development within the boundary of lands to be placed into federal trust for the tribe.

The discharge of wastewater to federally recognized tribal lands is regulated by the Environmental Protection Agency (EPA) through the application of the 1972 Federal Water Pollution Control Act, commonly referred to as the "Clean Water Act". The EPA is the regulatory agency for wastewater treatment and discharge to federally recognized tribal lands in California. The proposed Cloverdale Rancheria development lies within EPA Region 9.

The Cloverdale Rancheria intends to operate its wastewater treatment and disposal system in conformance with the requirements of the Clean Water Act and in full compliance with water quality, testing and reporting requirements of the Environmental Protection Agency, Region 9 and the California Code of Regulations, Title 22.

**Wastewater Volume**

Wastewater flow from the project alternatives is a function of the water use of the various project elements. Calculations of wastewater volume may be found in Attachment 1 titled, "Wastewater Flow Calculations", at the end of this report section. Project elements contributing to wastewater volume in Alternative A are the casino, hotel, convention center, entertainment center, food and beverage service, spa, and the project employees. In Alternatives B, C, and D these elements are either reduced in size or eliminated. Project elements contributing wastewater volume to Alternative E are the commercial/industrial warehouse, offices, retail sales, restaurant, and employees associated with the various elements. For the commercial/industrial element, an assumption regarding a potential wastewater generating use was made. A 200,000 case winery was assumed to occupy a portion of the warehouse complex. If alternative E were chosen for construction, a more specific and detailed plan for wastewater generation would be required.

An explanation of how wastewater volumes were estimated may be found in Attachment 1, titled, "Wastewater Flow Calculations", at the end of this report. The highest levels of wastewater generation were found to occur in development Alternative A. Table 1 below shows a monthly tabulation of anticipated wastewater volumes from each of the uses in Alternative A. Peak and average wastewater flow estimates for Alternative A are 171,500 gallons per day and 92,000 gallons per day, respectively.

**Table 1. Anticipated Wastewater Volume**

| Estimated Total Monthly Flow | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 538935 | 566862 | 834481 | 52180 | 16450 | 598920 | 2607828 |
| February | 563640 | 531100 | 769097 | 47131 | 19047 | 540960 | 2470975 |
| March | 666010 | 584542 | 859896 | 52180 | 20328 | 598920 | 2781877 |
| April | 676368 | 573253 | 838526 | 50497 | 21333 | 579600 | 2739577 |
| May | 772663 | 599381 | 881227 | 52180 | 23584 | 598920 | 2927954 |
| June | 801540 | 591249 | 863560 | 50497 | 25280 | 579600 | 2911727 |
| July | 837335 | 608379 | 894161 | 52180 | 25557 | 598920 | 3016533 |
| August | 869104 | 612799 | 900515 | 52180 | 26527 | 598920 | 3060045 |
| September | 768600 | 586513 | 856972 | 50497 | 24242 | 579600 | 2866424 |
| October | 806701 | 604117 | 888034 | 52180 | 24622 | 598920 | 2974575 |
| November | 633546 | 567097 | 829962 | 50497 | 19982 | 579600 | 2680683 |
| December | 496955 | 561021 | 826085 | 52180 | 15168 | 598920 | 2550330 |

Table 2 below shows a comparison of total annual wastewater volume and wastewater pond volumes for each of the development Alternatives. Water balance calculations for storage requirements are located in Attachment 2. Maximum wastewater storage volumes are listed below. Recycling of treated wastewater for toilet use will reduce pond storage volumes. Comparative calculations are provided in Attachment 2.

**Table 2. Wastewater Volume and Wastewater Pond Volume**

| | Wastewater Annual Flow Volumes | | | | |
|---|---|---|---|---|---|
| | Alternative A | Alternative B | Alternative C | Alternative D | Alternative E |
| Total Annual Wastewater Flow (gallons) | 33588530 | 24930416 | 22335953 | 9388428 | 11690085 |
| Total Wastewater Pond Volume (acre-ft) | 73.0 | 57.9 | 52.3 | 30.4 | 33.5 |

**Wastewater Treatment**

Wastewater will be treated to the level mandated by the EPA and further described as "Tertiary Disinfected" in the California Code of Regulations, Title 22, Section 60301.230.

Wastewater from the various project elements will be collected in a private piped collection system and conveyed to a wastewater treatment plant located east of area where project structures would be located, south of the City of Cloverdale Wastewater Treatment Plant and east of Porterfield Creek. See exhibit titled, "Preliminary Private Wastewater Plan-Alternatives A-E").

Wastewater treatment will consist of initial screening and transfer to an equalization tank, treatment in a constant flow membrane bioreactor, chlorination and transfer to an effluent pump station. Treated effluent will be transferred to an aerated storage pond or to recycling storage for landscape irrigation or project recycling in a redundantly plumbed toilet recycling system. Sludge collected in the bioreactor will be periodically removed and stored for final transfer to an approved disposal site.

**Wastewater Recycling**
Treated wastewater will be transferred to storage to meet fire suppression water storage, landscape irrigation, and project recycling requirements.

*Fire Suppression Water Storage*
An estimated volume of 500,000 gallons of fire suppression water storage will be retained in an above ground storage pond. The pond will be located in the area south of the City of Cloverdale Wastewater plant and east of Porterfield Creek. A separate fire suppression pump system will be constructed to supply the stored water to the project sprinkler and fire hydrant system.

*Landscape Irrigation*
Project alternatives have varying landscape areas and will have varying landscape irrigation demand. Project Alternative A will have the lowest irrigation water demand. Project landscape irrigation will use project treated wastewater. The treated water will be stored in an above ground storage tank with a volume of approximately 80,000 gallons. A separate landscape irrigation pump and piping system will be required to facilitate this use. The storage tank will be located in the area of the wastewater treatment plant. Rainfall exceeds anticipated evapotranspiration for landscape vegetation from November through March. With approximately 7.6 acres of landscape area, anticipated peak landscape irrigation demand for Alternative A will be 36,000 gallons per day in July, minimum requirements in May and September of approximately 18,000 gpd. Landscape irrigation demands increase for Alternatives B through E.

*Project Recycling*
Project treated wastewater will be used in toilet flushing. A separate and redundant pumping and plumbing system will be required to allow the use of recycled wastewater in this manner. Treated wastewater will be stored in an above ground storage tank with landscape irrigation water. A separate pressurized water storage tank and piped distribution system will be required for this use.

**Wastewater Storage**
Treated wastewater will be stored in an above ground storage pond located immediately south of the City of Cloverdale wastewater treatment plant and infiltration ponds and near the proposed wastewater treatment plant. The pond will be sized to accommodate peak project wastewater storage requirements above the fire suppression water storage requirements. Development Alternative A requires approximately 73.0 acre-ft of wastewater storage (56 acre-ft with recycle reduction). The pond required to contain

Alternative A wastewater is shown on the Preliminary Private Wastewater Plan. Proportionately smaller ponds would be required for development Alternatives B through E.

The wastewater storage pond is sized to account for project wastewater generation, average annual rainfall, evaporation, and the discharge of treated wastewater to the east parcel and landscape on the west parcel. Freeboard above maximum project pond surface is maintained for flood events. A water balance table for development Alternative A may be found in Attachment 2 titled "Water Balance Calculations" at the end of this report section.

The pond will be constructed in a cut and fill configuration with the pond bottom located at a tentative elevation of 255 feet, approximately 26 feet below existing grade. The storage pond will be enclosed by an earthen embankment, the top of which will be at least 2 feet above anticipated flood levels. The pond embankment will provide five feet of freeboard at anticipated peak wastewater storage. The pond will be lined to prevent infiltration of the treated wastewater into natural ground. The pond liner may be either a natural soil liner or artificial welded seam plastic liner. Pond shape, elevations, and grading quantities are subject to final design considerations.

The pond will be fitted with an aeration system designed to maintain an aerobic condition in the water. A wet well and fire pump system will be installed at the pond to provide fire suppression water supply. A floating intake system will be installed to permit withdrawal of stored water to be filtered and discharged to the wastewater disposal field.

**Wastewater Discharge**

Stored recycled wastewater will be filtered and discharged to a spray irrigation disposal field located approximately as shown on the Preliminary Private Wastewater Plan. The disposal field will be designed using soil absorption rates associated with the soil in the disposal field area and the irrigation absorption capacity of the selected non food crop vegetation.

A study of seasonal groundwater depth is currently under way. The purpose of the study is to generate information pertinent to the issue of recycled wastewater irrigation and seasonal groundwater. For the purpose of preliminary wastewater pond and disposal field design, no discharge of treated wastewater is proposed to occur from October 1 to May 14.

A system of permanent groundwater level monitoring wells will be installed in the area of the wastewater disposal field for the purpose of providing information relative to seasonal use of the spray fields.

Water balance calculations for the purpose of the disposal field sizing are located in Attachment 2. Project Alternative A generates the maximum effective soil application rate in the spray field of 1.3 gallons per square foot per day, based upon the proposed 4.0 acre spray field. Discharge for irrigation demand on the west parcel is limited to evapotranspiration rate of the landscape plants.

Alternate water balance calculations are included in Attachment 2 that reduce the discharge volume by the recycle amount that may be returned to the project for toilet flushing. With reductions for recycle water the effective soil application rate on the spray field is 0.9 gallons per square foot per day. Discharge to the spray field will occur at a rate that will lower stored water volume to minimum fire suppression water storage volume by the anticipated end of the allowed period of discharge to project land.

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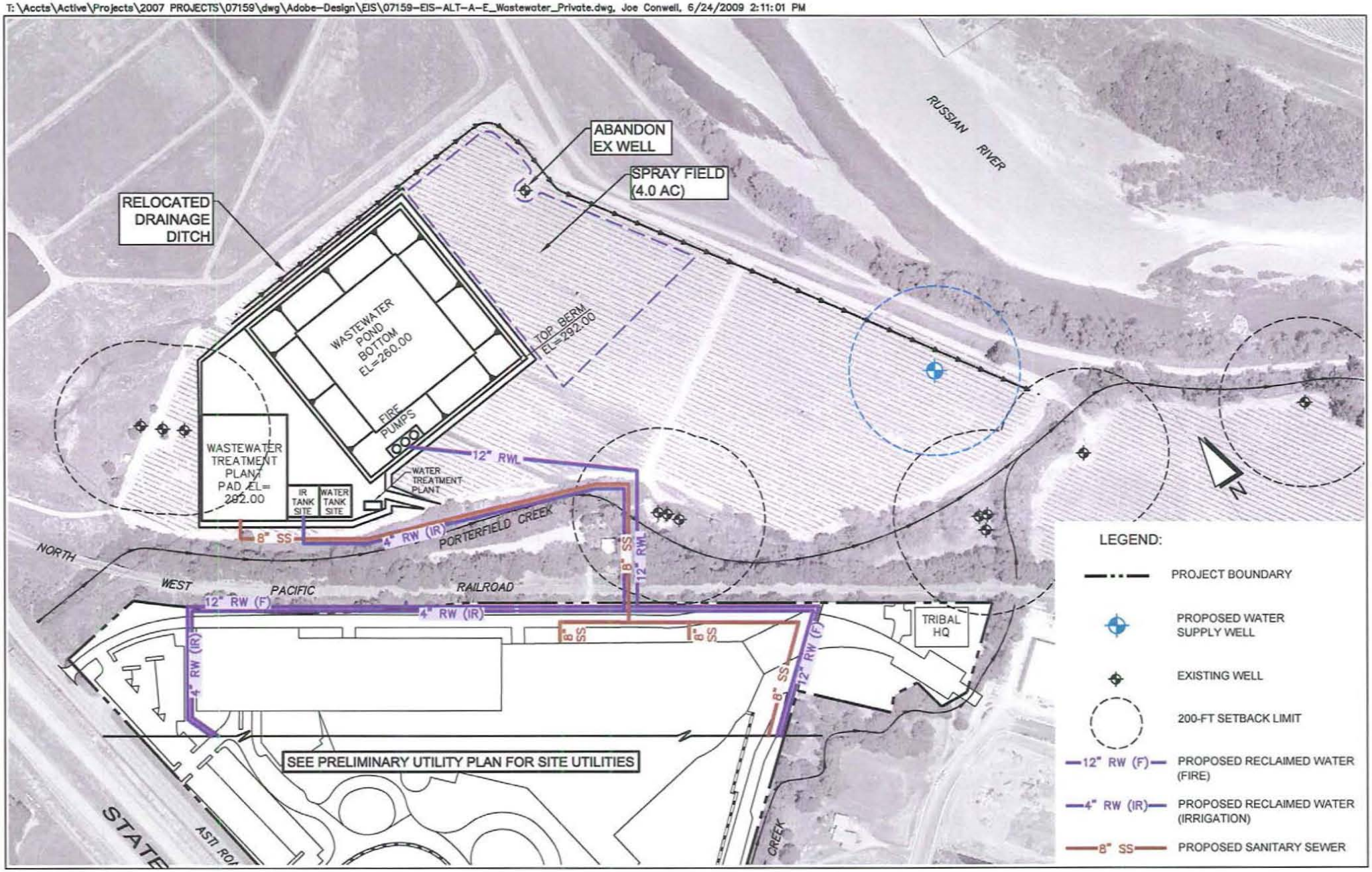


*CLOVERDALE RANCHERIA*

*Cloverdale, CA - Sonoma County*

**PRELIMINARY PRIVATE WASTEWATER PLAN - ALTERNATIVES A-E**

GRAPHIC SCALE: 1" = 300'

0 150 300 600

Adobe Associates, Inc.
1220 N. Dutton Drive
Santa Rosa, CA

# Attachment 1

# Wastewater Flow Calculations

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT
# SONOMA COUNTY, CALIFORNIA

**March 2009**

# Wastewater Flow Calculations
# Summary

Wastewater design flow estimates for the following project alternatives are based upon the expected visitors and employees of the facilities. The wastewater flows are associated with occupancy of the hotel, gaming visitors, convention center visitors, entertainment center visitors, employees, and food and beverage service to the visitors and employees. The unit flows assigned to each category is derived from US EPA Onsite Wastewater Treatment Systems Manual. Annual number of visitors to the casino is derived from the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. Gamer projections from the market assessment correlate to the casino described in Alternative C with 1660 gaming positions. Projection of gaming visitors for Alternatives A, B, and D are adjusted according to number of gaming positions in the casino. Annual design flows from the hotel are distributed through the year on the basis of the market assessment to arrive at average hotel flows. Design flows for the spa are distributed through the year on the basis of the hotel occupancy identified in the market assessment. Total number of annual spa visitors from the market assessment was adjusted in direct proportion to the number of hotel rooms. The attendance for the entertainment center was also derived from the market assessment relative to number of events and projected attendance. The events were considered to be distributed evenly throughout the year. Wastewater flows from food and beverage services are calculated by assignment of meals to visitors and employees. Flows associated with the Resort Support Facilities and Tribal Government Building are based on numbers of employees. Total project employee count for each alternative was provided by ESA Associates.

# Wastewater Flow Calculations
# Alternative A

## Hotel Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the hotel visitors. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to hotel visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative A:**

Number of Rooms = 244
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)
Estimated Flow Volume from Each Room = 150 gallons per day
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

**Table I - A** – Hotel Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

| Months | Occupancy Factor |
|---|---|
| (NA) | (Unit less) |
| January | 47.5% |
| February | 55.0% |
| March | 58.7% |
| April | 61.6% |
| May | 68.1% |
| June | 73.0% |
| July | 73.8% |
| August | 76.6% |
| September | 70.0% |
| October | 71.1% |
| November | 57.7% |
| December | 43.8% |

**Equations – Alternative A:**

**Volume of Wastewater Due Hotel Visitors**

$$V_H = OF \cdot \left( 150 \frac{Gallons}{\frac{Room}{Day}} \right) \cdot \left( X \frac{Days}{Month} \right) \cdot (244 Rooms)$$

Where:

$V_H$ = Estimated monthly volume of wastewater flow from the hotel $\left( gal/month \right)$

OF = Occupancy factors (Unit Less)

$\left( X \frac{Days}{Month} \right)$ = Number of given days in a month

**Table II - A.**

| Estimated Wastewater Flow due to the Hotel Visitors | | | | | |
|---|---|---|---|---|---|
| Months | Occupancy Factor | Number of Rooms | Estimated Flow per Room | Days in a Month | Estimated Monthly Flow Rate |
| (NA) | (Unit less) | (Rooms) | (Gal/Room/Day) | (Days) | (Gal) |
| January | 47.5% | 244 | 150 | 31 | 538935 |
| February | 55.0% | 244 | 150 | 28 | 563640 |
| March | 58.7% | 244 | 150 | 31 | 666010 |
| April | 61.6% | 244 | 150 | 30 | 676368 |
| May | 68.1% | 244 | 150 | 31 | 772663 |
| June | 73.0% | 244 | 150 | 30 | 801540 |
| July | 73.8% | 244 | 150 | 31 | 837335 |
| August | 76.6% | 244 | 150 | 31 | 869104 |
| September | 70.0% | 244 | 150 | 30 | 768600 |
| October | 71.1% | 244 | 150 | 31 | 806701 |
| November | 57.7% | 244 | 150 | 30 | 633546 |
| December | 43.8% | 244 | 150 | 31 | 496955 |
| Estimated Peak Daily = | | 36600 gallons | | | |
| Note: Peak daily based upon full capacity | | | | | |

## Gamer Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the gamers of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to gamers. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative A:**

Total local gamers expected in a year: 1,158,296
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Total non local gamers expected in a year: 238,967
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Estimated gamer flow per day = 5 gal/day
(Assumed)

**Table III - A.** Occupancy Factors and Weighted Average of Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

| Months | Occupancy Factor | Weighted Average of Occupancy Factor |
|---|---|---|
| (NA) | (Unit less) | (Unit less) |
| January | 47.5% | 6.3% |
| February | 55.0% | 7.3% |
| March | 58.7% | 7.8% |
| April | 61.6% | 8.1% |
| May | 68.1% | 9.0% |
| June | 73.0% | 9.6% |
| July | 73.8% | 9.8% |
| August | 76.6% | 10.1% |
| September | 70.0% | 9.2% |
| October | 71.1% | 9.4% |
| November | 57.7% | 7.6% |
| December | 43.8% | 5.8% |

**Equations – Alternative A:**

**Number of Local Gamers per Month**

$$\left(\frac{LocalGamers}{Month}\right)=\left(\frac{Days/Month}{Days/year}\right)\left(\frac{TotalLocalGamers}{Year}\right)$$

**Number of Non Local Gamers per Month**

$$\left(\frac{NonLocalGamers}{Month}\right)=(WeightedAverageOccupancyFactor)\left(\frac{TotalNonLocalGamers}{Year}\right)$$

**Total Monthly Wastewater flow expected due to the gamers**

$$V_G=\left[\left(\frac{LocalGamers}{Month}\right)+\left(\frac{NonLocalGamers}{Month}\right)\right]\left(\frac{GallonsOfWastewater}{Gamer}\right)$$

Where:

$V_G$ = Total Monthly Wastewater flow expected due to the gamers (not including meals)

**Table IV - A.**

| Estimated Wastewater Flow due to the Gamers | | | |
|---|---|---|---|
| Months | Estimated Gamer Flow | Days in a Month | Estimated Monthly Flow Rate |
| (NA) | (Gal/Gamer/Day) | (Days) | (Gal) |
| January | 5 | 31 | 566862 |
| February | 5 | 28 | 531100 |
| March | 5 | 31 | 584542 |
| April | 5 | 30 | 573253 |
| May | 5 | 31 | 599381 |
| June | 5 | 30 | 591249 |
| July | 5 | 31 | 608379 |
| August | 5 | 31 | 612799 |
| September | 5 | 30 | 586513 |
| October | 5 | 31 | 604117 |
| November | 5 | 30 | 567097 |
| December | 5 | 31 | 561021 |
| Estimated Peak Daily Gamer = | | | 38281 gallons |
| Note: The peak is based upon 2 times the max daily average | | | |

## Food and Beverage Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the restaurants and bars within the casino and hotel.

**Design Parameters – Alternative A:**

Gallons of wastewater produced from a meal = 5 gal/meal
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)
Note: Value is a combination of meal and bar flow

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)

Seat capacity in the convention center = 984 seats
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the convention center = 29%
(Assumed, 20% weekday, 50% weekend)

Estimated Employees = 1610
(Based upon revenues, provided by ESA )

**Equations – Alternative A:**

**Volume of Wastewater from**
**The Hotel Visitor Meals**

$$V_{HM} = (OF)\left(X\ \frac{Days}{Month}\right)(244 Rooms)\left(2\frac{Guests}{Room}\right)\left(3\frac{Meals}{Guest/Day}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

$V_{HM}$=Volume of wastewater from the hotel visitor meals
OF = Occupancy Factor (found in Table I above)
$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Volume of Wastewater from**
**The Gamer Visitor Meals**

$$V_{GM} = \left(X\ \frac{LocalGamers}{Month}\right)\left(1\frac{Meal}{Gamer}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

$V_{GM}$=Volume of wastewater from the gamer visitor meals

**Volume of Wastewater from**
**The Employee Meals**

$$V_{EM} = (XEmployees)\left(X\ \frac{Days}{Month}\right)\left(1\frac{Meal}{Employee}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

$V_{EM}$=Volume of wastewater from employee meals
$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Volume of Wastewater from**
**The Entertainment Center Meals**

$$V_{ECM} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\ \frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)\left(1\frac{Meal}{Visitor/Event}\right)\left(5\frac{Gallons}{Meal}\right)(80\%)$$

Where:

$V_{ECM}$=Volume of wastewater from entertainment center event visitor meals

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Volume of Wastewater from**
**The Convention Center Meals**

$$V_{CCM} = (984Seats)\left(X\ \frac{Days}{Month}\right)(29\%Capacity)\left(1\frac{Meal}{Visitor/Convention}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

$V_{CCM}$=Volume of wastewater from convention center event visitor meals

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Total Monthly Wastewater Volume from**
**Food and Beverage Service**

$$V_{FB} = V_{HM} + V_{GM} + V_{EM} + V_{ECM} + V_{CCM}$$

Where:

$V_{FB}$ = Total monthly wastewater volume from the food and beverage
$V_{HM}$=Volume of wastewater from the hotel visitor meals
$V_{GM}$=Volume of wastewater from the gamer visitor meals
$V_{EM}$=Volume of wastewater from employee meals
$V_{ECM}$=Volume of wastewater from entertainment center event visitor meals
$V_{CCM}$=Volume of wastewater from convention center event visitor meals

**Table V - A.**

| Estimated Wastewater Flow due to the Food and Beverage Service | |
|---|---|
| Months | Total Monthly Flow from Meals |
| NA | (Gal) |
| January | 834481 |
| February | 769097 |
| March | 859896 |
| April | 838526 |
| May | 881227 |
| June | 863560 |
| July | 894161 |
| August | 900515 |
| September | 856972 |
| October | 888034 |
| November | 829962 |
| December | 826085 |
| Note: All visitors are estimated to have one meal a day with the exception of the hotel visitors. They are estimated to have 3 meals per day | |

**Table VI – A.**

| Peak Daily Flow due to Food and Beverage (gallons) | |
|---|---|
| Hotel | 7320 |
| Gamers | 31734 |
| Employees | 8050 |
| Entertainment Visitors | 6500 |
| Convention Visitors | 4920 |
| Sum = | 58524 |

Note: The hotel peak daily is based upon full capacity, the gamers peak daily is based upon the maximum daily average times 2, the employees peak daily is based upon each employee having a meal (average based upon 80%), the peak entertainment center and convention center is based upon every seat generating a meal

## Entertainment Center and Convention Center Wastewater Flow Volume Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the entertainment center and convention center visitors. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative A:**

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)

Seat capacity in the convention center = 984 seats
(Value Found in Table 2-1 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Daily occupancy of the convention center = 29%
(Assumed, 20% weekday, 50% weekend)

**Equations – Alternative A:**

**Number of Entertainment Center Visitors per Month**

$$E.C.\frac{Visitors}{Month} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\ \frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)(80\%Capacity)$$

Where:

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Number of Convention Center Visitors per Month**

$$C.C.\frac{Visitors}{Month} = (984 Seats)\left( X \frac{Days}{Month} \right)(29\% Capacity)$$

Where:

$C.C.\frac{Visitors}{Month}$ = Convention center visitors per month

$\left( X \frac{Days}{Month} \right)$ = Number of days in a given month

**Total Monthly Volume of Wastewater Flow Due to Entertainment Center and Convention Center Visitors**

$$V_{Events} = \left( E.C.\frac{Visitors}{Month} + C.C.\frac{Visitors}{Month} \right)\left( 5\frac{Gallons}{Visitor} \right)$$

Where:

$V_{Events}$ = Total Monthly Volume of Wastewater Flow Due to Entertainment Center and Convention Center Visitors

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

$C.C.\frac{Visitors}{Month}$ = Convention center visitors per month

**Table VII - A.**

| Estimated Wastewater Flow due to Entertainment Center Visitors and Convention Center Visitors | |
|---|---|
| Months | Total Monthly Flow from Events Centers |
| January | 52180 |
| February | 47131 |
| March | 52180 |
| April | 50497 |
| May | 52180 |
| June | 50497 |
| July | 52180 |
| August | 52180 |
| September | 50497 |
| October | 52180 |
| November | 50497 |
| December | 52180 |
| Note: It is estimated that events center visitors will use 5 gallons per day, not including meals | |

| Estimated Peak Daily | | |
|---|---|---|
| Entertainment Center Visitors | 6500 | gallons |
| Convention Center Visitors | 4920 | gallons |

Note: Peak Daily flows are based upon full capacity

## Spa Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the spa within the hotel.

**Design Parameters – Alternative A:**

Total spa visitor expected in a year
(Value extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Gallons per spa visit = 40 gallons
(Assumed)

Occupancy factors and the weighted average of occupancy factors (See Table III)

**Equations – Alternative A:**

**Spa Visits per Month**

$$\frac{SpaVisits}{Month} = \left(\frac{SpaVisits}{Year}\right)\left(\begin{matrix}WeightedMonthly\\OccupancyFactor\end{matrix}\right)$$

**Total Monthly Wastewater Flow Expected from the Spa**

$$V_{Spa} = \left(\frac{SpaVisits}{Month}\right)\left(40\frac{Gallons}{Visit}\right)$$

Where:

$V_{Spa}$ = Total monthly volume of wastewater flow due to the spa visitors

**Table VIII - A.**

| Estimated Wastewater Flow from Spa | | | | |
|---|---|---|---|---|
| Months | Occupancy Factor | Weighted Average of Occupancy Factor | Gallons per Spa Visit | Estimated Monthly Flow Rate |
| January | 47.5% | 6.3% | 40 | 16450 |
| February | 55.0% | 7.3% | 40 | 19047 |
| March | 58.7% | 7.8% | 40 | 20328 |
| April | 61.6% | 8.1% | 40 | 21333 |
| May | 68.1% | 9.0% | 40 | 23584 |
| June | 73.0% | 9.6% | 40 | 25280 |
| July | 73.8% | 9.8% | 40 | 25557 |
| August | 76.6% | 10.1% | 40 | 26527 |
| September | 70.0% | 9.2% | 40 | 24242 |
| October | 71.1% | 9.4% | 40 | 24622 |
| November | 57.7% | 7.6% | 40 | 19982 |
| December | 43.8% | 5.8% | 40 | 15168 |
| Estimated Peak Daily | | 2520 gallons | | |
| Based upon 100% of weekly flow happening on weekend | | | | |

## Employee Wastewater Flow Volume – Alternative A:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the employees of the casino, hotel, entertainment center and convention center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to employees. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative A:**

Gallons per employee = 12 gallons
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated Employees = 1610
(Based upon revenue values)

**Equations – Alternative A:**

**Volume of Wastewater from The Employees**

$$V_E = (XEmployees)\left(X\ \frac{Days}{Month}\right)\left(12\frac{Gallons}{day}\right)$$

Where:

$V_E$=Volume of wastewater from an employee per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Table IX - A.**

| Estimated Monthly Wastewater Flow from Employees | | | |
|---|---|---|---|
| Month | Days in a Month | Gallons per Employee | Estimated Monthly Flow |
| January | 31 | 12 | 598920 |
| February | 28 | 12 | 540960 |
| March | 31 | 12 | 598920 |
| April | 30 | 12 | 579600 |
| May | 31 | 12 | 598920 |
| June | 30 | 12 | 579600 |
| July | 31 | 12 | 598920 |
| August | 31 | 12 | 598920 |
| September | 30 | 12 | 579600 |
| October | 31 | 12 | 598920 |
| November | 30 | 12 | 579600 |
| December | 31 | 12 | 598920 |
| Estimated Peak Daily | | 24150 | gallons |
| Based upon a use of 15 gpd | | | |

## Total Monthly Wastewater Flow – Alternative A:

**Equation – Alternative A:**

$$V_T = V_H + V_G + V_{FB} + V_{Events} + V_{Spa} + V_E$$

Where:

$V_T$ = Total monthly wastewater flow $\left( gal/month \right)$

$V_H$ = Estimated monthly volume of wastewater flow from the hotel $\left( gal/month \right)$

$V_G$ = Total monthly wastewater flow expected due to the gamers $\left( gal/month \right)$

$V_{FB}$ = Total monthly wastewater volume from the food and beverage $\left( gal/month \right)$

$V_{Events}$ = Total monthly volume of wastewater flow due to entertainment $\left( gal/month \right)$

$V_{Spa}$ = Total monthly volume of wastewater flow due to the spa visitors $\left( gal/month \right)$

$V_E$ = Total monthly volume of wastewater flow due to the employees $\left( gal/month \right)$

**Table X - A.**

| Estimated Total Monthly Flow | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 538935 | 566862 | 834481 | 52180 | 16450 | 598920 | 2607828 |
| February | 563640 | 531100 | 769097 | 47131 | 19047 | 540960 | 2470975 |
| March | 666010 | 584542 | 859896 | 52180 | 20328 | 598920 | 2781877 |
| April | 676368 | 573253 | 838526 | 50497 | 21333 | 579600 | 2739577 |
| May | 772663 | 599381 | 881227 | 52180 | 23584 | 598920 | 2927954 |
| June | 801540 | 591249 | 863560 | 50497 | 25280 | 579600 | 2911727 |
| July | 837335 | 608379 | 894161 | 52180 | 25557 | 598920 | 3016533 |
| August | 869104 | 612799 | 900515 | 52180 | 26527 | 598920 | 3060045 |
| September | 768600 | 586513 | 856972 | 50497 | 24242 | 579600 | 2866424 |
| October | 806701 | 604117 | 888034 | 52180 | 24622 | 598920 | 2974575 |
| November | 633546 | 567097 | 829962 | 50497 | 19982 | 579600 | 2680683 |
| December | 496955 | 561021 | 826085 | 52180 | 15168 | 598920 | 2550330 |

**Table XI – A.**

| **Total Estimated Peak Daily Flow (Gallons)** | |
|---|---|
| Hotel | 36600 |
| Gamers | 38281 |
| Food and Beverage | 58524 |
| Event Centers | 11420 |
| Spa | 2520 |
| Employees | 24150 |
| Total | 171496 |

| Annual Daily Average Wastewater Flow |
|---|
| 92023 |

# Wastewater Flow Calculations
# Alternative B

## Hotel Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the hotel visitors. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed hotel visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative B:**

Number of Rooms = 141
(Value Found in Table 2-2 of the September 2008 Preliminary ESA Report)
Estimated Flow Volume from Each Room = 150 gallons per day
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

**Table I - B–** Hotel Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

| Months | Occupancy Factor |
|---|---|
| (NA) | (Unit less) |
| January | 47.5% |
| February | 55.0% |
| March | 58.7% |
| April | 61.6% |
| May | 68.1% |
| June | 73.0% |
| July | 73.8% |
| August | 76.6% |
| September | 70.0% |
| October | 71.1% |
| November | 57.7% |
| December | 43.8% |

**Equations – Alternative B:**

**Volume of Wastewater Due Hotel Visitors**

$$V_H = OF \cdot \left( 150 \frac{Gallons}{\frac{Room}{Day}} \right) \cdot \left( X \frac{Days}{Month} \right) \cdot (141 Rooms)$$

Where:

$V_H$ = Estimated monthly volume of wastewater flow from the hotel $\left( {}^{gal}/_{month} \right)$

OF = Occupancy factors (Unit Less)

$\left( X \frac{Days}{Month} \right)$ = Number of given days in a month

**Table II - B.**

| Estimated Wastewater Flow due to the Hotel Visitors | | | | | |
|---|---|---|---|---|---|
| Months | Occupancy Factor | Number of Rooms | Estimated Flow per Room | Days in a Month | Estimated Monthly Flow Rate |
| (NA) | (Unit less) | (Rooms) | (Gal/Room/Day) | (Days) | (Gal) |
| January | 47.5% | 141 | 150 | 31 | 311434 |
| February | 55.0% | 141 | 150 | 28 | 325710 |
| March | 58.7% | 141 | 150 | 31 | 384867 |
| April | 61.6% | 141 | 150 | 30 | 390852 |
| May | 68.1% | 141 | 150 | 31 | 446498 |
| June | 73.0% | 141 | 150 | 30 | 463185 |
| July | 73.8% | 141 | 150 | 31 | 483870 |
| August | 76.6% | 141 | 150 | 31 | 502228 |
| September | 70.0% | 141 | 150 | 30 | 444150 |
| October | 71.1% | 141 | 150 | 31 | 466167 |
| November | 57.7% | 141 | 150 | 30 | 366107 |
| December | 43.8% | 141 | 150 | 31 | 287175 |
| Estimated Peak Daily | | 21150 gallons | | | |
| Note: Peak daily based upon full capacity | | | | | |

## Gamer Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the gamers of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to gamers. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative B:**

Total local gamers expected in a year: 989,910
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Total non local gamers expected in a year: 204,227
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Estimated gamer flow per day = 5 gal/day
(Assumed)

**Table III - B.** Occupancy Factors and Weighted Average of Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

| Months | Occupancy Factor | Weighted Average of Occupancy Factor |
|---|---|---|
| (NA) | (Unit less) | (Unit less) |
| January | 47.5% | 6.3% |
| February | 55.0% | 7.3% |
| March | 58.7% | 7.8% |
| April | 61.6% | 8.1% |
| May | 68.1% | 9.0% |
| June | 73.0% | 9.6% |
| July | 73.8% | 9.8% |
| August | 76.6% | 10.1% |
| September | 70.0% | 9.2% |
| October | 71.1% | 9.4% |
| November | 57.7% | 7.6% |
| December | 43.8% | 5.8% |

**Equations – Alternative B:**

**Number of Local Gamers per Month**

$$\left(\frac{LocalGamers}{Month}\right)=\left(\frac{Days/Month}{Days/year}\right)\left(\frac{TotalLocalGamers}{Year}\right)$$

**Number of Non Local Gamers per Month**

$$\left(\frac{NonLocalGamers}{Month}\right)=\left(WeightedAverageOccupancyFactor\right)\left(\frac{TotalNonLocalGamers}{Year}\right)$$

**Total Monthly Wastewater flow expected due to the gamers**

$$V_G=\left[\left(\frac{LocalGamers}{Month}\right)+\left(\frac{NonLocalGamers}{Month}\right)\right]\left(\frac{GallonsOfWastewater}{Gamer}\right)$$

Where:

$V_G$ = Total Monthly Wastewater flow expected due to the gamers (not including meals)

**Table IV - B.**

| Estimated Wastewater Flow due to the Gamers | | | |
|---|---|---|---|
| Months | Estimated Gamer Flow | Days in a Month | Estimated Monthly Flow Rate |
| (NA) | (Gal/Gamer/Day) | (Days) | (Gal) |
| January | 5 | 31 | 484455 |
| February | 5 | 28 | 453892 |
| March | 5 | 31 | 499565 |
| April | 5 | 30 | 489917 |
| May | 5 | 31 | 512246 |
| June | 5 | 30 | 505297 |
| July | 5 | 31 | 519936 |
| August | 5 | 31 | 523714 |
| September | 5 | 30 | 501249 |
| October | 5 | 31 | 516294 |
| November | 5 | 30 | 484655 |
| December | 5 | 31 | 479463 |
| | | Estimated Peak Daily | 32716 Gallons |
| Note: The peak is based upon 2 times the max daily average | | | |

## Food and Beverage Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the restaurants and bars within the casino and hotel.

**Design Parameters – Alternative B:**

Gallons of wastewater produced from a meal = 5 gal/meal
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)
Note: Value is a combination of meal and bar flow

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-2 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Estimated Employees = 1350
(Based upon revenues, provided by ESA )

**Equations – Alternative B:**

**Volume of Wastewater from**
**The Hotel Visitor Meals**

$$V_{HM} = (OF)\left(X\ \frac{Days}{Month}\right)(141 Rooms)\left(2\frac{Guests}{Room}\right)\left(3\frac{Meals}{Guest/Day}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

$V_{HM}$=Volume of wastewater from the hotel visitor meals
OF = Occupancy Factor (found in Table I above)
$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Volume of Wastewater from**
**The Gamer Visitor Meals**

$$V_{GM} = \left(X\ \frac{LocalGamers}{Month}\right)\left(1\frac{Meal}{Gamer}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

$V_{GM}$=Volume of wastewater from the gamer visitor meals

**Volume of Wastewater from**
**The Employee Meals**

$$V_{EM} = (XEmployees)\left( X \frac{Days}{Month} \right)\left( 1\frac{Meal}{Employee} \right)\left( 5\frac{Gallons}{Meal} \right)$$

Where:

$V_{EM}$=Volume of wastewater from employee meals

$\left( X \frac{Days}{Month} \right)$ = Number of days in a given month

**Volume of Wastewater from**
**The Entertainment Center Meals**

$$V_{ECM} = \left( 1300\frac{Visitors}{Event} \right)\left( \frac{X \frac{Days}{Month}}{365\frac{Days}{Year}} \right)\left( 36\frac{Events}{Year} \right)\left( 1\frac{Meal}{Visitor / Event} \right)\left( 5\frac{Gallons}{Meal} \right)(80\%)$$

Where:

$V_{ECM}$=Volume of wastewater from entertainment center event visitor meals

$\left( X \frac{Days}{Month} \right)$ = Number of days in a given month

**Total Monthly Wastewater Volume from**
**Food and Beverage Service**

$$V_{FB} = V_{HM} + V_{GM} + V_{EM} + V_{ECM}$$

Where:

$V_{FB}$ = Total monthly wastewater volume from food and beverage
$V_{HM}$=Volume of wastewater from the hotel visitor meals
$V_{GM}$=Volume of wastewater from the gamer visitor meals
$V_{EM}$=Volume of wastewater from employee meals
$V_{ECM}$=Volume of wastewater from entertainment center event visitor meals

**Table V - B.**

| Estimated Wastewater Flow due to the Food and Beverage Service | |
|---|---|
| Months | Total Monthly Flow from Meals |
| NA | (gal) |
| January | 645033 |
| February | 591494 |
| March | 659720 |
| April | 642119 |
| May | 672046 |
| June | 656585 |
| July | 679521 |
| August | 683192 |
| September | 652778 |
| October | 675980 |
| November | 637170 |
| December | 640182 |
| Note: All visitors are estimated to have one meal a day with the exception of the hotel visitors. They are estimated to have 3 meals per day | |

**Table VI - B**

| Peak Daily Flow due to Food and Beverage (gallons) | |
|---|---|
| Hotel | 4230 |
| Gamers | 27121 |
| Employees | 6750 |
| Entertainment Visitors | 6500 |
| Sum = | 44601 |

Note: The hotel peak daily is based upon full capacity, the gamers peak daily is based upon the maximum daily average times 2, the employees peak daily is based upon each employee having a meal (average based upon 80%), the peak entertainment center is based upon every seat generating a meal

## Entertainment Center Wastewater Flow Volume - Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the entertainment center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative B:**

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-2 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

**Equations – Alternative B:**

**Number of Entertainment Center Visitors per Month**

$$E.C.\frac{Visitors}{Month} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\ \frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)(80\%)$$

Where:

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Total Monthly Volume of Wastewater Flow Due to The Entertainment Center Visitors**

$$V_{Events} = \left(E.C.\frac{Visitors}{Month}\right)\left(5\frac{Gallons}{Visitor}\right)$$

Where:

$V_{Events}$ = Total Monthly Volume of Wastewater Flow Due to Entertainment Center Visitors

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

**Table VII - B.**

| Estimated Wastewater Flow due to Entertainment Center Visitors | |
|---|---|
| Months | Total Monthly Flow from Events Centers |
| January | 15899 |
| February | 14361 |
| March | 15899 |
| April | 15386 |
| May | 15899 |
| June | 15386 |
| July | 15899 |
| August | 15899 |
| September | 15386 |
| October | 15899 |
| November | 15386 |
| December | 15899 |
| Note: It is estimated that events center visitors will use 5 gallons per day, not including meals | |
| Estimated Peak Daily = | 6500 |

Note: Peak Daily flows are based upon full capacity

## Spa Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the spa within the hotel.

**Design Parameters – Alternative B:**

Total spa visitor expected in a year
(Value extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Gallons per spa visit = 40 gallons
(Assumed)

Occupancy factors and the weighted average of occupancy factors (See Table II)

**Equations – Alternative B:**

**Spa Visits per Month**

$$\frac{SpaVisits}{Month} = \left(\frac{SpaVisits}{Year}\right)\left(\begin{matrix}WeightedMonthly\\OccupancyFactor\end{matrix}\right)$$

**Total Monthly Wastewater Flow Expected from the Spa**

$$V_{Spa} = \left(\frac{SpaVisits}{Month}\right)\left(40\frac{Gallons}{Visit}\right)$$

Where:

$V_{Spa}$ = Total monthly volume of wastewater flow due to the spa visitors

**Table VIII - B.**

| Estimated Wastewater Flow from Spa | | | | |
|---|---|---|---|---|
| Months | Occupancy Factor | Weighted Average of Occupancy Factor | Gallons per Spa Visit | Estimated Monthly Flow Rate |
| January | 47.5% | 6.3% | 40 | 9506 |
| February | 55.0% | 7.3% | 40 | 11007 |
| March | 58.7% | 7.8% | 40 | 11747 |
| April | 61.6% | 8.1% | 40 | 12327 |
| May | 68.1% | 9.0% | 40 | 13628 |
| June | 73.0% | 9.6% | 40 | 14609 |
| July | 73.8% | 9.8% | 40 | 14769 |
| August | 76.6% | 10.1% | 40 | 15329 |
| September | 70.0% | 9.2% | 40 | 14008 |
| October | 71.1% | 9.4% | 40 | 14229 |
| November | 57.7% | 7.6% | 40 | 11547 |
| December | 43.8% | 5.8% | 40 | 8765 |
| Estimated Peak Daily | | 1456 gallons | | |
| Based upon 100% of weekly flow happening on weekend | | | | |

## Employee Wastewater Flow Volume – Alternative B:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the employees of the casino, hotel, entertainment center and convention center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to employees. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative B:**

Gallons per employee = 12 gallons
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated Employees = 1,350
(Based upon revenue values)

**Equations – Alternative B:**

**Volume of Wastewater from The Employees**

$$V_E = (XEmployees)\left(X\ \frac{Days}{Month}\right)\left(12\frac{Gallons}{day}\right)$$

Where:

$V_E$=Volume of wastewater from an employee per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Table IX - B.**

| Estimated Monthly Wastewater Flow from Employees | | |
|---|---|---|
| Month | Gallons per Employee | Estimated Monthly Flow |
| January | 12 | 502200 |
| February | 12 | 453600 |
| March | 12 | 502200 |
| April | 12 | 486000 |
| May | 12 | 502200 |
| June | 12 | 486000 |
| July | 12 | 502200 |
| August | 12 | 502200 |
| September | 12 | 486000 |
| October | 12 | 502200 |
| November | 12 | 486000 |
| December | 12 | 502200 |
| Estimated Peak Daily = | | 20250 gallons |
| Based upon a use of 15 gpd | | |

## Total Monthly Wastewater Flow – Alternative B:

### Equation – Alternative B:

$$V_T = V_H + V_G + V_{FB} + V_{Events} + V_{Spa} + V_E$$

Where:

$V_T$ = Total monthly wastewater flow $\left( gal/month \right)$

$V_H$ = Estimated monthly volume of wastewater flow from the hotel $\left( gal/month \right)$

$V_G$ = Total monthly wastewater flow expected due to the gamers $\left( gal/month \right)$

$V_{FB}$ = Total monthly wastewater volume from the food and beverage $\left( gal/month \right)$

$V_{Events}$ = Total monthly volume of wastewater flow due to entertainment $\left( gal/month \right)$

$V_{Spa}$ = Total monthly volume of wastewater flow due to the spa visitors $\left( gal/month \right)$

$V_E$ = Total monthly volume of wastewater flow due to the employees $\left( gal/month \right)$

**Table X - B.**

| Estimated Total Monthly Flow | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 311434 | 484455 | 645033 | 15899 | 9506 | 502200 | 1968527 |
| February | 325710 | 453892 | 591494 | 14361 | 11007 | 453600 | 1850063 |
| March | 384867 | 499565 | 659720 | 15899 | 11747 | 502200 | 2073998 |
| April | 390852 | 489917 | 642119 | 15386 | 12327 | 486000 | 2036601 |
| May | 446498 | 512246 | 672046 | 15899 | 13628 | 502200 | 2162518 |
| June | 463185 | 505297 | 656585 | 15386 | 14609 | 486000 | 2141062 |
| July | 483870 | 519936 | 679521 | 15899 | 14769 | 502200 | 2216195 |
| August | 502228 | 523714 | 683192 | 15899 | 15329 | 502200 | 2242562 |
| September | 444150 | 501249 | 652778 | 15386 | 14008 | 486000 | 2113572 |
| October | 466167 | 516294 | 675980 | 15899 | 14229 | 502200 | 2190769 |
| November | 366107 | 484655 | 637170 | 15386 | 11547 | 486000 | 2000865 |
| December | 287175 | 479463 | 640182 | 15899 | 8765 | 502200 | 1933684 |

**Table XI - B**

| Total Estimated Peak Daily Flow (Gallons) | |
|---|---|
| Hotel | 21150 |
| Gamers | 32716 |
| Food and Beverage | 44601 |
| Event Centers | 6500 |
| Spa | 1456 |
| Employees | 20250 |
| Total | 126673 |

| Annual Daily Average Wastewater Flow |
|---|
| 68303 |

# Wastewater Flow Calculations
# Alternative C

## Hotel Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the hotel visitors. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to hotel visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative C:**

Number of Rooms = 141
(Value Found in Table 2-3 of the September 2008 Preliminary ESA Report)
Estimated Flow Volume from Each Room = 150 gallons per day
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

**Table I - C–** Hotel Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

| Months | Occupancy Factor |
|---|---|
| (NA) | (Unit less) |
| January | 47.5% |
| February | 55.0% |
| March | 58.7% |
| April | 61.6% |
| May | 68.1% |
| June | 73.0% |
| July | 73.8% |
| August | 76.6% |
| September | 70.0% |
| October | 71.1% |
| November | 57.7% |
| December | 43.8% |

**Equations – Alternative C:**

**Volume of Wastewater Due Hotel Visitors**

$$V_H = OF \cdot \left( 150 \frac{Gallons}{\frac{Room}{Day}} \right) \cdot \left( X \frac{Days}{Month} \right) \cdot (141 Rooms)$$

Where:

$V_H$ = Estimated monthly volume of wastewater flow from the hotel $\left( gal/month \right)$

OF = Occupancy factors (Unit Less)

$\left( X \frac{Days}{Month} \right)$ = Number of given days in a month

**Table II - C.**

| Estimated Wastewater Flow due to the Hotel Visitors | | | | | |
|---|---|---|---|---|---|
| Months | Occupancy Factor | Number of Rooms | Estimated Flow per Room | Days in a Month | Estimated Monthly Flow Rate |
| (NA) | (Unit less) | (Rooms) | (Gal/Room/Day) | (Days) | (Gal) |
| January | 47.5% | 141 | 150 | 31 | 311434 |
| February | 55.0% | 141 | 150 | 28 | 325710 |
| March | 58.7% | 141 | 150 | 31 | 384867 |
| April | 61.6% | 141 | 150 | 30 | 390852 |
| May | 68.1% | 141 | 150 | 31 | 446498 |
| June | 73.0% | 141 | 150 | 30 | 463185 |
| July | 73.8% | 141 | 150 | 31 | 483870 |
| August | 76.6% | 141 | 150 | 31 | 502228 |
| September | 70.0% | 141 | 150 | 30 | 444150 |
| October | 71.1% | 141 | 150 | 31 | 466167 |
| November | 57.7% | 141 | 150 | 30 | 366107 |
| December | 43.8% | 141 | 150 | 31 | 287175 |
| Estimated Peak Daily | | 21150 gallons | | | |
| Note: Peak daily based upon full capacity | | | | | |

## Gamer Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the gamers of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to gamers. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative C:**

Total local gamers expected in a year: 847,036
(Value was found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value correlates to the number of positions in this alternative)

Total non local gamers expected in a year: 174,751
(Value was found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value correlates to the number of positions in this alternative)

Estimated gamer flow per day = 5 gal/day
(Assumed)

**Table III - C.** Occupancy Factors and Weighted Average of Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

| Months | Occupancy Factor | Weighted Average of Occupancy Factor |
|---|---|---|
| (NA) | (Unit less) | (Unit less) |
| January | 47.5% | 6.3% |
| February | 55.0% | 7.3% |
| March | 58.7% | 7.8% |
| April | 61.6% | 8.1% |
| May | 68.1% | 9.0% |
| June | 73.0% | 9.6% |
| July | 73.8% | 9.8% |
| August | 76.6% | 10.1% |
| September | 70.0% | 9.2% |
| October | 71.1% | 9.4% |
| November | 57.7% | 7.6% |
| December | 43.8% | 5.8% |

**Equations – Alternative C:**

**Number of Local Gamers per Month**

$$\left(\frac{LocalGamers}{Month}\right)=\left(\frac{Days/Month}{Days/year}\right)\left(\frac{TotalLocalGamers}{Year}\right)$$

**Number of Non Local Gamers per Month**

$$\left(\frac{NonLocalGamers}{Month}\right)=(WeightedAverageOccupancyFactor)\left(\frac{TotalNonLocalGamers}{Year}\right)$$

**Total Monthly Wastewater flow expected due to the gamers**

$$V_G=\left[\left(\frac{LocalGamers}{Month}\right)+\left(\frac{NonLocalGamers}{Month}\right)\right]\left(\frac{GallonsOfWastewater}{Gamer}\right)$$

Where:

$V_G$ = Total Monthly Wastewater flow expected due to the gamers (not including meals)

**Table IV - C.**

| Estimated Wastewater Flow due to the Gamers | | | |
|---|---|---|---|
| Months | Estimated Gamer Flow | Days in a Month | Estimated Monthly Flow Rate |
| (NA) | (Gal/Gamer/Day) | (Days) | (Gal) |
| January | 5 | 31 | 414534 |
| February | 5 | 28 | 388382 |
| March | 5 | 31 | 427463 |
| April | 5 | 30 | 419207 |
| May | 5 | 31 | 438314 |
| June | 5 | 30 | 432367 |
| July | 5 | 31 | 444894 |
| August | 5 | 31 | 448126 |
| September | 5 | 30 | 428904 |
| October | 5 | 31 | 441777 |
| November | 5 | 30 | 414705 |
| December | 5 | 31 | 410262 |
| | | Estimated Peak Daily | 27994 Gallons |
| Note: The peak is based upon 2 times the max daily average | | | |

## Food and Beverage Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the restaurants and bars within the casino and hotel.

**Design Parameters – Alternative C:**

Gallons of wastewater produced from a meal = 5 gal/meal
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)
Note: Value is a combination of meal and bar flow

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-3 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Estimated Employees = 1170
(Based upon revenues, provided by ESA )

**Equations – Alternative C:**

**Volume of Wastewater from**
**The Hotel Visitor Meals**

$$V_{HM} = (OF)\left(X\ \frac{Days}{Month}\right)(141 Rooms)\left(2\frac{Guests}{Room}\right)\left(3\frac{Meals}{Guest/Day}\right)\left(5\frac{Gallons}{Meal}\right)$$

Where:

$V_{HM}$=Volume of wastewater from the hotel visitor meals
OF = Occupancy Factor (found in Table I above)
$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Volume of Wastewater from**
**The Gamer Visitor Meals**

$$V_{GM} = \left( X \frac{LocalGamers}{Month} \right) \left( 1 \frac{Meal}{Gamer} \right) \left( 5 \frac{Gallons}{Meal} \right)$$

Where:

$V_{GM}$=Volume of wastewater from the gamer visitor meals

**Volume of Wastewater from**
**The Employee Meals**

$$V_{EM} = (XEmployees) \left( X \frac{Days}{Month} \right) \left( 1 \frac{Meal}{Employee} \right) \left( 5 \frac{Gallons}{Meal} \right)$$

Where:

$V_{EM}$=Volume of wastewater from employee meals

$\left( X \frac{Days}{Month} \right)$ = Number of days in a given month

**Volume of Wastewater from**
**The Entertainment Center Meals**

$$V_{ECM} = \left( 1300 \frac{Visitors}{Event} \right) \left( \frac{X \frac{Days}{Month}}{365 \frac{Days}{Year}} \right) \left( 36 \frac{Events}{Year} \right) \left( 1 \frac{Meal}{Visitor / Event} \right) \left( 5 \frac{Gallons}{Meal} \right) (80\%)$$

Where:

$V_{ECM}$=Volume of wastewater from entertainment center event visitor meals

$\left( X \frac{Days}{Month} \right)$ = Number of days in a given month

**Total Monthly Wastewater Volume from**
**The Food and Beverage**

$$V_{FB} = V_{HM} + V_{GM} + V_{EM} + V_{ECM}$$

Where:

$V_{FB}$ = Total monthly wastewater volume from the food and beverage
$V_{HM}$=Volume of wastewater from the hotel visitor meals
$V_{GM}$=Volume of wastewater from the gamer visitor meals
$V_{EM}$=Volume of wastewater from employee meals
$V_{ECM}$=Volume of wastewater from entertainment center event visitor meals

**Table V - C.**

| Estimated Wastewater Flow due to the Food and Beverage Service | |
|---|---|
| Months | Total Monthly Flow from Meals |
| NA | Gallons |
| January | 564831 |
| February | 519053 |
| March | 579518 |
| April | 564504 |
| May | 591844 |
| June | 578970 |
| July | 599318 |
| August | 602990 |
| September | 575163 |
| October | 595778 |
| November | 559555 |
| December | 559979 |
| Note: All visitors are estimated to have one meal a day with the exception of the hotel visitors. They are estimated to have 3 meals per day | |

**Table VI - C**

| Peak Daily Flow due to Food and Beverage (gallons) | |
|---|---|
| Hotel | 4230 |
| Gamers | 23206 |
| Employees | 5850 |
| Entertainment Visitors | 6500 |
| Sum = | 39786 |

Note: The hotel peak daily is based upon full capacity, the gamers peak daily is based upon the maximum daily average times 2, the employees peak daily is based upon each employee having a meal (average based upon 80%), the peak entertainment center is based upon every seat generating a meal

## Entertainment Center Wastewater Flow Volume - Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the entertainment center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to visitors. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative C:**

Seat capacity in the entertainment center = 1,300 seats
(Value Found in Table 2-3 of the September 2008 Preliminary ESA Report)

Number of events per year in the entertainment center = 36 events
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Average occupancy of the entertainment center = 80%
(Value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

**Equations – Alternative C:**

**Number of Entertainment Center Visitors per Month**

$$E.C.\frac{Visitors}{Month} = \left(1300\frac{Visitors}{Event}\right)\left(\frac{X\ \frac{Days}{Month}}{365\frac{Days}{Year}}\right)\left(36\frac{Events}{Year}\right)(80\%)$$

Where:

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Total Monthly Volume of Wastewater Flow Due to The Entertainment Center Visitors**

$$V_{Events} = \left(E.C.\frac{Visitors}{Month}\right)\left(5\frac{Gallons}{Visitor}\right)$$

Where:

$V_{Events}$ = Total Monthly Volume of Wastewater Flow Due to Entertainment Center Visitors

$E.C.\frac{Visitors}{Month}$ = Entertainment center visitors per month

**Table VII - C.**

| Estimated Wastewater Flow due to Entertainment Center Visitors | |
|---|---|
| Months | Total Monthly Flow from Events Centers |
| January | 15899 |
| February | 14361 |
| March | 15899 |
| April | 15386 |
| May | 15899 |
| June | 15386 |
| July | 15899 |
| August | 15899 |
| September | 15386 |
| October | 15899 |
| November | 15386 |
| December | 15899 |
| Note: It is estimated that events center visitors will use 5 gallons per day, not including meals | |
| Estimated Peak Daily = | 6500 |

Note: Peak Daily flows are based upon full capacity

## Spa Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the spa within the hotel.

**Design Parameters – Alternative C:**

Total spa visitor expected in a year
(Value extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

Gallons per spa visit = 40 gallons
(Assumed)

Occupancy factors and the weighted average of occupancy factors (See Table II)

**Equations – Alternative C:**

**Spa Visits per Month**

$$\frac{SpaVisits}{Month} = \left(\frac{SpaVisits}{Year}\right)\left(\begin{matrix}WeightedMonthly\\OccupancyFactor\end{matrix}\right)$$

**Total Monthly Wastewater Flow Expected from the Spa**

$$V_{Spa} = \left(\frac{SpaVisits}{Month}\right)\left(40\frac{Gallons}{Visit}\right)$$

Where:

$V_{Spa}$ = Total monthly volume of wastewater flow due to the spa visitors

**Table VIII - C.**

| Estimated Wastewater Flow from Spa | | | | |
|---|---|---|---|---|
| Months | Occupancy Factor | Weighted Average of Occupancy Factor | Gallons per Spa Visit | Estimated Monthly Flow Rate |
| January | 47.5% | 6.3% | 40 | 9506 |
| February | 55.0% | 7.3% | 40 | 11007 |
| March | 58.7% | 7.8% | 40 | 11747 |
| April | 61.6% | 8.1% | 40 | 12327 |
| May | 68.1% | 9.0% | 40 | 13628 |
| June | 73.0% | 9.6% | 40 | 14609 |
| July | 73.8% | 9.8% | 40 | 14769 |
| August | 76.6% | 10.1% | 40 | 15329 |
| September | 70.0% | 9.2% | 40 | 14008 |
| October | 71.1% | 9.4% | 40 | 14229 |
| November | 57.7% | 7.6% | 40 | 11547 |
| December | 43.8% | 5.8% | 40 | 8765 |
| Estimated Peak Daily | | 1456 gallons | | |
| Based upon 100% of weekly flow happening on weekend | | | | |

## Employee Wastewater Flow Volume – Alternative C:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the employees of the casino, hotel, entertainment center and convention center. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to employees. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative C:**

Gallons per employee = 12 gallons
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated Employees = 1,170
(Based upon revenue values)

**Equations – Alternative C:**

**Volume of Wastewater from The Employees**

$$V_E = (XEmployees)\left(X\,\frac{Days}{Month}\right)\left(12\,\frac{Gallons}{day}\right)$$

Where:

$V_E$=Volume of wastewater from an employee per month

$\left(X\,\frac{Days}{Month}\right)$ = Number of days in a given month

**Table IX - C.**

| Estimated Monthly Wastewater Flow from Employees | | | |
|---|---|---|---|
| Month | Days in a Month | Gallons per Employee | Estimated Monthly Flow |
| January | 31 | 12 | 435240 |
| February | 28 | 12 | 393120 |
| March | 31 | 12 | 435240 |
| April | 30 | 12 | 421200 |
| May | 31 | 12 | 435240 |
| June | 30 | 12 | 421200 |
| July | 31 | 12 | 435240 |
| August | 31 | 12 | 435240 |
| September | 30 | 12 | 421200 |
| October | 31 | 12 | 435240 |
| November | 30 | 12 | 421200 |
| December | 31 | 12 | 435240 |
| Estimated Peak Daily = | | 17550 | gallons |
| Based upon a use of 15 gpd | | | |

## Total Monthly Wastewater Flow – Alternative C:

**Equation – Alternative C:**

$$V_T = V_H + V_G + V_{FB} + V_{Events} + V_{Spa} + V_E$$

Where:

$V_T$ = Total monthly wastewater flow $\left( gal/month \right)$

$V_H$ = Estimated monthly volume of wastewater flow from the hotel $\left( gal/month \right)$

$V_G$ = Total monthly wastewater flow expected due to the gamers $\left( gal/month \right)$

$V_{FB}$ = Total monthly wastewater volume from the food and beverage $\left( gal/month \right)$

$V_{Events}$ = Total monthly volume of wastewater flow due to entertainment $\left( gal/month \right)$

$V_{Spa}$ = Total monthly volume of wastewater flow due to the spa visitors $\left( gal/month \right)$

$V_E$ = Total monthly volume of wastewater flow due to the employees $\left( gal/month \right)$

**Table X - C.**

| Estimated Total Monthly Flow | | | | | | | |
|---|---|---|---|---|---|---|---|
| Months | Hotel Flow | Gamer Flow | Food and Beverage Flow | Event Center Flow | Spa Flow | Employee Flow | Total Monthly Flow |
| | (Gal/Month) | | | | | | |
| January | 311434 | 414534 | 564831 | 15899 | 9506 | 435240 | 1751444 |
| February | 325710 | 388382 | 519053 | 14361 | 11007 | 393120 | 1651632 |
| March | 384867 | 427463 | 579518 | 15899 | 11747 | 435240 | 1854733 |
| April | 390852 | 419207 | 564504 | 15386 | 12328 | 421200 | 1823477 |
| May | 446498 | 438314 | 591844 | 15899 | 13628 | 435240 | 1941423 |
| June | 463185 | 432367 | 578970 | 15386 | 14609 | 421200 | 1925718 |
| July | 483870 | 444894 | 599318 | 15899 | 14769 | 435240 | 1993990 |
| August | 502228 | 448126 | 602990 | 15899 | 15330 | 435240 | 2019813 |
| September | 444150 | 428904 | 575163 | 15386 | 14009 | 421200 | 1898812 |
| October | 466167 | 441777 | 595778 | 15899 | 14229 | 435240 | 1969090 |
| November | 366107 | 414705 | 559555 | 15386 | 11547 | 421200 | 1788500 |
| December | 287175 | 410262 | 559979 | 15899 | 8765 | 435240 | 1717321 |

**Table XI - C**

| **Total Estimated Peak Daily Flow (Gallons)** | |
|---|---|
| Hotel | 21150 |
| Gamers | 27994 |
| Food and Beverage | 39786 |
| Event Centers | 6500 |
| Spa | 1456 |
| Employees | 17550 |
| Total | 114437 |

| Annual Daily Average Wastewater Flow |
|---|
| 61194 |

# Wastewater Flow Calculations
# Alternative D

## Gamer Wastewater Flow Volume – Alternative D:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the gamers of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to gamers. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative D:**

Total local gamers expected in a year: 739,881
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Total non local gamers expected in a year: 152,644
(Value was extrapolated from the value found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria. The value was extrapolated based upon number of positions)

Estimated gamer flow per day = 5 gal/day
(Assumed)

**Table I - D.** Occupancy Factors and Weighted Average of Occupancy Factors
(Values found in the June 2007 Gaming and Hotel Market Assessment Cloverdale Rancheria)

| Months | Occupancy Factor | Weighted Average of Occupancy Factor |
|---|---|---|
| (NA) | (Unit less) | (Unit less) |
| January | 47.5% | 6.3% |
| February | 55.0% | 7.3% |
| March | 58.7% | 7.8% |
| April | 61.6% | 8.1% |
| May | 68.1% | 9.0% |
| June | 73.0% | 9.6% |
| July | 73.8% | 9.8% |
| August | 76.6% | 10.1% |
| September | 70.0% | 9.2% |
| October | 71.1% | 9.4% |
| November | 57.7% | 7.6% |
| December | 43.8% | 5.8% |

**Equations – Alternative D:**

**Number of Local Gamers per Month**

$$\left(\frac{LocalGamers}{Month}\right)=\left(\frac{Days/Month}{Days/year}\right)\left(\frac{TotalLocalGamers}{Year}\right)$$

**Number of Non Local Gamers per Month**

$$\left(\frac{NonLocalGamers}{Month}\right)=(WeightedAverageOccupancyFactor)\left(\frac{TotalNonLocalGamers}{Year}\right)$$

**Total Monthly Wastewater flow expected due to the gamers**

$$V_G=\left[\left(\frac{LocalGamers}{Month}\right)+\left(\frac{NonLocalGamers}{Month}\right)\right]\left(\frac{GallonsOfWastewater}{Gamer}\right)$$

Where:

$V_G$ = Total Monthly Wastewater flow expected due to the gamers (not including meals)

**Table II - D.**

| Estimated Wastewater Flow due to the Gamers | | | |
|---|---|---|---|
| Months | Estimated Gamer Flow | Days in a Month | Estimated Monthly Flow Rate |
| (NA) | (Gal/Gamer/Day) | (Days) | (Gal) |
| January | 5 | 31 | 362093 |
| February | 5 | 28 | 339249 |
| March | 5 | 31 | 373386 |
| April | 5 | 30 | 366175 |
| May | 5 | 31 | 382865 |
| June | 5 | 30 | 377670 |
| July | 5 | 31 | 388612 |
| August | 5 | 31 | 391436 |
| September | 5 | 30 | 374645 |
| October | 5 | 31 | 385890 |
| November | 5 | 30 | 362242 |
| December | 5 | 31 | 358362 |
| | | Estimated Peak Daily = | 24453 gallons |
| Note: The peak is based upon 2 times the max daily average | | | |

## Food and Beverage Wastewater Flow Volume – Alternative D:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the restaurants and bars within the casino.

**Design Parameters – Alternative D:**

Gallons of wastewater produced from a meal = 5 gal/meal
(Value Found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)
Note: Value is a combination of meal and bar flow

Estimated Employees = 960
(Based upon revenue values)

**Equations – Alternative D:**

**Volume of Wastewater from The Gamer Visitor Meals**

$$V_{GM} = \left( X \frac{LocalGamers}{Month} \right) \left( 1 \frac{Meal}{Gamer} \right) \left( 5 \frac{Gallons}{Meal} \right)$$

Where:

$V_{GM}$=Volume of wastewater from the gamer visitor meals

**Volume of Wastewater from The Employee Meals**

$$V_{EM} = (XEmployees) \left( X \frac{Days}{Month} \right) \left( 1 \frac{Meal}{Employee} \right) \left( 5 \frac{Gallons}{Meal} \right)$$

Where:

$V_{EM}$=Volume of wastewater from employee meals

$\left( X \frac{Days}{Month} \right)$ = Number of days in a given month

**Total Monthly Wastewater Volume from The Food and Beverage**

$$V_{FB} = V_{GM} + V_{EM}$$

Where:

$V_{FB}$ = Total monthly wastewater volume from the food and beverage
$V_{GM}$=Volume of wastewater from the gamer visitor meals
$V_{EM}$=Volume of wastewater from employee meals

**Table III - D.**

| Estimated Wastewater Flow due to the Food and Beverage Service | |
|---|---|
| Months | Total Monthly Flow from Meals |
| NA | Gallons |
| January | 418356 |
| February | 377870 |
| March | 418356 |
| April | 404861 |
| May | 418356 |
| June | 404861 |
| July | 418356 |
| August | 418356 |
| September | 404861 |
| October | 418356 |
| November | 404861 |
| December | 418356 |
| Note: All visitors are estimated to have one meal a day. | |

**Table IV - D**

| Peak Daily Flow due to Food and Beverage (gallons) | |
|---|---|
| Gamers | 20271 |
| Employees | 4800 |
| Sum = | 25071 |

Note: The gamers peak daily flow is based upon the maximum daily average times 2, the employees peak daily is based upon each employee having a meal (average based upon 80%)

## Employee Wastewater Flow Volume – Alternative D:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the employees of the casino. Note: These calculations do not take into consideration the wastewater flow caused by meals attributed to employees. These flows are taken into consideration in the food and beverage wastewater flow section of these calculations.

**Design Parameters – Alternative D:**

Gallons per employee = 12 gallons
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated Employees = 960
(Based upon revenues, provided by ESA )

**Equations – Alternative D:**

**Volume of Wastewater from The Employees**

$$V_E = (XEmployees)\left(X\ \frac{Days}{Month}\right)\left(12\frac{Gallons}{day}\right)$$

Where:

$V_E$=Volume of wastewater from an employee per month

$\left(X\ \frac{Days}{Month}\right)$ = Number of days in a given month

**Table V - D.**

| Estimated Monthly Wastewater Flow from Employees | | | |
|---|---|---|---|
| Month | Days in a Month | Gallons per Employee | Estimated Monthly Flow |
| January | 31 | 12 | 357120 |
| February | 28 | 12 | 322560 |
| March | 31 | 12 | 357120 |
| April | 30 | 12 | 345600 |
| May | 31 | 12 | 357120 |
| June | 30 | 12 | 345600 |
| July | 31 | 12 | 357120 |
| August | 31 | 12 | 357120 |
| September | 30 | 12 | 345600 |
| October | 31 | 12 | 357120 |
| November | 30 | 12 | 345600 |
| December | 31 | 12 | 357120 |
| Estimated Peak Daily | | 14400 | gallons |
| Based upon a use of 15 gpd | | | |

## Total Monthly Wastewater Flow – Alternative D:

**Equation – Alternative D:**

$$V_T = V_G + V_{FB} + V_E$$

Where:

$V_T$ = Total monthly wastewater flow $\left(gal/month\right)$

$V_G$ = Total monthly wastewater flow expected due to the gamers $\left(gal/month\right)$

$V_{FB}$ = Total monthly wastewater volume from the food and beverage $\left(gal/month\right)$

$V_E$ = Total monthly wastewater volume from the employees $\left(gal/month\right)$

**Table VI - D.**

| Estimated Total Monthly Flow | | | | |
|---|---|---|---|---|
| Months | Gamer Flow | Food and Beverage Flow | Employees Flow | Total Monthly Flow |
| | (Gal/Month) | | | |
| January | 362093 | 418356 | 357120 | 780449 |
| February | 339249 | 377870 | 322560 | 717119 |
| March | 373386 | 418356 | 357120 | 791742 |
| April | 366175 | 404861 | 345600 | 771036 |
| May | 382865 | 418356 | 357120 | 801221 |
| June | 377670 | 404861 | 345600 | 782531 |
| July | 388612 | 418356 | 357120 | 806968 |
| August | 391436 | 418356 | 357120 | 809792 |
| September | 374645 | 404861 | 345600 | 779506 |
| October | 385890 | 418356 | 357120 | 804246 |
| November | 362242 | 404861 | 345600 | 767103 |
| December | 358362 | 418356 | 357120 | 776718 |

**Table VII - D**

| Total Estimated Peak Daily Flow (Gallons) | |
|---|---|
| Gamers | 24453 |
| Food and Beverage | 25071 |
| Employees | 14400 |
| Total | 63923 |

| Annual Daily Average Wastewater Flow |
|---|
| 25722 |

# Wastewater Flow Calculations
# Alternative E

## Industrial Warehouse Use – Alternative E:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the potential industrial warehouse.

**Design Parameters – Alternative E:**

Total square footage of the industrial warehouse = 150,000 SF
(Value Found in Table 2-5 of the September 2008 Preliminary ESA Report)

Employees per square feet = 1 Employee/500 SF
(Value Found in Zoning Ordinance County of Sonoma under the Parking Regulation section For number of parking spaces required per square footage of warehouse stores – Note we assumed one employee per required parking space)

Gallons per employee = 12 gallons per day (average)
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Estimated cases of wine to be processed – 200,000 cases
(It is assumed that winery processing will occur in the warehouse)

Gallons of wastewater produced per gallon of wine = $\left(\frac{8 gal of wastewater}{1 gal of wine}\right)$

Estimated usage of water used during crush = 50%

**Equations – Alternative E:**

**Number of Warehouse Employees**

$$300 Employees = (150{,}000 SF)\left(\frac{1 Employee}{500 SF}\right)$$

**Wastewater Produced by Employees per Month**

$$X\left(\frac{gallons}{day}\right) = (300 Employees)\cdot\left(12\frac{gallons}{day}\right)\cdot\left(X\frac{days}{month}\right)$$

**Yearly Winery Wastewater Flow**

$$3{,}840{,}000\left(\frac{gallons}{Year}\right)=\left(200{,}000Cases\right)\cdot\left(2.4\frac{gallons}{case}\right)\cdot\left(8\frac{gallonswaste}{gallonwine}\right)$$

**Winery Wastewater Flow per Month**

$$X\left(\frac{gallons}{month}\right)=\left(3840000\frac{gallons}{year}\right)\cdot\left(MonthlyFactor\right)$$

Where:

Monthly Factor = Estimated percentage of winery waste per month

**Table I – E. Winery Wastewater per Month**

| Months | Percentage of Winery Waste per Month | Yearly Winery Wastewater | Winery Waste per Month |
|---|---|---|---|
| January | 5.6% | 3840000 | 215040 |
| February | 5.6% | 3840000 | 215040 |
| March | 5.6% | 3840000 | 215040 |
| April | 5.6% | 3840000 | 215040 |
| May | 5.6% | 3840000 | 215040 |
| June | 5.6% | 3840000 | 215040 |
| July | 5.6% | 3840000 | 215040 |
| August | 12.5% | 3840000 | 480000 |
| September | 25.0% | 3840000 | 960000 |
| October | 12.5% | 3840000 | 480000 |
| November | 5.6% | 3840000 | 215040 |
| December | 5.6% | 3840000 | 215040 |

**Table II – E.**

| Estimated Wastewater Produced by the Industrial Warehouse | | | |
|---|---|---|---|
| Months | Winery Waste per Month | Employee Waste per Month | Total Monthly Waste |
| January | 215040 | 111600 | 326640 |
| February | 215040 | 100800 | 315840 |
| March | 215040 | 111600 | 326640 |
| April | 215040 | 108000 | 323040 |
| May | 215040 | 111600 | 326640 |
| June | 215040 | 108000 | 323040 |
| July | 215040 | 111600 | 326640 |
| August | 480000 | 111600 | 591600 |
| September | 960000 | 108000 | 1068000 |
| October | 480000 | 111600 | 591600 |
| November | 215040 | 108000 | 323040 |
| December | 215040 | 111600 | 326640 |

## Commercial Office and Retail Use – Alternative E:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the potential commercial office.

**Design Parameters – Alternative E:**

Total square footage of the commercial offices = 125,000 SF
(Value Found in Table 2-5 of the September 2008 Preliminary ESA Report)

Employees per square feet of commercial office = 1 Employee/250 SF
(Value Found in Zoning Ordinance County of Sonoma under the Parking Regulation section For number of parking spaces required per square footage of commercial offices – Note we assumed one employee per required parking space)

Total square footage of the retail space = 75,000 SF
(Value Found in Table 2-5 of the September 2008 Preliminary ESA Report)

Employees per square feet of retail space = 1 Employee/200 SF
(Value Found in Zoning Ordinance County of Sonoma under the Parking Regulation section For number of parking spaces required per square footage of shopping center – Note we assumed one employee per required parking space)

Gallons per employee = 12 gallons per day (average)
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

**Equations – Alternative E:**

**Number of Commercial Office Employees**

$$500 Employees = (125{,}000 SF)\left(\frac{1 Employee}{250 SF}\right)$$

**Wastewater Produced by Commercial Office Employees per Month**

$$X\left(\frac{gallons}{month}\right) = (500 Employees)\cdot\left(12\frac{gallons}{day}\right)\cdot\left(X\frac{days}{month}\right)$$

**Number of Retail Employees**

$$375 Employees = (75{,}000 SF)\left(\frac{1 Employee}{200 SF}\right)$$

**Wastewater Produced by Retail Employees per Month**

$$X\left(\frac{gallons}{month}\right) = (375 Employees)\cdot\left(12\frac{gallons}{day}\right)\cdot\left(X\frac{days}{month}\right)$$

**Table III – E.**

| Estimated Wastewater Flow from the Commercial Offices and Retail Space | | | |
|---|---|---|---|
| Months | Commercial Flow per Month | Retail Space Flow per Month | Total Monthly Flow |
| January | 186000 | 139500 | 325500 |
| February | 168000 | 126000 | 294000 |
| March | 186000 | 139500 | 325500 |
| April | 180000 | 135000 | 315000 |
| May | 186000 | 139500 | 325500 |
| June | 180000 | 135000 | 315000 |
| July | 186000 | 139500 | 325500 |
| August | 186000 | 139500 | 325500 |
| September | 180000 | 135000 | 315000 |
| October | 186000 | 139500 | 325500 |
| November | 180000 | 135000 | 315000 |
| December | 186000 | 139500 | 325500 |

## Restaurant Use – Alternative E:

Below are the equations, variables and calculations used to estimate the amount of wastewater flow produced by the potential restaurant use.

**Design Parameters – Alternative E:**

Total square footage of seating area of the fast food restaurants = 4,000 SF
(Value is a portion of the value found in Table 2-5 of the September 2008 Preliminary ESA Report – Note: it was assumed that 3000 SF of the total 7000 SF would be working space for employees)

Wastewater flow per square foot of fast food restaurant = 1 Gallon/SF/Day
(Assumed)

Total square footage of the seating area of the sit down restaurants = 5,000 SF
(Value is a portion of the value found in Table 2-5 of the September 2008 Preliminary ESA Report – Note: it was assumed that 2000 SF of the total 7000 SF would be working space for employees)

Seats per square feet of sit down restaurant space = 1 seat/60 SF
(Value Found in Zoning Ordinance County of Sonoma under the Parking Regulation section For number of parking spaces required per square footage of restaurants – Note we assumed one seat per required parking space)

Meals per seat = 5 meals per seat
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Gallons per meal = 5 gallons per meal
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Gallons of restroom use per meal = 2.5 gallons per meal
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

Employees in the sit down restaurants = 20 Employees
(Assumed)

Gallons per employee = 12 gallons per meal
(Value is an average of the values found in Table 3-4 of the EPA's Onsite Wastewater Treatment Systems Manual)

**Equations – Alternative E:**

**Wastewater Flow Produced by the Fast Food Restaurants per Month**

$$X\left(\frac{gallons}{Month}\right)=(4000SF)\cdot\left(1\frac{gallon}{SF}\right)\cdot\left(X\frac{days}{month}\right)$$

**Wastewater Produced by the Sit Down Restaurants Meals per Month**

$$X\left(\frac{gallons}{month}\right)=(5000SF)\cdot\left(\frac{1Seat}{60SF}\right)\left(5\frac{meals}{seat}\right)\left(5\frac{gal}{meal}+2.5\frac{gal}{meal}\right)\left(X\frac{days}{month}\right)$$

Where:

5 Gallons/meal = Gallons produced by making the meal
2.5 gallons/meal = Gallons produced by restroom use per meal

**Wastewater Produced by the Employees of the Sit Down Restaurant per Month**

$$\left(X\frac{gal}{month}\right)=(20Employees)\left(12\frac{gal}{day/employee}\right)\left(X\frac{days}{month}\right)$$

**Table IV – E.**

| Estimated Wastewater Flow from the Restaurants | | | | |
|---|---|---|---|---|
| Month | Fast Food Resaurant Flow | Sit Down Restaurant Flow (Meals) | Sit Down Restaurant Flow (Employees) | Total Monthly Flow from Restaurants |
| January | 124000 | 96875 | 7440 | 228315 |
| February | 112000 | 87500 | 6720 | 206220 |
| March | 124000 | 96875 | 7440 | 228315 |
| April | 120000 | 93750 | 7200 | 220950 |
| May | 124000 | 96875 | 7440 | 228315 |
| June | 120000 | 93750 | 7200 | 220950 |
| July | 124000 | 96875 | 7440 | 228315 |
| August | 124000 | 96875 | 7440 | 228315 |
| September | 120000 | 93750 | 7200 | 220950 |
| October | 124000 | 96875 | 7440 | 228315 |
| November | 120000 | 93750 | 7200 | 220950 |
| December | 124000 | 96875 | 7440 | 228315 |

## Total Monthly Wastewater Flow – Alternative E:

### Equation – Alternative E:

$$V_T = V_W + V_{OandR} + V_R$$

Where:

$V_T$ = Total monthly wastewater flow $\left(gal/month\right)$

$V_W$ = Total monthly wastewater flow expected due to the warehouse $\left(gal/month\right)$

$V_{OandR}$ = Total monthly wastewater volume from the office and retail space $\left(gal/month\right)$

$V_R$ = Total monthly wastewater volume from the restaurants $\left(gal/month\right)$

**Table V - E.**

| Estimated Total Monthly Flow | | | | |
|---|---|---|---|---|
| Months | Warehouse Flow | Office and Retail Space Flow | Restaurant Flow | Total Monthly Flow |
| | (Gallons/Month) | | | |
| January | 326640 | 325500 | 228315 | 880455 |
| February | 315840 | 294000 | 206220 | 816060 |
| March | 326640 | 325500 | 228315 | 880455 |
| April | 323040 | 315000 | 220950 | 858990 |
| May | 326640 | 325500 | 228315 | 880455 |
| June | 323040 | 315000 | 220950 | 858990 |
| July | 326640 | 325500 | 228315 | 880455 |
| August | 591600 | 325500 | 228315 | 1145415 |
| September | 1068000 | 315000 | 220950 | 1603950 |
| October | 591600 | 325500 | 228315 | 1145415 |
| November | 323040 | 315000 | 220950 | 858990 |
| December | 326640 | 325500 | 228315 | 880455 |

| Annual Daily Average Wastewater Flow |
|---|
| 32028 |

## Estimated Peak Daily Wastewater Flow – Alternative E

**Industrial Warehouse:**

Given:

- 15 gallons/employee
- 200,000 Cases of Wine
- 2.4 gallons of water per case
- 1.5 safety factor
- 60 day harvest period

$$DailyPeakWineryWaste\left(\frac{gal}{day}\right) = \frac{(200000Cases)\left(2.4\frac{gal}{Case}\right)(1.5)}{60} = 12000\left(\frac{gal}{day}\right)$$

$$DailyPeakWarehouseEmployeeFlow\left(\frac{gal}{day}\right) = \#Employees\left(15\frac{gal}{day}\right) = 4500\left(\frac{gal}{day}\right)$$

$$TotalDailyPeakWarehouseFlow\left(\frac{gal}{day}\right) = 12000\left(\frac{gal}{day}\right) + 4500\left(\frac{gal}{day}\right) = 16{,}500\left(\frac{gal}{day}\right)$$

**Commercial Office:**

Given:

- 15 gallons/employee

$$DailyPeakOfficeFlow\left(\frac{gal}{day}\right) = \#Employees\left(15\frac{gal}{day}\right) = 7{,}500\left(\frac{gal}{day}\right)$$

**Retail Use:**

Given:

- 15 gallons/employee

$$DailyPeak\,\mathrm{Re}tailFlow\left(\frac{gal}{day}\right) = \#Employees\left(15\frac{gal}{day}\right) = 5626\left(\frac{gal}{day}\right)$$

**Restaurant Flow:**

Given:

- 4000 gal/day = Estimated Flow for Fast Food Meals
- 2075 gal/day = Estimated Flow for Sit Down Restaurant Meals
- 15 gallons/employee
- Peak Factor of 2

$$DailyPeakEmployeeFlow\left(\frac{gal}{day}\right) = \#Employees\left(15\frac{gal}{day}\right) = 150\left(\frac{gal}{day}\right)$$

$$DailyPeak\,\mathrm{Re}\,staurantFlow\left(\frac{gal}{day}\right) = \left(150\left(\frac{gal}{day}\right) + 2075\left(\frac{gal}{day}\right) + 4000\left(\frac{gal}{day}\right)\right) * 2 = 12500\left(\frac{gal}{day}\right)$$

**Table VI – E - Total Peak Daily Flow:**

| Warehouse Flow | Office and Retail Space Flow | Restaurant Flow | Peak Daily Flow |
|---|---|---|---|
| 16500 | 13126 | 12500 | 42126 |

# Summary of Wastewater Flow Volumes
# Alternative A – E

**Table I – Monthly Wastewater Flow Volumes**

| Wastewater Flow Volumes (gallons) | | | | | |
|---|---|---|---|---|---|
| Months | Alternative A | Alternative B | Alternative C | Alternative D | Alternative E |
| January | 2607828 | 1968527 | 1751444 | 780449 | 880455 |
| February | 2470975 | 1850063 | 1651632 | 717119 | 816060 |
| March | 2781877 | 2073998 | 1854733 | 791742 | 880455 |
| April | 2739577 | 2036601 | 1823477 | 771036 | 858990 |
| May | 2927954 | 2162518 | 1941423 | 801221 | 880455 |
| June | 2911727 | 2141062 | 1925718 | 782531 | 858990 |
| July | 3016533 | 2216195 | 1993990 | 806968 | 880455 |
| August | 3060045 | 2242562 | 2019813 | 809792 | 1145415 |
| September | 2866424 | 2113572 | 1898812 | 779506 | 1603950 |
| October | 2974575 | 2190769 | 1969090 | 804246 | 1145415 |
| November | 2680683 | 2000865 | 1788500 | 767103 | 858990 |
| December | 2550330 | 1933684 | 1717321 | 776718 | 880455 |

**Table II – Annual Wastewater Flow Volumes**

| | Wastewater Annual Flow Volumes (gallons) | | | | |
|---|---|---|---|---|---|
| | Alternative A | Alternative B | Alternative C | Alternative D | Alternative E |
| Total Annual Wastewater Flow (millions of gallons) | 33588530 | 24930416 | 22335953 | 9388428 | 11690085 |

**Table III – Peak Daily and Average Daily Wastewater Flows**

| | Estimated Peak Daily Flow | Estimated Average Daily Flow |
|---|---|---|
| Alternative A | 171496 | 92023 |
| Alternative B | 126673 | 68303 |
| Alternative C | 114437 | 61194 |
| Alternative D | 63923 | 25722 |
| Alternative E | 42126 | 32028 |

# Attachment 2

# Water Balance Calculations

# CLOVERDALE RANCHERIA FEE TO TRUST AND RESORT CASINO PROJECT SONOMA COUNTY, CALIFORNIA

**March, 2009**
**Revised June, 2009**

# Wastewater Pond Calculations – Based Upon Alternative A (No Recycling Reduction)

## Water Balance Determination:

### Evaporation Design Parameters:

Pond evaporation = 70% (Pan Evaporation)

**Table I. Pan Evaporation Rates and Actual Evaporation Rates (gallons)**
(Data was collected from the Warm Springs Dam Weather Station, NCDC #9440, values are based upon averages recorded from the years of 1973 to 1998)

| Month | Monthly Pan Evaporation (Inches) | Pond Evaporation (Inches) |
|---|---|---|
| January | 1.23 | 0.861 |
| February | 2.46 | 1.722 |
| March | 3.63 | 2.541 |
| April | 5.65 | 3.955 |
| May | 8.06 | 5.642 |
| June | 9.2 | 6.44 |
| July | 9.96 | 6.972 |
| August | 8.64 | 6.048 |
| September | 6.79 | 4.753 |
| October | 4.74 | 3.318 |
| November | 2.15 | 1.505 |
| December | 1.44 | 1.008 |
| Total Yearly Average | 63.95 | 44.765 |

**Table II. Monthly Evaporation Volume (gallons)**
(To be conservative the monthly evaporation volume values were calculated based upon the lowest pond volume expected in a month)

| Month | Pond Water Depth (ft) | Pond Area (SF) | Evaporation (ft) | Evaporation Volume (gal) |
|---|---|---|---|---|
| January | 15.20 | 121941 | 0.07 | 65444 |
| February | 19.00 | 138384 | 0.14 | 148539 |
| March | 22.00 | 152100 | 0.21 | 240910 |
| April | 24.80 | 165486 | 0.33 | 407970 |
| May | 25.60 | 169415 | 0.47 | 595805 |
| June | 21.00 | 147456 | 0.54 | 591928 |
| July | 15.50 | 123201 | 0.58 | 535417 |
| August | 9.10 | 97719 | 0.50 | 368392 |
| September | 1.00 | 69696 | 0.40 | 206489 |
| October | 1.00 | 69696 | 0.28 | 144147 |
| November | 6.40 | 87853 | 0.13 | 82416 |
| December | 11.00 | 104976 | 0.08 | 65959 |

**Precipitation Design Parameters:**

Top area of the pond (Collection Area) = 202,500 SF
(Based upon a freeboard width of 450' and length of 450')

**Table III. Monthly Average Precipitation (Inches)**
(Data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008)

| Month | Average Monthly Precipitation (Inches) |
|---|---|
| January | 9.29 |
| February | 7.73 |
| March | 5.53 |
| April | 2.84 |
| May | 1.07 |
| June | 0.21 |
| July | 0.04 |
| August | 0.13 |
| September | 0.54 |
| October | 2.35 |
| November | 5.77 |
| December | 8.29 |
| Total Yearly Average | 43.79 |

**Table IV. Monthly Precipitation Volume (gallons)**

| Month | Monthly Precipitation Volume (gal) |
|---|---|
| January | 1172630 |
| February | 975719 |
| March | 698024 |
| April | 358479 |
| May | 135061 |
| June | 26507 |
| July | 5049 |
| August | 16409 |
| September | 68162 |
| October | 296629 |
| November | 728318 |
| December | 1046405 |

**Wastewater Design Parameters:**

**Table V. Monthly Wastewater Volume (gallons)**
(The monthly wastewater volumes were taken from Table X-A in the Wastewater Volume Calculations – Alternative A section of this report)

| Month | Monthly Wastewater Volume (gal) |
|---|---|
| January | 2607828 |
| February | 2470975 |
| March | 2781877 |
| April | 2739577 |
| May | 2927954 |
| June | 2911727 |
| July | 3016533 |
| August | 3060045 |
| September | 2866424 |
| October | 2974575 |
| November | 2680683 |
| December | 2550330 |

**Pond Volume Calculations:**

Minimum pond storage for fire suppression = 500,000 gallons

**Equation 1:**

Sum of Yearly Precipitation = 5,527,393 gallons

Sum of Yearly Evaporation = 3,453,415 gallons

Sum of Yearly Wastewater Volume = 33,588,528

Total Volume of Water to be Discharged =

Sum of Yearly Precipitation = 5,527,393 gallons

+ Sum of Yearly Wastewater Volume = 33,588,528

- Sum of Yearly Evaporation = 3,453,415 gallons

= 35,662,506 gallons

Daily Discharge = (Total Volume of Water to be Discharged/138 Days) = 258,424 gallons

(Assumed water could only be discharged from May 16th to September 30th)

**Table VI. Required Monthly Pond Volume (Million Gallons)**

| Months | Monthly Wastewater Flow | Monthly Evaporation | Monthly Precipitation | Monthly Discharge Volume to Land | Pond Volume |
|---|---|---|---|---|---|
| | MG | | | | |
| January | 2.61 | 0.07 | 1.17 | 0.00 | 14.20 |
| February | 2.47 | 0.15 | 0.98 | 0.00 | 17.50 |
| March | 2.78 | 0.24 | 0.70 | 0.00 | 20.74 |
| April | 2.74 | 0.41 | 0.36 | 0.00 | 23.43 |
| May | 2.93 | 0.60 | 0.14 | 4.13 | 21.76 |
| June | 2.91 | 0.59 | 0.03 | 7.75 | 16.35 |
| July | 3.02 | 0.54 | 0.01 | 8.01 | 10.83 |
| August | 3.06 | 0.37 | 0.02 | 8.01 | 5.52 |
| September | 2.87 | 0.21 | 0.07 | 7.75 | 0.50 |
| October | 2.97 | 0.14 | 0.30 | 0.00 | 3.63 |
| November | 2.68 | 0.08 | 0.73 | 0.00 | 6.95 |
| December | 2.55 | 0.07 | 1.05 | 0.00 | 10.48 |

The maximum monthly pond storage volume required occurs in April at 23.43 MG
(This includes the 500,000 gallons required for fire suppression)

**Table VII. Pond Dimensions**

| Freeboard Width (ft) | Freeboard Length (ft) | Full Width (ft) | Full Length (ft) | Bottom Width (ft) | Bottom Length (ft) | Full Water Depth (ft) | Side Slope | Pond Volume (gal) |
|---|---|---|---|---|---|---|---|---|
| 450 | 450 | 420 | 420 | 258 | 258 | 27 | 3 :1 | 23,651,114 |

Note: The pond volume of 23.65 MG exceeds the required pond storage volume of 23.43 MG. This is due to rounding the water depth to the nearest half foot that is adequate to contain the required pond storage volume.

# Wastewater Pond Calculations – Based Upon Alternative A (With Recycling Reduction)

## Water Balance Determination:

### Evaporation Design Parameters:

Pond evaporation = 70% (Pan Evaporation)

**Table VIII. Pan Evaporation Rates and Actual Evaporation Rates (gallons)**
(Data was collected from the Warm Springs Dam Weather Station, NCDC #9440, values are based upon averages recorded from the years of 1973 to 1998)

| Month | Monthly Pan Evaporation (Inches) | Pond Evaporation (Inches) |
|---|---|---|
| January | 1.23 | 0.861 |
| February | 2.46 | 1.722 |
| March | 3.63 | 2.541 |
| April | 5.65 | 3.955 |
| May | 8.06 | 5.642 |
| June | 9.2 | 6.44 |
| July | 9.96 | 6.972 |
| August | 8.64 | 6.048 |
| September | 6.79 | 4.753 |
| October | 4.74 | 3.318 |
| November | 2.15 | 1.505 |
| December | 1.44 | 1.008 |
| Total Yearly Average | 63.95 | 44.765 |

**Table IX. Monthly Evaporation Volume (gallons)**
(To be conservative the monthly evaporation volume values were calculated based upon the lowest volume expected in a month)

| Month | Pond Water Depth (ft) | Pond Area (SF) | Evaporation (ft) | Evaporation Volume (gal) |
|---|---|---|---|---|
| January | 9.40 | 135719 | 0.07 | 72839 |
| February | 12.20 | 148379 | 0.14 | 159267 |
| March | 14.50 | 159201 | 0.21 | 252157 |
| April | 16.50 | 168921 | 0.33 | 416438 |
| May | 16.90 | 170900 | 0.47 | 601028 |
| June | 13.50 | 154449 | 0.54 | 619999 |
| July | 9.60 | 136604 | 0.58 | 593665 |
| August | 5.40 | 118611 | 0.50 | 447155 |
| September | 0.70 | 99982 | 0.40 | 296218 |
| October | 0.70 | 99982 | 0.28 | 206786 |
| November | 3.60 | 111289 | 0.13 | 104402 |
| December | 6.50 | 123201 | 0.08 | 77410 |

**Precipitation Design Parameters:**

Top area of the pond (Collection Area)= 202,500 SF
(Based upon a freeboard width of 450' and length of 450')

**Table X. Monthly Average Precipitation (Inches)**
(Data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008)

| Month | Average Monthly Precipitation (Inches) |
|---|---|
| January | 9.29 |
| February | 7.73 |
| March | 5.53 |
| April | 2.84 |
| May | 1.07 |
| June | 0.21 |
| July | 0.04 |
| August | 0.13 |
| September | 0.54 |
| October | 2.35 |
| November | 5.77 |
| December | 8.29 |
| Total Yearly Average | 43.79 |

**Table XI. Monthly Precipitation Volume (gallons)**

| Month | Monthly Precipitation Volume (gal) |
|---|---|
| January | 1172630 |
| February | 975719 |
| March | 698024 |
| April | 358479 |
| May | 135061 |
| June | 26507 |
| July | 5049 |
| August | 16409 |
| September | 68162 |
| October | 296629 |
| November | 728318 |
| December | 1046405 |

**Wastewater Design Parameters:**

**Table XII. Monthly Wastewater Volume (gallons)**

(The monthly wastewater volumes were taken from Table X-A in the Wastewater Volume Calculations – Alternative A section of this report and reduced by the volume of water associated with toilet flushing)

| Month | Monthly Wastewater Volume (gal) |
|---|---|
| January | 1874892 |
| February | 1781742 |
| March | 2010874 |
| April | 1982337 |
| May | 2125001 |
| June | 2116700 |
| July | 2194206 |
| August | 2228202 |
| September | 2081341 |
| October | 2161425 |
| November | 1936371 |
| December | 1829970 |

**Pond Volume Calculations:**

Minimum pond storage for fire suppression = 500,000 gallons

**Equation 1:**

Sum of Yearly Precipitation = 5,527,393 gallons

Sum of Yearly Evaporation = 3,847,364 gallons

Sum of Yearly Wastewater Volume = 24,323,061

Total Volume of Water to be Discharged =

Sum of Yearly Precipitation = 5,527,393 gallons

+ Sum of Yearly Wastewater Volume = 24,323,061

- Sum of Yearly Evaporation = 3,847,364 gallons

= 26,003,090 gallons

Daily Discharge = (Total Volume of Water to be Discharged/138 Days) = 188,428 gallons

(Assumed water could only be discharged from May 16th to September 30th)

**Table XIII. Required Monthly Pond Volume (Million Gallons)**

| Months | Monthly Wastewater Flow | Monthly Evaporation | Monthly Precipitation | Monthly Discharge Volume to Land | Pond Volume |
|---|---|---|---|---|---|
| | MG | | | | |
| January | 1.87 | 0.07 | 1.17 | 0.00 | 11.09 |
| February | 1.78 | 0.16 | 0.98 | 0.00 | 13.68 |
| March | 2.01 | 0.25 | 0.70 | 0.00 | 16.14 |
| April | 1.98 | 0.42 | 0.36 | 0.00 | 18.06 |
| May | 2.13 | 0.60 | 0.14 | 3.01 | 16.71 |
| June | 2.12 | 0.62 | 0.03 | 5.65 | 12.58 |
| July | 2.19 | 0.59 | 0.01 | 5.84 | 8.34 |
| August | 2.23 | 0.45 | 0.02 | 5.84 | 4.30 |
| September | 2.08 | 0.30 | 0.07 | 5.65 | 0.50 |
| October | 2.16 | 0.21 | 0.30 | 0.00 | 2.75 |
| November | 1.94 | 0.10 | 0.73 | 0.00 | 5.31 |
| December | 1.83 | 0.08 | 1.05 | 0.00 | 8.11 |

The maximum monthly pond storage volume required occurs in April at 18.06 MG
(This includes the 500,000 gallons required for fire suppression)

**Table XIV. Pond Dimensions**

| Freeboard Width (ft) | Freeboard Length (ft) | Full Width (ft) | Full Length (ft) | Bottom Width (ft) | Bottom Length (ft) | Full Water Depth (ft) | Side Slope | Pond Volume (gal) |
|---|---|---|---|---|---|---|---|---|
| 450 | 450 | 420 | 420 | 312 | 312 | 18 | 3 :1 | 18,166,701 |

Note: The pond volume of 18.17 MG exceeds the required pond storage volume of 18.06 MG. This is due to rounding the water depth to the nearest half foot that is adequate to contain the required pond storage volume.

# Dispersal Area Sizing – Based Upon Alternative A (No Recycling Credit)

**Determining the Allowable Landscape Irrigation Discharge Volume:**
We are proposing a landscape irrigation area of 7.6 acres. The following calculations and table calculate the maximum volume of water allowed to be dispersed to the 7.6 acres according to Metcalf and Eddy's method found in "Wastewater Engineering, Treatment and Reuse", published in 2003. The water to be dispersed to the landscape area is only to be taken up by evapotranspiration. Therefore percolation absorption was not taken into consideration when performing the following calculations.

**Design Parameters:**

Landscape Irrigation Dispersal Area = 7.6 acres

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero)

Maximum Volume of Landscape Irrigation Discharge per Month (gal)
=Net Evapotranspiration per Month X 7.6 acres X (1/12) X 7.48 X 43560

**Table I. Monthly Allowable Landscape Irrigation Discharge Volume (gal)**
(Precipitation data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008) (Crop Evapotranspiration data was determined by Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. The crop evapotranspiration data refers to a Zone 8, Wet Year, Misc. Deciduous)

| Month | Crop Evapotranspiration (Inches) | Precipitation (Inches) | Net Evapotranspiration (Inches) | Maximum Allowable Landscape Discharge Volume (gal) |
|---|---|---|---|---|
| January | 0.42 | 9.29 | 0 | 0 |
| February | 0.89 | 7.73 | 0 | 0 |
| March | 2.3 | 5.53 | 0 | 0 |
| April | 3.4 | 2.84 | 0.56 | 0 |
| May | 3.79 | 1.07 | 2.72 | 292750 |
| June | 4.41 | 0.21 | 4.20 | 875828 |
| July | 5.41 | 0.04 | 5.37 | 1119808 |
| August | 5.02 | 0.13 | 4.89 | 1019714 |
| September | 3.28 | 0.54 | 2.74 | 571373 |
| October | 2.99 | 2.35 | 0.64 | 0 |
| November | 0.95 | 5.77 | 0 | 0 |
| December | 0.96 | 8.29 | 0 | 0 |

Note: It is assumed landscape irrigation water could only be discharged from May 16$^{th}$ to September 30$^{th}$

**Determining the Maximum Allowable Discharge:**
We are proposing a dispersal area of 4 acres. The following calculations and tables calculate the maximum volume of water allowed to be dispersed to 4 acres according to Metcalf and Eddy's method found in "Wastewater Engineering, Treatment and Reuse", published in 2003. The 4 acre area was determined to be adequate for dispersal.

**Design Parameters:**

Dispersal Area = 4 acres

Saturated hydraulic conductivity (Permeability) = 20 inch/hour
(Value found in the Soil Survey of Sonoma County California, under the Cortina soil series located in the dispersal area)

Maximum allowable percolation rate = 10% of saturated hydraulic conductivity
= 2 inch/hour

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero)

Maximum Depth of Discharge per Month = (in)
Net Evapotranspiration + Maximum Allowable Percolation Rate

Maximum Volume of Discharge per Month (gal)
=Maximum Depth of Discharge per Month X 4 acres X (1/12) X 7.48 X 43560

**Table II. Monthly Maximum Depth of Percolation (Inches)**
(Values calculated based upon hours in a month multiplied by the maximum allowable percolation rate)

| Month | Percolation (Inches) |
|---|---|
| January | 1488 |
| February | 1344 |
| March | 1488 |
| April | 1440 |
| May | 1488 |
| June | 1440 |
| July | 1488 |
| August | 1488 |
| September | 1440 |
| October | 1488 |
| November | 1440 |
| December | 1488 |

**Table III. Monthly Average Precipitation (Inches)**
(Data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008)

| Month | Average Monthly Precipitation (Inches) |
|---|---|
| January | 9.29 |
| February | 7.73 |
| March | 5.53 |
| April | 2.84 |
| May | 1.07 |
| June | 0.21 |
| July | 0.04 |
| August | 0.13 |
| September | 0.54 |
| October | 2.35 |
| November | 5.77 |
| December | 8.29 |
| Total Yearly Average | 43.79 |

**Table IV. Monthly Crop Evapotranspiration (Inches)**
(Data was determined by Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. The below data refers to a Zone 8, Wet Year, Pasture and Misc. Grasses)

| Month | Crop Evapotranspiration (Inches) |
|---|---|
| January | 0.47 |
| February | 0.98 |
| March | 2.73 |
| April | 4.11 |
| May | 4.03 |
| June | 4.71 |
| July | 5.92 |
| August | 5.65 |
| September | 3.78 |
| October | 3.23 |
| November | 1.02 |
| December | 0.98 |

**Table V. Monthly Allowable Discharge Volume (gal)**

| Alternative A | Allowable Discharge | | | | |
|---|---|---|---|---|---|
| Month | Net Evapotranspiration (Inches) | Percolation (Inches) | Maximum Depth of Discharge per Month (Inches) | Maximum Allowable Discharge Volume per 4 Acres (gal) | Monthly Discharge Less the Landscape Irrigation (gal) |
| January | 0 | 1488 | NA | 0 | 0 |
| February | 0 | 1344 | NA | 0 | 0 |
| March | 0 | 1488 | NA | 0 | 0 |
| April | 1.27 | 1440 | NA | 0 | 0 |
| May | 2.96 | 1488 | 745.48 | 80966285 | 3842034 |
| June | 4.5 | 1440 | 1444.5 | 156886567 | 6876891 |
| July | 5.88 | 1,488 | 1493.88 | 162249709 | 6891334 |
| August | 5.52 | 1488 | 1493.52 | 162210610 | 6991429 |
| September | 3.24 | 1440 | 1443.24 | 156749719 | 7181345 |
| October | 0.88 | 1488 | NA | 0 | 0 |
| November | 0 | 1440 | NA | 0 | 0 |
| December | 0 | 1488 | NA | 0 | 0 |
| Note: The month of May's Net Evaporation only takes into account 1/2 the precipitation and evapotranspiration | | | | | |

## Determining the Applied Discharge Percolation Rate:

The following calculations and table calculate the applied percolation and soil application rates when dispersing the discharge volumes found in Table IV. "Required Monthly Pond Volume" in the Wastewater Pond Sizing Calculations section over the 4 acre area.

**Design Parameters:**

Dispersal Area = 4 acres

Precipitation Values found in Table II above

Crop Evapotranspiration values found in Table III above

Net Evapotranspiration = Crop Evapotranspiration - Precipitation
(If less than zero, then use zero) (Values found in Table IV above)

Depth of Discharge per Month = (in)

$$12\,{}^{inch}\!/_{ft}\left(\frac{MonthlyDischargeVolume - LandscapeIrrigationDischarge}{(4acre(43560\left({}^{sf}\!/_{acre}\right))(7.48\,{}^{gal}\!/_{ft^3})}\right)$$

Applied Percolation Rate per Month (in)
= Depth of Discharge – Net Evapotranspiration

Applied Percolation Rate per Hour
= Applied Percolation Rate per Month/Allowable Discharge Hours

**Table VI. Applied Percolation Rate (Inch/Hour)**

| Alternative A | Minimum Percolation Rate | | | | |
|---|---|---|---|---|---|
| Month | Amount Required to be Discharged (gal) | Applied Discharge Height (Inches) | Applied Percolation per Month (inches) | Applied Percolation Rate (inches/hour) | Applied Soil Application Rate (gal/sf/day) |
| January | 0 | 0.00 | NA | NA | NA |
| February | 0 | 0.00 | NA | NA | NA |
| March | 0 | 0.00 | NA | NA | NA |
| April | 0 | 0.00 | NA | NA | NA |
| May | 3842034 | 35.37 | 32.41 | 0.087 | 1.26 |
| June | 6876891 | 63.32 | 58.82 | 0.082 | 1.22 |
| July | 6891334 | 63.45 | 57.57 | 0.077 | 1.16 |
| August | 6991429 | 64.37 | 58.85 | 0.079 | 1.18 |
| September | 7181345 | 66.12 | 62.88 | 0.087 | 1.31 |
| October | 0 | 0.00 | NA | NA | NA |
| November | 0 | 0.00 | NA | NA | NA |
| December | 0 | 0.00 | NA | NA | NA |

The table above shows an approximate Applied Percolation Rate of 0.09 inch/hour, which corresponds to the Maximum Allowable Percolation Rate from the Wastewater Engineering Method. This predicts the need for at least 0.9 inch/hour percolation rate in the spray field soil to accept the projected discharge.

# Dispersal Area Sizing – Based Upon Alternative A (With Recycling Credit)

**Determining the Allowable Landscape Irrigation Discharge Volume:**
We are proposing a landscape irrigation area of 7.6 acres. The following calculations and table calculate the maximum volume of water allowed to be dispersed to the 7.6 acres according to Metcalf and Eddy's method found in "Wastewater Engineering, Treatment and Reuse", published in 2003. The water to be dispersed to the landscape area is only to be taken up by evapotranspiration. Therefore percolation absorption was not taken into consideration when performing the following calculations.

**Design Parameters:**

Landscape Irrigation Dispersal Area = 7.6 acres

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero)

Maximum Volume of Landscape Irrigation Discharge per Month (gal)
=Net Evapotranspiration per Month X 7.6 acres X (1/12) X 7.48 X 43560

**Table VII. Monthly Allowable Landscape Irrigation Discharge Volume (gal)**
(Precipitation data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008) (Crop Evapotranspiration data was determined by Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. The crop evapotranspiration data refers to a Zone 8, Wet Year, Misc. Deciduous)

| Month | Crop Evapotranspiration (Inches) | Precipitation (Inches) | Net Evapotranspiration (Inches) | Maximum Allowable Landscape Discharge Volume (gal) |
|---|---|---|---|---|
| January | 0.42 | 9.29 | 0 | 0 |
| February | 0.89 | 7.73 | 0 | 0 |
| March | 2.3 | 5.53 | 0 | 0 |
| April | 3.4 | 2.84 | 0.56 | 0 |
| May | 3.79 | 1.07 | 2.72 | 292750 |
| June | 4.41 | 0.21 | 4.20 | 875828 |
| July | 5.41 | 0.04 | 5.37 | 1119808 |
| August | 5.02 | 0.13 | 4.89 | 1019714 |
| September | 3.28 | 0.54 | 2.74 | 571373 |
| October | 2.99 | 2.35 | 0.64 | 0 |
| November | 0.95 | 5.77 | 0 | 0 |
| December | 0.96 | 8.29 | 0 | 0 |

Note: It is assumed landscape irrigation water could only be discharged from May 16th to September 30th

**Determining the Maximum Allowable Discharge:**
We are proposing a dispersal area of 4 acres. The following calculations and tables calculate the maximum volume of water allowed to be dispersed to 4 acres according to Metcalf and Eddy's method found in "Wastewater Engineering, Treatment and Reuse", published in 2003. The 4 acre area was determined to be adequate for dispersal.

**Design Parameters:**

Dispersal Area = 4 acres

Saturated hydraulic conductivity (Permeability) = 20 inch/hour
(Value found in the Soil Survey of Sonoma County California, under the Cortina soil series located in the dispersal area)

Maximum allowable percolation rate = 10% of saturated hydraulic conductivity
= 2 inch/hour

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero)

Maximum Depth of Discharge per Month = (in)
Net Evapotranspiration + Maximum Allowable Percolation Rate

Maximum Volume of Discharge per Month (gal)
=Maximum Depth of Discharge per Month X 4 acres X (1/12) X 7.48 X 43560

**Table VIII. Monthly Maximum Depth of Percolation (Inches)**
(Values calculated based upon hours in a month multiplied by the maximum allowable percolation rate)

| Month | Percolation (Inches) |
|---|---|
| January | 1488 |
| February | 1344 |
| March | 1488 |
| April | 1440 |
| May | 1488 |
| June | 1440 |
| July | 1488 |
| August | 1488 |
| September | 1440 |
| October | 1488 |
| November | 1440 |
| December | 1488 |

## Table IX. Monthly Average Precipitation (Inches)

(Data was collected from the Cloverdale Weather Station, NCDC #1838, values are based upon averages recorded from the years of 1950 to 2008)

| Month | Average Monthly Precipitation (Inches) |
|---|---|
| January | 9.29 |
| February | 7.73 |
| March | 5.53 |
| April | 2.84 |
| May | 1.07 |
| June | 0.21 |
| July | 0.04 |
| August | 0.13 |
| September | 0.54 |
| October | 2.35 |
| November | 5.77 |
| December | 8.29 |
| Total Yearly Average | 43.79 |

## Table X. Monthly Crop Evapotranspiration (Inches)

(Data was determined by Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. The below data refers to a Zone 8, Wet Year, Pasture and Misc. Grasses)

| Month | Crop Evapotranspiration (Inches) |
|---|---|
| January | 0.47 |
| February | 0.98 |
| March | 2.73 |
| April | 4.11 |
| May | 4.03 |
| June | 4.71 |
| July | 5.92 |
| August | 5.65 |
| September | 3.78 |
| October | 3.23 |
| November | 1.02 |
| December | 0.98 |

**Table XI. Monthly Allowable Discharge Volume (gal)**

| Alternative A | Allowable Discharge | | | | |
|---|---|---|---|---|---|
| Month | Net Evapotranspiration (Inches) | Percolation (Inches) | Maximum Depth of Discharge per Month (Inches) | Maximum Allowable Discharge Volume per 4 Acres (gal) | Monthly Discharge Less the Landscape Irrigation (gal) |
| January | 0 | 1488 | NA | 0 | 0 |
| February | 0 | 1344 | NA | 0 | 0 |
| March | 0 | 1488 | NA | 0 | 0 |
| April | 1.27 | 1440 | NA | 0 | 0 |
| May | 2.96 | 1488 | 745.48 | 80966285 | 2722101 |
| June | 4.5 | 1440 | 1444.5 | 156886567 | 4777018 |
| July | 5.88 | 1,488 | 1493.88 | 162249709 | 4721465 |
| August | 5.52 | 1488 | 1493.52 | 162210610 | 4821560 |
| September | 3.24 | 1440 | 1443.24 | 156749719 | 5081472 |
| October | 0.88 | 1488 | NA | 0 | 0 |
| November | 0 | 1440 | NA | 0 | 0 |
| December | 0 | 1488 | NA | 0 | 0 |
| Note: The month of May's Net Evaporation only takes into account 1/2 the precipitation and evapotranspiration | | | | | |

## Determining the Applied Discharge Percolation Rate:

The following calculations and table calculate the applied percolation and soil application rates when dispersing the discharge volumes found in Table XIII. "Required Monthly Pond Volume" in the Wastewater Pond Sizing Calculations section over the 4 acre area.

**Design Parameters:**

Dispersal Area = 4 acres

Precipitation Values found in Table IX above

Crop Evapotranspiration values found in Table X above

Net Evapotranspiration = Crop Evapotranspiration – Precipitation (in)
(If less than zero, then use zero) (Values found in Table IX above)

Depth of Discharge per Month = (in)

$$12\,{}^{inch}\!/_{ft}\left(\frac{MonthlyDischargeVolume - LandscapeIrrigationDischarge}{(4acre(43560\left({}^{sf}\!/_{acre}\right))(7.48\,{}^{gal}\!/_{ft^3})}\right)$$

Applied Percolation Rate per Month (in)
= Depth of Discharge – Net Evapotranspiration

Applied Percolation Rate per Hour
= Applied Percolation Rate per Month/Allowable Discharge Hours

**Table XII. Applied Percolation Rate (Inch/Hour)**

| Alternative A | Minimum Percolation Rate | | | | |
|---|---|---|---|---|---|
| Month | Amount Required to be Discharged (gal) | Applied Discharge Height (Inches) | Applied Percolation per Month (inches) | Applied Percolation Rate (inches/hour) | Applied Soil Application Rate (gal/sf/day) |
| January | 0 | 0.00 | NA | NA | NA |
| February | 0 | 0.00 | NA | NA | NA |
| March | 0 | 0.00 | NA | NA | NA |
| April | 0 | 0.00 | NA | NA | NA |
| May | 2722101 | 25.06 | 22.10 | 0.059 | 0.86 |
| June | 4777018 | 43.98 | 39.48 | 0.055 | 0.82 |
| July | 4721465 | 43.47 | 37.59 | 0.051 | 0.76 |
| August | 4821560 | 44.39 | 38.87 | 0.052 | 0.78 |
| September | 5081472 | 46.79 | 43.55 | 0.060 | 0.90 |
| October | 0 | 0.00 | NA | NA | NA |
| November | 0 | 0.00 | NA | NA | NA |
| December | 0 | 0.00 | NA | NA | NA |

The table above shows an approximate Applied Percolation Rate of 0.06 inch/hour, which corresponds to the Maximum Allowable Percolation Rate from the Wastewater Engineering Method. This predicts the need for at least 0.6 inch/hour percolation rate in the spray field soil to accept the projected discharge.

# Appendix K

## Phase II Environmental Investigations Reports

ESA

# PHASE II ENVIRONMENTAL INVESTIGATION REPORT

## Sirrah Property, Cloverdale, California

**Prepared for**
**Perry, Johnson, Anderson, Miller and Moskowitz LLP**

**March 2009**

# PHASE II ENVIRONMENTAL INVESTIGATION REPORT

## Sirrah Property, Cloverdale, California

**Prepared for**
**Perry, Johnson, Anderson, Miller and Moskowitz LLP**

**March 2009**

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ESA

# TABLE OF CONTENTS

## Phase II Environmental Investigation Report
## Sirrah Property, Cloverdale, California


| | | Page |
|---|---|---|
| 1. | Introduction | 1 |
| 2. | Site Overview | 1 |
| 3. | Field Investigation and Sample Analysis | 4 |
| 4. | Screening Criteria for Analytical Results | 6 |
| 5. | Investigation Results and Findings | 7 |
| 6. | Conclusions | 14 |
| 7. | Limitations and Exceptions | 14 |
| 8. | Signature of Environmental Professionals | 15 |
| 9. | References Cited | 16 |


**List of Figures**


| | | |
|---|---|---|
| 1. | Site Vicinity Map | 2 |
| 2. | Site Map and Sample Locations | 5 |


**List of Tables**


| | | |
|---|---|---|
| 1. | Background Metal Concentrations in Soil--Summary of Previous Studies | 8 |
| 2. | CAM 17 Metals in Surface Soil | 9 |
| 3. | Organochlorine Pesticides and Nitrate in Surface Soil | 10 |
| 4. | CAM 17 Metals in Ground Water and Surface Water | 12 |
| 5. | TPH-Gas, Diesel and Motor Oil (8015M), VOCs, and Pesticides in Ground Water | 13 |


**Appendices**


| | | |
|---|---|---|
| A. | Analytical Laboratory Reports | A-1 |

# PHASE II ENVIRONMENTAL INVESTIGATION REPORT

# 1. Introduction

Perry, Johnson, Anderson, Miller and Moskowitz LLP (PJAMM), retained Environmental Science Associates (ESA) to complete a Phase II environmental investigation report for a 37-acre parcel of land located south-southeast of downtown Cloverdale, California (herein referred to as the "Sirrah Property"; **Figure 1**). This investigation and resulting report is based on ESA's proposal for Phase II services dated September 4, 2008. The objective of this Phase II investigation was to evaluate the information and data gathered, primarily by Weiss, complete a Phase II report summarizing the data collected and findings, and from the findings, develop conclusions with regards to soil and groundwater contamination as it pertains to future site development.

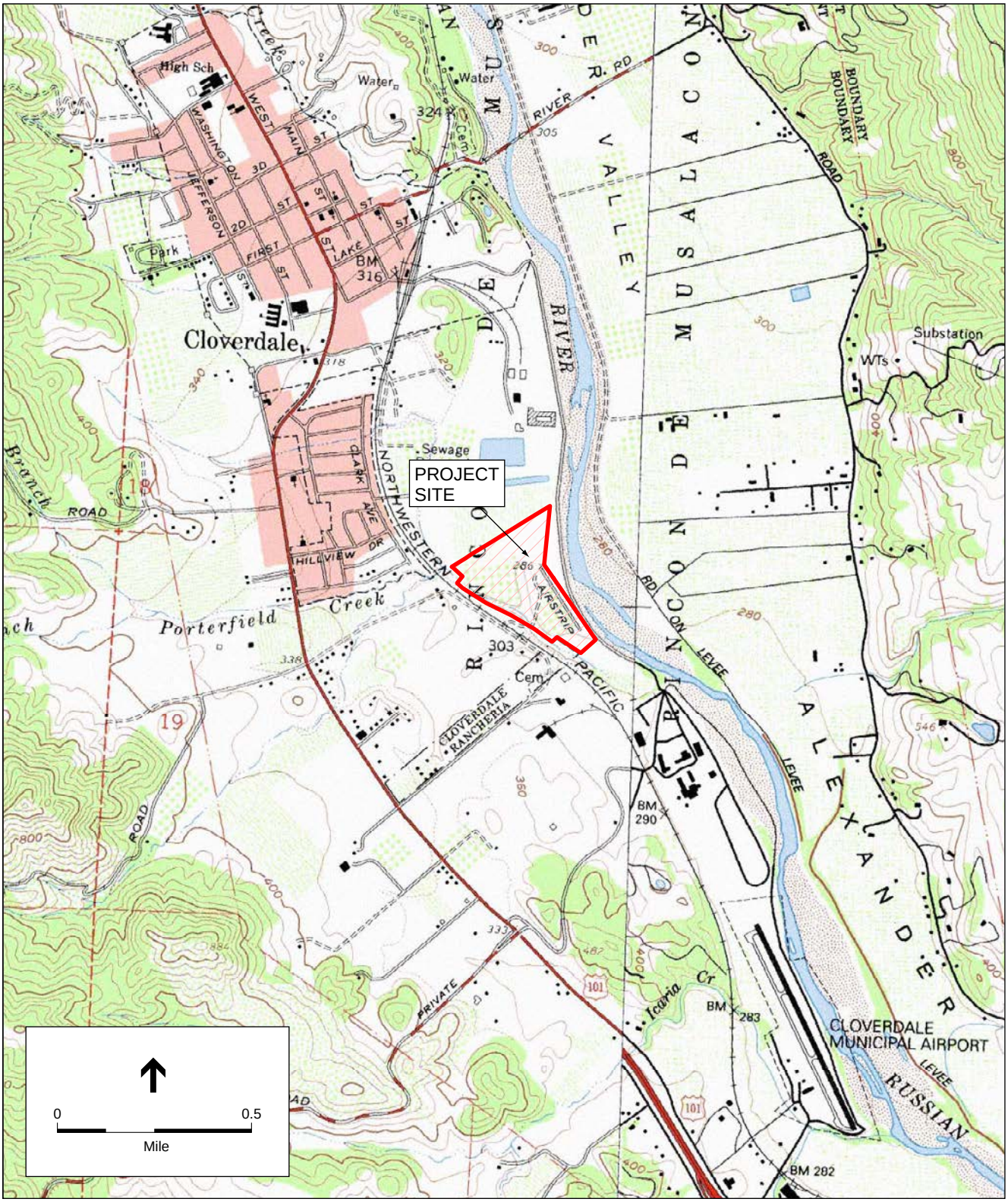
This report presents a summary of the investigation methods and procedures, investigation results, and an evaluation of environmental conditions based on the data collected. The scope of the Phase II investigation was based on conversations with PJAMM, and soil and groundwater data provided to ESA. ESA's investigation relied on the field investigation and reconnaissance work completed by Weiss Associates (Weiss) at the Sirrah Property. ESA also obtained additional lithologic and groundwater information from three groundwater wells that were recently installed on the Sirrah Property. ESA reviewed the data and information provided by Weiss for technical adequacy and included it in this report, as appropriate.

ESA understands that additional studies are currently underway to assess the potential development of water supplies at the Sirrah Property; this report does not address opportunities or constraints of developing a viable water supply on the Sirrah Property.

# 2. Site Overview

## Site Location and Description

The Sirrah Property is located in a rural area of Cloverdale, east and across Highway 101 from the downtown area and west of the Russian River (**Figure 1**). The property consists of parcel 116-310-044 (25 acres) and parcel 116-310-005 (12 acres), which are bound by the City Of Cloverdale Waste Water Treatment Facility to the north, rural vineyard property to the south, the Russian River to the east and Lile Lane and the Northwestern Pacific Railroad right-of-way to the west. The Amonos Property, subject of a similar Phase II investigation completed concurrently by ESA, is located immediately west of the Sirrah Property.




SOURCE: USGS 7.5' Cloverdale and Asti Quadrangles



**Figure 1**
Site Vicinity Map

The Sirrah Property is located on the flat-lying floodplain of the Russian River at an elevation of approximately 280 feet above mean sea level (amsl). The majority of property is currently under cultivation with vineyards and has been for about 32 years. The remaining acreage is uncultivated and vacant.

## Site Geology and Groundwater Conditions

The Sirrah Property is located in the Alexander Valley, which in this area, is also considered the Cloverdale Valley. The Alexander Valley is one of the many northwest trending valleys in the Coast Range Geomorphic Province that are bound by strike-slip (lateral displacement) faults. The Alexander Valley is likely a sediment filled valley that has been pulled apart by the Maacama and the Healdsburg Fault Zones.

The Sirrah Property lies within the eastern flank of the northern Coast Ranges, which is underlain by the Franciscan Complex, an assemblage of igneous, sedimentary, and metamorphic rocks. Bedrock underlying the project area is about 50 feet to 60 feet deep and consists of fractured dark greenish-gray shale of the Franciscan Formation. Overlying the bedrock assemblages in the project region are younger (10,000 to 1.6 million years old) alluvium and river channel deposits consisting of various clay, silt, sand, and gravel mixtures. Boring logs revealed that these alluvial sediments occur generally as alternating sandy clay mixtures and gravels from the surface to the interface with the bedrock. The sediment transport and depositional history of the Russian River has controlled the placement of the alluvial sediments and the horizontal and vertical distribution of these materials.

Groundwater beneath the Sirrah Property is present in the alluvium and underlying bedrock. The only formation capable of providing significant quantities of groundwater is the younger alluvium and river channel deposits. The Franciscan Bedrock tends to have a low specific yield. Groundwater in the alluvial deposits fluctuates seasonally and is, for the most part, controlled by the surface flow in the Russian River and groundwater flow from the adjacent upland areas to the west and east of the property. Groundwater flow beneath the Sirrah Property likely follows topography and flows in a general north-northeasterly direction towards the Russian River. According to a pump test conducted at the agricultural well located at 505 Lile Lane on the Sirrah Property, groundwater was 15 feet below ground surface in December 2008. The pump test extracted water at 100 gallons per minute for about 11 hours and the water level was lowered about 1.7 feet. Water level in the well recovered 100 percent (15 feet) following the pump test (County of Sonoma, 2008). Additional investigation is currently underway to determine the viability of a permanent water supply on the Sirrah Property and thus, further water supply analysis is not included in this report.

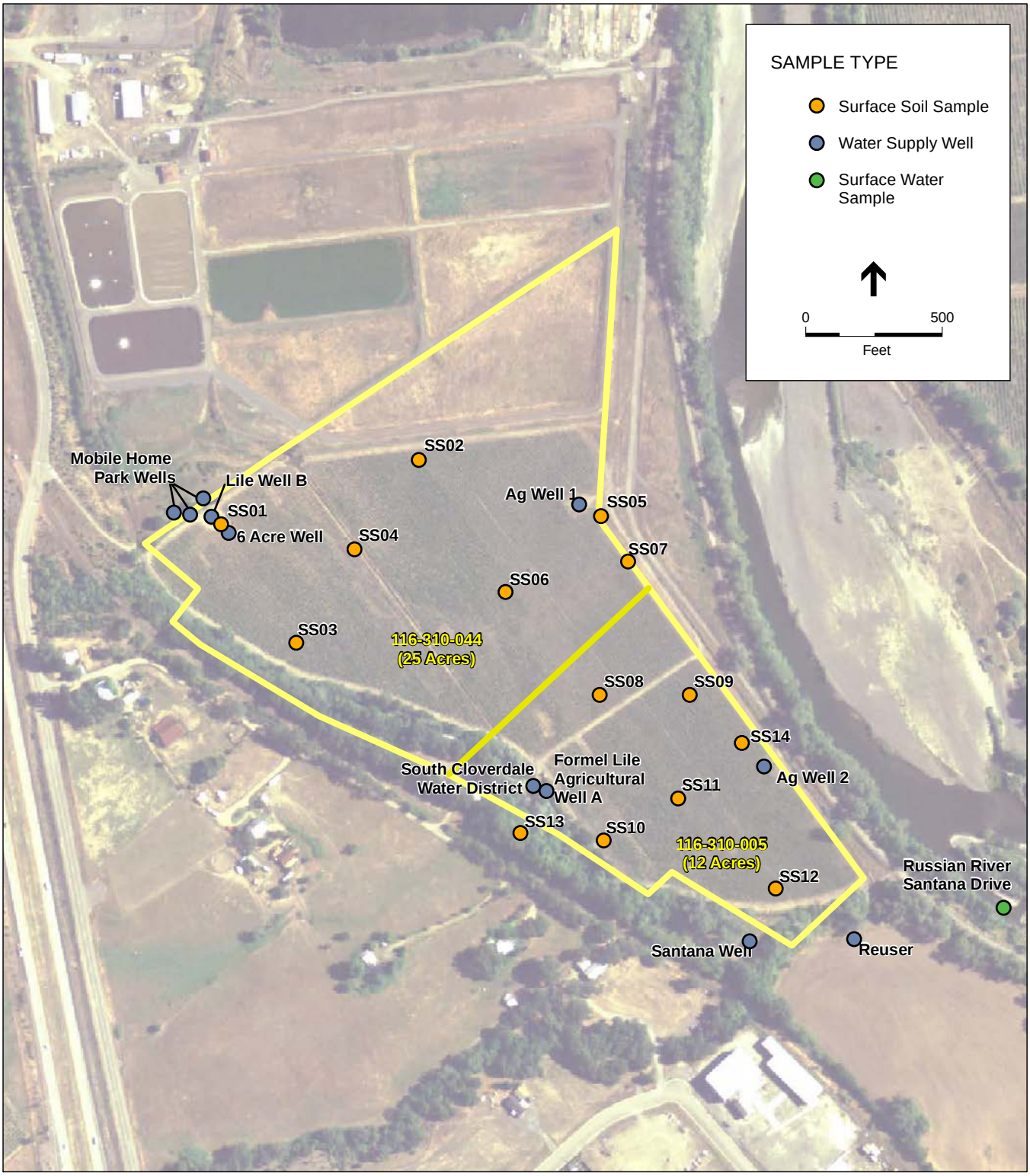
# 3. Field Investigation and Sample Analysis

Weiss sampled near surface soils, surface water, and groundwater and submitted the samples for chemical analysis by a California state-certified analytical laboratory. Soil samples were collected from 14, 1.5–foot deep, hand-augered soil borings at locations shown on **Figure 2**. Samples represented depths ranging from 0.5 feet to 1.5 feet. Boring locations were randomly selected throughout the Sirrah Property to obtain a representative sampling of the soil conditions. Sample collection from shallow borings is appropriate for evaluation of soil conditions in agricultural settings where the primary concern is the bioaccumulation of chlorinated pesticides, metals, and nitrates. Surface water samples were collected from the Russian River near Santana Drive. Groundwater samples were collected from three agricultural production wells (referred to as the "6 Acre Well," "Ag Well 1," and Former Lile Agricultural Well A, as shown on **Figure 2**).

Soil samples were analyzed for California Administrative Manual (CAM) metals, nitrate, and pesticides. This list of analytes is appropriate to evaluate shallow soils for chemical contamination in former and current vineyard settings. Surface water samples were analyzed for CAM-17 metals and groundwater samples were analyzed for CAM-17 metals, total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, TPH as motor oil, pesticides, chlorinated volatile organic compounds (VOCs), *E. coli* and total coliform. Additional analyses for general chemistry were also requested that are not applicable to this Phase II investigation report, as they were part of the water supply investigation. Analytical laboratory reports are provided in Appendix A.

Soil samples were collected from shallow hand-augered borings as disturbed samples and placed in polymer or glass containers. Water samples were collected in an appropriately sized container prepared by the laboratory. Soil and water quality analyses were performed by Curtis & Tompkins, LTD, a California state-certified laboratory, using EPA Methods 6010/6020/7410 for metals, 8260B for VOCs, 8015 for TPH, 8081A for pesticides, 8082 for PCBs, and 300.0 for nitrate as nitrogen. All samples were analyzed within the appropriate holding time for each of the analyses unless otherwise noted.

The quality assurance (QA) objectives for this Phase II Investigation report focused on assessing the appropriateness of data generated during the Phase II activities (precision, accuracy, completeness, comparability, and representative application and use), and evaluating the quality of data collected before the data was used as a basis for analysis. Quality control (QC) procedures included data reduction and validation for field and laboratory activities, and data acceptance criteria were defined and achieved. The soil and groundwater activities conducted by Weiss included the collection of samples throughout the site and along the property boundaries. Based on review of the data provided to ESA, it appears that Weiss generally adhered to industry-accepted methods and procedures for soil and groundwater sample collection, analysis and reporting.






SOURCE: Wiess Associates, NAIP 2005

**Figure 2**
Site Map and
Sample Locations

# 4. Screening Criteria for Analytical Results

To facilitate the evaluation of the analytical results of the soil and groundwater samples collected at the Sirrah Property, the data were compared using the San Francisco Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESLs; SFRWQCB, 2008) as the primary screening values for soil and groundwater. The ESLs that were used reflect both a residential and an industrial/commercial land use scenario and consider groundwater where groundwater is a current or potential source of drinking water.

The ESLs are considered to be conservative. Under most circumstances, and within the limitations described, the presence of a chemical in soil or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant, long term (chronic) threat to human health and the environment. Additional evaluation would generally be necessary at sites where a chemical is present at concentrations above the corresponding ESL. Active remediation may or may not be required depending on site specific conditions and considerations. The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is warranted (SFRWQCB, 2008).

Additionally, to facilitate the evaluation of analytical results for the surface water and groundwater samples collected at and near the Sirrah Property, the data were compared using the United States Environmental Protection Agency (USEPA) Drinking Water Maximum Contaminant Levels (MCL-USEPA) and California Department of Environmental Health Services Drinking Water Maximum Contaminant Levels (MCL-CDHS). These criteria reflect drinking water standards and are used because the future site development plans include the development of an on-site drinking water source. The feasibility of the water supply development is not addressed as part of this Phase II report, but water quality standards for drinking water purposes are relevant.

## Background Concentrations of Metals

Metals were detected in the soil and groundwater samples collected at the Sirrah Property. Some of these concentrations are considered elevated but can be attributed to naturally-occurring background concentrations. Elevated concentrations of metals in soil can occur due to natural and anthropogenic sources. Naturally occurring concentrations of metals depend on the geology of the source rock and the weathering processes and depositional environments of a given area. In the Coast Ranges Geomorphic Province, naturally occurring metals are common due to the ultramafic and mafic parent rock present in the mélange of the northern Coast Ranges. However, elevated concentrations of metals can also be introduced to soils by industrial activities (anthropogenic sources), such as through the application of herbicides, the use and storage of various chemicals, and the use of chemically treated woods.

Several reports document background concentrations of metals in soils collected throughout California from a variety of geologic units and soils. In Professional Paper 1270, “Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States” (USGS,

1984), the USGS cites a range of concentrations of naturally occurring metals in soil. In its paper titled, "Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory", Lawrence Berkeley National Laboratory (LBNL) cited a range of concentrations of metals in soil samples collected from the Great Valley sediments in the East Bay Hills. Additionally, the City of Oakland conducted a survey of background metal concentration studies and compiled additional literature resources to determine relevant background metal concentrations of soils (City of Oakland, 2008); a summary table of background metal concentrations compiled by the City of Oakland is included as **Table 1,** and includes the USGS and LBNL literature values.

# 5. Investigation Results and Findings

Soil and groundwater samples were collected from the Sirrah property at the locations shown on **Figure 2**. Analytical results obtained from the soil, surface water, and groundwater samples are presented in **Tables 1** through **4**. Observations and analytical results are presented in the sections below. Analytical laboratory reports are provided in Appendix A.

## Surface Soil

Laboratory results for soils analyses are presented in **Tables 2** (metals) and **Table 3** (nitrate and pesticides. Soil samples collected from the Sirrah Property contained metal concentrations characteristic of naturally-occurring background levels (**Table 1**). Soils samples contained antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, vanadium and zinc. Arsenic, mercury, nickel and vanadium were present in the samples at concentrations above the relevant residential ESL, while arsenic and nickel concentrations were above the relevant industrial/commercial ESL. The concentration range of arsenic (2.0 milligram per kilogram [mg/kg] to 4.5 mg/kg, mercury (2.0 mg/kg), nickel (100 mg/kg to 230 mg/kg), and vanadium (40 mg/kg to 57 mg/kg).

Because the future site development would be commercial, metals concentrations that exceed the relevant ESL for industrial/commercial land use scenarios are discussed further. Background arsenic and nickel concentrations can exceed ESL limits in many locations throughout the San Francisco Bay Area. LBNL reports a range of background arsenic concentration between 9.3 mg/kg and 31.0 mg/kg and background concentrations of chromium ranging between 24.8 mg/kg and 142.2 mg/kg. The background concentration for nickel ranges between 32.4 mg/kg and 144.3 mg/kg in the greater Bay Area, according to the LBNL report, and range of nickel reported for the western U.S. ranges from 5-500 mg/kg. Four soils samples exhibited concentrations of nickel (maximum 230 mg/kg) that exceeded the residential ESL, and are above the LBNL report for naturally occurring background concentrations of nickel. Given the narrow range of concentrations detected and the potential that background concentrations of nickel can exceed ESLs in the San Francisco Bay Area, the four concentrations of nickel over the ESL are considered background and do not indicate an active source of soil or groundwater contamination.

**TABLE 1**
**BACKGROUND METAL CONCENTRATIONS IN SOIL**
**SUMMARY OF PREVIOUS STUDIES**
**(concentrations reported in milligrams per kilogram [mg/kg])**

| Source | Antimony | Arsenic | Beryllium | Cadmium | Chromium | Copper | Lead | Mercury | Nickel | Selenium | Silver | Thallium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lawrence Berkeley National Laboratories[1] | 5.5 | 19.1 | 1.0 | 2.7 | 99.6 | 69.4 | 16.1 | 0.4 | 119.8 | 5.6 | 1.8 | 27.1 | 106.1 |
| -Colluvian & Fill[1] | 5.9 | 14 | 0.9 | 1.5 | 91.4 | 59.6 | 14.7 | 0.3 | 120.2 | 5.6 | 1.7 | 42.5 | 91.5 |
| -Great Valley Group[1] | 6.3 | 31 | 1.0 | 3.2 | 59.0 | 99.7 | 21.5 | 0.6 | 69.7 | 4.8 | 2.2 | 8.7 | 135.9 |
| -Moraga Formation[1] | 6.1 | 9.3 | 0.8 | 2.6 | 142.2 | 54.1 | 8.9 | 0.3 | 100.4 | 4.7 | 2 | 38.9 | 84.7 |
| -Orinda Formation[1] | 5.2 | 17.8 | 1.1 | 3.3 | 95.2 | 66.9 | 14.8 | 0.3 | 144.3 | 7 | 1.9 | 19.8 | 98.3 |
| -San Pablo Group[1] | 7.1 | 15.7 | 0.8 | 2.9 | 78.9 | 40.9 | 10.3 | 0.4 | 125.9 | 4.9 | 1.5 | 10.9 | 97.7 |
| San Leandro, CA[2] | <3-<15 | 1.8-5.9 | <0.25-<1.30 | <0.25-<1.30 | 24.8-43.0 | 11.8-68.0 | 3.3-10.4 | <0.10 | 2.93-43.6 | <0.25-<2.50 | <0.50-<2.50 | <0.50-<5.00 | 9.3-61.3 |
| Union City, CA[3] | 5 | 6.92-9.34 | 0.5-0.81 | 0.5-1.30 | 46.5-112 | 28.2-60.1 | 19.8-148 | 0.1-0.36 | 32.4-60.6 | 0.5 | 0.5 | 5.0 | 97.1-474 |
| Western U.S.[4] | -- | 1-50 | -- | 0.1-0.7 | 1-1,000 | 2-100 | 20-100 | 0.01-0.3 | 5-500 | -- | -- | -- | 10-300 |

**Notes:**

[1] = Lawrence Berkeley National Laboratory (LBNL) Environmental Restoration Program, 1995. 500 samples were taken from 71 locations representing 5 geologic units at LBNL: Colluvium & Fill, Great Valley group, Moraga formation, Orinda formation and San Pablo group. Concentrations listed are Upper 95% Confidence Limits of data from 71 monitoring well borings.

[2] = Chemical Testing on Background Soil Samples: Roberts Landing Development Site, San Leandro, CA, 1994.

[3] = Site Wide Remedial Investigation: Pacific States Steel Corp. Union City, CA, 1992.

[4] = USEPA (found in Remedial Investigation Report, Hercules Properties, Inc., 1991).

SOURCE: City of Oakland, 2008

**TABLE 2**
**CAM 17 METALS IN SURFACE SOIL**
**SIRRAH PROPERTIES, CLOVERDALE, CALIFORNIA**

| Sample Location | Sample ID | Date | Depth (ft bgs) | Sb | As | Ba | Be | Cd | Cr | Co | Cu | Pb | Hg | Mo | Ni | Se | Ag | Tl | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | << | | | | | | | | *mg/kg* | | | | | | | | >> |
| SS01 | 0208-01 | 02/19/08 | 0.5 | 1.8 | **4.5** | 130 | 0.39 | 0.41 | 110 | 22 | 37 | 7.4 | 0.32 | <0.25 | **200** | <0.50 | <0.25 | <0.50 | **54** | 57 |
| SS02 | 0208-02 | 02/19/08 | 0.5 | 1.8 | **3.1** | 150 | 0.38 | 0.31 | 84 | 15 | 27 | 5.6 | 0.94 | <0.25 | 130 | <0.50 | <0.25 | <0.50 | **42** | 52 |
| SS03 | 0208-03 | 02/19/08 | 0.5 | 1.8 | **4.0** | 140 | 0.38 | 0.42 | 120 | 24 | 34 | 6.9 | 0.22 | <0.25 | **230** | <0.50 | <0.25 | <0.50 | **57** | 47 |
| SS04 | 0208-04 | 02/19/08 | 0.5 | <0.50 | **3.1** | 160 | 0.37 | 0.33 | 83 | 15 | 30 | 7.1 | **2.0** | <0.25 | 130 | <0.50 | <0.25 | <0.50 | **41** | 48 |
| SS05 | 0208-05 | 02/20/08 | 0.5 | 0.50 | **2.0** | 120 | 0.33 | 0.35 | 76 | 13 | 26 | 5.4 | 0.76 | <0.25 | 100 | <0.50 | <0.25 | <0.50 | **40** | 54 |
| SS06 | 0208-06 | 02/19/08 | 0.5 | 0.89 | **2.7** | 140 | 0.38 | 0.32 | 79 | 14 | 31 | 7.4 | 0.11 | <0.25 | 120 | <0.50 | <0.25 | <0.50 | **43** | 64 |
| SS07 | 0208-07 | 02/20/08 | 0.5 | <0.50 | **2.1** | 120 | 0.32 | 0.34 | 82 | 13 | 24 | 4.9 | 0.24 | <0.25 | 110 | <0.50 | <0.25 | <0.50 | **43** | 54 |
| SS08 | 0208-08 | 02/20/08 | 0.5 | 0.61 | **3.2** | 140 | 0.34 | 0.30 | 77 | 13 | 25 | 4.2 | 0.96 | <0.25 | 110 | <0.50 | <0.25 | <0.50 | **41** | 50 |
| SS09 | 0208-09 | 02/19/08 | 0.5 | 1.6 | **2.8** | 150 | 0.36 | 0.37 | 86 | 14 | 27 | 5.7 | 1.2 | <0.25 | 120 | <0.50 | <0.25 | <0.50 | **42** | 59 |
| SS10 | 0208-10 | 02/19/08 | 0.5 | 1.2 | **3.1** | 130 | 0.36 | 0.33 | 83 | 14 | 32 | 6.0 | 0.47 | <0.25 | 130 | <0.50 | <0.25 | <0.50 | **42** | 62 |
| SS11 | 0208-11 | 02/19/08 | 0.5 | <0.50 | **2.6** | 150 | 0.37 | 0.33 | 82 | 14 | 33 | 6.6 | 0.73 | <0.25 | 120 | <0.50 | <0.25 | <0.50 | **42** | 56 |
| SS12 | 0208-12 | 02/19/08 | 0.5 | 1.1 | **3.3** | 120 | 0.32 | 0.33 | 96 | 18 | 32 | 7.2 | 0.28 | <0.25 | **170** | <0.50 | <0.25 | <0.50 | **42** | 53 |
| SS13 | 0208-13 | 02/20/08 | 0.5 | <0.50 | **4.4** | 120 | 0.33 | 0.33 | 82 | 18 | 32 | 6.7 | 0.41 | <0.25 | **190** | <0.50 | <0.25 | <0.50 | **41** | 63 |
| SS14 | 0208-14 | 02/19/08 | 0.5 | <0.50 | **2.2** | 140 | 0.35 | 0.31 | 70 | 13 | 120 | 5.4 | 0.70 | <0.25 | 110 | <0.50 | <0.25 | <0.50 | **43** | 90 |
| | | Residential ESL | | 6.3 | 0.39 | 750 | 4.0 | 1.7 | 750/8[1] | 40 | 225 | 200 | 1.3 | 40 | 150 | 10 | 20 | 1.3 | 16 | 600 |
| | | Commercial/Industrial ESL | | 40 | 1.6 | 1500 | 8.0 | 7.4 | 750/8[1] | 80 | 225 | 750 | 10 | 40 | 150 | 10 | 40 | 16 | 200 | 600 |

**Abbreviations:**

Ag = Silver
As = Arsenic
Ba = Barium
Be = Beryllium
CAM = California Assesment Method
Cd = Cadmium
Co = Cobalt
Cr = Chromium
Cu = Copper
ft bgs = feet below ground surface
Hg = Mercury
mg/kg = milligrams per kilogram
Mo = Molybdenum
Ni = Nickel
Pb = Lead
Sb = Antimony
Se = Selenium
Ss = Soil sample
Tl = Thallium
USEPA = U.S. Environmental Protection Agency chemical analytical method
V = Vanadium
Zn = Zinc

**Notes:**

Analysis for CAM 17 Metals by USEPA Method 6020 and Mercury by USEPA Method 7471A. All samples analyzed by Curtis and Tompkins, Berkeley, California

**Bold** = Result exceeds screening level for that analyte.

ESL = Environmental Screening Levels, from "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater" where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

[1] = There is no ESL for total chromium. However, the ESL for chromium III at 750 mg/kg and for chromium VI at 8 mg/kg are shown on the table and were used for screening purposes.

**TABLE 3**
**ORGANOCHLORINE PESTICIDES**
**AND NITRATE IN SURFACE SOIL,**
**SIRRAH PROPERTIES, CLOVERDALE, CA**

| Boring ID | Sample ID | Date | Depth (ft bgs) | Nitrate (300) | 4,4′-DDD | 4,4′-DDE | 4,4′-DDT | alpha Chlor-dane | gamma-Chlor-dane | Other Pesticides (8081) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | << | | | *mg/kg* | | | >> |
| SS01 | 0208-01 | 02/19/08 | .05 | 0.5 | <0.0032 | 0.03 # | 0.02 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS02 | 0208-02 | 02/19/08 | .05 | <0.5 | <0.0033 | 0.027 # | 0.0099 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS03 | 0208-03 | 02/19/08 | .05 | 0.7 | <0.0033 | <0.0033 | <0.0033 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS04 | 0208-04 | 02/19/08 | .05 | <0.5 | <0.0033 | 0.09 # | 0.035 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS05 | 0208-05 | 02/20/08 | .05 | <0.5 | <0.0033 | 0.038 # | 0.014 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS06 | 0208-06 | 02/19/08 | .05 | <0.5 | <0.0033 | 0.017 # | 0.0086 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS07 | 0208-07 | 02/20/08 | .05 | 2.0 | <0.0033 | <0.0033 | <0.0033 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS08 | 0208-08 | 02/20/08 | .05 | <0.5 | <0.0033 | 0.012 | 0.0046 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS09 | 0208-09 | 02/19/08 | .05 | 0.8 | <0.0033 | 0.037 # | 0.016 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS10 | 0208-10 | 02/19/08 | .05 | <0.5 | <0.0033 | 0.011 C | 0.0057 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS11 | 0208-11 | 02/19/08 | .05 | 0.6 | <0.0033 | 0.027 # | 0.011 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS12 | 0208-12 | 02/19/08 | .05 | 1.3 | <0.0033 | 0.0040 # | <0.0033 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS13 | 0208-13 | 02/20/08 | .05 | 1 | <0.0033 | <0.0033 | <0.0033 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| SS14 | 0208-14 | 02/19/08 | .05 | 1.1 | <0.0033 | 0.022 # | 0.0080 | <0.0017 | <0.0017 | <0.0017 - <0.060 |
| | | | ESL:[1] | NE | 2.4 | 1.7 | 1.7 | 0.44 | 0.44 | NA |

**Abbreviations:**

ft bgs = feet below ground surface
mg/kg= milligrams per kilogram
NE = not established

**Notes:**

All samples analyzed by Curtis Tompkins, Berkeley, California.

**Bold** = Result exceeds screening level for that analyte.

\# = CCV drift outside limits; average CCV drift within limits per method requirements.

C = Presence confirmed, but RPD between columns exceeds 40%.

NA = Not Applicable because screening levels or criteria are establishedfor individual compounds in group and /or no compounds in the group were detected.

[1] = ESL: Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by California Regional Water Quality Control Board San Francisco Bay Region, 1515 Clay Street, Suite 1400, Oakland, California, 94612, November 2007 (Revised May 2008), Table A. Shallow Soil Screening Levels (less than or equal to 3 meters below ground surface), Residential Land Use (potentially impacted groundwater is a current or potential drinking water resource).

Alpha and gamma chlordane do not have an established ESL, therefore the total chlordane ESL of 0.44 mg/kg was used for each of these analytes.

Nitrates were detected at very low concentrations (0.5 mg/kg to 2.0 mg/kg) in the soil samples. These concentrations do not indicate nitrate contamination in the soils. Organochlorine pesticides (4,4-DDD, 4,4-DDE, and 4,4-DDT) were detected at very low concentrations ranging from 0.0033 mg/kg to 0.035 mg/kg. The residential ESL is 2.4 mg/kg for 4,4-DDD and 1.7 mg/kg for 4,4-DDE and 4,4 DDT—the detected concentrations are well below the residential ESLs. The trace pesticide detections in the soils likely reflect residual concentrations from past use when these chemicals were legal and used widely in agricultural. Organochlorine pesticides, such as DDT, can remain in the environment for many years in trace amounts following initial application.

## Surface Water and Groundwater

Analytical results of metals detected the surface water and groundwater samples are summarized on **Tables 4** and **5**, with the corresponding maximum contaminant levels (MCLs) set forth by the US Environmental Protection Agency (USEPA) and California Department of Health Services (CDHS). Metals concentrations in surface water and groundwater with reported detections above their laboratory detection limits were arsenic, barium, cobalt, copper, molybdenum, nickel, vanadium and zinc. The levels detected are characteristic of naturally-occurring concentrations and do not suggest a groundwater contamination source. No detected metals concentrations were above the relevant USEPA or CDHS groundwater MCL.

Volatile organic compounds, pesticides, TPH as gasoline and motor oil were not detected in the groundwater samples above the method laboratory detection limits (see **Table 3**). TPH as diesel was detected in the three agricultural wells at low concentrations ranging from 51 to 67 micrograms per liter (µg/L); the ESL for diesel is 100 µg/L. The laboratory noted that the samples exhibited a chromatographic pattern that does not resemble the diesel standard. This can occur if the petroleum in the water is aged and degraded. The source of the diesel-like compound in the well water is not known but based on its low level and degraded nature, the concentration could represent a localized detection originating from petroleum lubrication used in the well pump.

*E. Coli* was not detected in any of the monitoring wells sampled and total coliform was detected at a concentration of 1 Most Probable Number per 100 milliliters (MNP/100 ml) in Ag Well 1, 23 MPN/100ml in the 6 Acre Well, 110 MPN/100 ml in the Former Lile Agricultural Well A, and 2,000 MPN/100 ml in the water sample collected from the Russian River.[1]

[1] Coliform bacteria are organisms that are present in the environment and in the feces of all warm-blooded animals and humans. Coliform bacteria will not likely cause illness. However, their presence in drinking water indicates that disease-causing organisms (pathogens) could be in the water system. Total coliform bacteria are commonly found in the environment (e.g., soil or vegetation) and are generally harmless. If only total coliform bacteria are detected in drinking water, the source is probably environmental. Fecal contamination is not likely. However, if environmental contamination can enter the system, there may also be a way for pathogens to enter the system. Total coliform, fecal coliform, and *E. coli* are all indicators of drinking water quality. The total coliform group is a large collection of different kinds of bacteria. Fecal coliforms are types of total coliform that mostly exist in feces. *E. coli* is a sub-group of fecal coliform.

**TABLE 4**
**CAM 17 METALS IN GROUND WATER AND SURFACE WATER**
**SIRRAH PROPERTIES, CLOVERDALE, CALIFORNIA**

| Sample Location | Sample ID | Date | Sb | As | Ba | Be | Cd | Cr | Co | Cu | Pb | Hg | Mo | Ni | Se | Ag | Tl | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | << | | | | | | | | µg/L | | | | | | | | >> |
| 6 Acre well | 6 Acre Well | 09/10/03 | --- | --- | --- | --- | --- | --- | --- | <50 | --- | --- | --- | --- | --- | --- | --- | --- | <50 |
| | 6 Acre Well | 06/27/07 | <6 | <2 | 180 | <1 | <1 | <1 | --- | <50 | --- | <1 | --- | 13 | <5 | <10 | <1 | --- | <50 |
| | 0308-01 | 03/10/08 | <1.0 | <1.0 | 150 | <1.0 | <1.0 | <1.0 | <1.0 | 1.6 | <1.0 | <0.20 | <1.0 | 4.6 | <1.0 | <1.0 | <1.0 | 1.1 | <5.0 |
| Ag well 1 | 0308-02 | 03/10/08 | <1.0 | 1.6 | 200 | <1.0 | <1.0 | <1.0 | 2.0 | 5.8 | <1.0 | <0.20 | 1.3 | 14 | <1.0 | <1.0 | <1.0 | 1.9 | 9.6 |
| Artesian Spring | 0408-11 | 04/11/08 | <1.0 | <1.0 | 9.2 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.20 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 1.9 | <5.0 |
| Fore Lile Agricultural Well A | 0308-03 | 03/10/08 | <1.0 | <1.0 | 86 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.20 | <1.0 | <1.5 | <1.0 | <1.0 | <1.0 | 1.1 | <5.0 |
| Russian River at Santana Drive | 0408-10 | 04/11/08 | <1.0 | <1.0 | 74 | <1.0 | <1.0 | <1.0 | <1.0 | 1.9 | <1.0 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 38 |
| South Cloverdale Water District Well | South Cloverdale Water District Well | 06/27/07 | <6 | <2 | 110 | <1 | <1 | 1.5 | --- | <50 | --- | <1 | --- | <10 | <5 | <10 | <1 | --- | <50 |
| | MCL-USEPA:[1] | | 6 | 10 | 2,000 | 4 | 5 | 100 | NE | 1,300 | 15 | 2 | NE | Ne | 50 | NE | 2 | NE | NE |
| | MCL-CDHS:[2] | | 6 | 50 | 1,000 | 4 | 5 | 50 | NE | 1,000 | 15 | 2 | NE | 100 | 50 | NE | 2 | NE | NE |

**Abbreviations:**

Ag = Silver
As = Arsenic
Ba = Barium
Be = Beryllium
Cd = Cadmium
Co = Cobalt
Cr = Chromium
Cu = Copper
ft bgs = feet below ground surface
Hg = Mercury
µg/L= micrograms per liter
Mo = Molybdenum
NE= not established
Ni = Nickel
Pb = Lead
Sb = Antimony
Se = Selenium
Tl = Thallium
V = Vanadium
Zn = Zinc

**Notes:**

Data for the Six Acre Well from September 10, 2003 and June 27, 2007 and South Cloverdale Water District Well from June 27, 2007 were taken from data sheets provided by California Department of Health and Services, Field Testing Division.

Analysis for CAM 17 Metals by USEPA Method 6010B and Mercury by USEPA Method 7471A. All samples analyzed by Curtis and Tompkins, Berkeley, California

**Bold** = Result exceeds most stringent screening level for that analyte.

[1] = MCL-USEPA: Maximum Contaminant Level, the USEPA Drinking Water Maximum Contaminant Levels, September 2007.

[2] = MCL-CDHS: Maximum Contaminant Level, the California Department of Health Services Drinking Water Maximum Contaminant Levels, September 2007.

**TABLE 5**
**TPH-GAS, DEISEL AND MOTOR OIL (8015M)**
**VOCS, AND PESTICIDES IN GROUND WATER,**
**SIRRAH PROPERTIES, CLOVERDALE, CALIFORNIA**

| Sample Location | Name | Date | VOCs (8260B) | Pesticides (8081A) | TPH-Gas (8015M) | TPH-Diesel (8015M) | TPH-Motor Oil (8015M) |
|---|---|---|---|---|---|---|---|
| | | | << ——— µg/L ——— >> | | | | |
| 6 Acre well | 6 Acre Well | 09/10/03 | <0.5 - <10 | <0.50 - <1.0 | --- | --- | --- |
| | 6 Acre Well | 06/27/07 | <0.5 - <1,750 | --- | --- | --- | --- |
| | 0308-01 | 03/10/08 | <0.5 - <10 | <0.50 - <1.0 | <50 | 60 Y | <3000 |
| Ag well 1 | 0308-02 | 03/10/08 | <0.5 - <10 | <0.50 - <1.0 | <50 | 67 Y | <300 |
| Former Lile Agricultural Well A | 0308-03 | 03/10/08 | <0.5 - <10 | <0.50 - <1.0 | <50 | 51 Y | <300 |
| South Cloverdale Water District Well | South Cloverdale Water District Well | 06/27/07 | <0.5 - <1,750 | --- | --- | --- | --- |
| | MCL-USEPA:[1] | | NA | NA | NE | NE | NE |
| | MCL-CDHS:[2] | | NA | NA | NE | NE | NE |
| | ESL:[3] | | NA | NA | 100 | 100 | 100 |

**Abbreviations:**

µg/L = micrograms per liter
NE = not established
TPH = Total Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds

**Notes:**

Data for the Six Acre Well from September 10, 2003 and June 27, 2007 and South Cloverdale Water District Well from June 27, 2007 were taken from data sheets provided by California Department of Health and Services, Field Testing Division.

All samples analyzed by Curtis and Tompkins, Berkeley, California.

**Bold** = Result exceeds the most stringent screening level for that analyte.

NA = Not Applicable because screening levels or criteria are established for individual compounds in group and /or no compounds in the group were detected.

Y = Sample exhibits chromatographic pattern which does not resemble standard.

[1] = MCL-USEPA: Maximum Contaminant Level, the USEPA Drinking Water Maximum Contaminant Levels, September2007.

[2] = MCL-CDHS: Maximum Contaminant Level, the California Department of Health Services Drinking Water Maximum Contaminant Levels, September 2007.

[3] = ESL: Environmental Screening Level, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by San Francisco Bay Regional Water Quality Control Board, Interim Final – November 2007 (Revised May 2008), Table F. Surface Water Screening Levels (freshwater). The ESL classification for TPH-Diesel corresponds to TPH-middle distillates and TPH-Motor Oil corresponds to TPH-residual fuel.

ESLs used for TPHs because MCLs are not established

# 6. Conclusions

This Phase II investigation effort reviewed and evaluated soil and groundwater sampling and analysis work conducted to assess the potential environmental impacts to soil and groundwater at the Sirrah Property in Cloverdale, California. The field investigation and sampling program conducted for this Phase II was appropriate given the past and present use of the property as a vineyard. Available information and data reviewed for the Sirrah Property indicates that historical and ongoing site uses have not resulted in notable soil or groundwater contamination on the Sirrah Property.

Concentrations of metals in the soil, surface water (Russian River) and groundwater appear to be characteristic of naturally-occurring background levels although there are a few instances of metals concentrations exceeding the ESLs. Considering the geologic environment, especially in the northern Coast Ranges region, it is not uncommon for background metals to exceed ESLs. Overall, the metals detected do not suggest a surface contaminant source or a more widespread soil and groundwater contamination issue.

The total coliform detected in the property groundwater wells may indicate that the groundwater and surface water at the Sirrah Property is impacted by the upstream and adjacent City of Cloverdale Waste Water Treatment Facility. Other sources of total coliform include faulty well seals that do not isolate the screened zone of the well from surface infiltration. The presence of total coliform, however, is not considered an impediment to development of the Sirrah Property because if a potable water system is developed, the California Department of Health Services would require that the production well and water treatment system be designed to treat and eliminate concentrations of total coliform in the potable water supply, and meet MCL-CDHS standards for the delivery of potable water.

Detections of residual pesticides at very low concentrations in the soil and low levels of degraded diesel do not represent an ongoing impact to soil and groundwater and the levels are well below the ESL screening criteria used to protect human health and the environment. Nitrates and pesticide concentrations detected in soils do not indicate significant residual soil contamination by agricultural fertilizers, herbicides, or pesticides.

This Phase II investigation did not reveal soil and groundwater conditions that would impede the future development of the Sirrah Property for the proposed commercial land use.

# 7. Limitations and Exceptions

The opinions and recommendations presented in this report are based upon the scope of services, information obtained from PJAMM from previous site investigation activities, and the schedule as agreed upon by ESA and PJAMM. Site specific activities performed by Weiss Associates and information collected regarding these activities, were reviewed by ESA to the extent practical for use in this Phase II Investigation Report. To the extent that ESA relied upon any information prepared by other parties not under contract to ESA, ESA makes no representation as to the

accuracy or completeness of such information beyond the reasonable evaluation of site activities and analytical data received. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the environmental consulting industry. It must be recognized, however, that this Phase II was intended for the purpose of determining and characterizing the potential extent for contamination and does represents a conclusive or complete site characterization. ESA's ability to interpret investigation results is dependant on the availability of the data and the extent of the investigation activities. The conclusions and recommendations presented in this Phase II pertain to the conditions judged to be present or applicable at the site (Sirrah Property, Cloverdale California) and the time the work was performed. ESA developed its opinions in accordance with accepted site assessment and engineering practices for this time and specific site. It should be understood that some of the findings presented in this report are based on analytical results of soil and groundwater samples collected at select onsite locations. These results may not reflect conditions at locations not sampled. As such, 100 percent confidence in Phase II conclusions cannot be reasonably achieved. The interpretations and conclusions contained in this report represent our professional opinions. Other than this, no warranty is implied or intended.

# 8. Signature of Environmental Professionals

This Phase II Investigation Report has been prepared by ESA staff whose signatures appear below. The recommendations, specifications, and methodologies presented herein were prepared and presented in accordance with generally accepted practices at the time that this report was prepared, and are true and correct to the best of our knowledge.

**Prepared by:**

Peter B. Hudson
Senior Geologist
PG # 6730, CEG # 2348 Expires 10/31/09

# 9. References Cited

City of Oakland, 2008. City of Oakland, Survey of Background Metal Concentrations Studies. Available at http://www.oaklandpw.com/Asset1116.aspx, accessed December 2008.

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San Francisco, Regional Water Quality Control Board, 2008. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final – November 2007 (Revised May 2008).

United States Geological Survey (USGS), 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, Professional Paper 1270.

# APPENDIX A

## Analytical Laboratory Reports

Please Note: Analytical laboratory reports in “hard-copy” format were not available at the time of publication of this document. Laboratory data in electronic spreadsheet format is available on request from Perry, Johnson, Anderson, Miller and Moskowitz LLP.

# PHASE II ENVIRONMENTAL INVESTIGATION REPORT

## Amonos Site, Cloverdale, California

**Prepared for**
**Perry, Johnson, Anderson, Miller and Moskowitz LLP**

**March 2009**

# PHASE II ENVIRONMENTAL INVESTIGATION REPORT

## Amonos Site, Cloverdale, California

**Prepared for**
**Perry, Johnson, Anderson, Miller and Moskowitz LLP**

**March 2009**

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**208262**

ESA

# TABLE OF CONTENTS

## Phase II Environmental Investigation Report
## Amonos Site, Cloverdale, California


| | Page |
|---|---|
| 1. Objective | 1 |
| 2. Site Overview | 1 |
| 3. Investigation Activities | 4 |
| 4. Screening Criteria | 12 |
| 5. Investigation Results and Findings | 13 |
| 6. Conclusions | 25 |
| 7. Limitations and Exceptions | 26 |
| 8. Signature of Environmental Professionals | 27 |
| References Cited | 28 |


**List of Figures**


| | |
|---|---|
| 1. Site Vicinity Map | 2 |
| 2. Site Map and Soil Boring Sample Locations | 5 |
| 3. Site Map and Groundwater Sample Locations | 8 |


**List of Tables**


| | |
|---|---|
| 1. Amonos Site Phase II Investigation Sample Matrix, Shallow and Deep Soil Locations | 9 |
| 2. Amonos Site Phase II Investigation Sample Matrix, Grab Groundwater and Monitoring Well | 10 |
| 3. Background Metal Concentrations in Soil, Summary of Previous Studies | 14 |
| 4. Analytical Results for Detected Metals in Shallow and Deep Soil Samples | 15 |
| 5. Analytical Results for Detected Metals in Grab and Monitoring Well Groundwater Samples | 19 |
| 6. Analytical Results for VOCs and TPH in Shallow and Deep Soil Samples | 21 |
| 7. Analytical Results for VOCs and TPH in Grab and Monitoring Well Groundwater Samples | 22 |
| 8. Analytical Results for Pesticides in Soil Samples and Grab Groundwater Samples | 26 |

Page

## Appendices

A. Drilling Permits, Field Notes, Boring Logs, Well Elevation Survey A-1
B. Quality Assurance and Quality Control Summary B-1
C. Analytical Laboratory Reports C-1

# PHASE II ENVIRONMENTAL INVESTIGATION REPORT

Perry, Johnson, Anderson, Miller and Moskowitz LLP (PJAMM), retained Environmental Science Associates (ESA) to complete a Phase II environmental investigation report for properties located at 208, 250 and 496 Lile Lane and 585 Santana Drive in Cloverdale, California (herein referred to as the "Amonos site"; **Figure 1**). ESA's investigation relied on previously prepared reports including the Phase I reports completed for the Amonos site by Geomatrix Consultants Inc. (Geomatrix) (Geomatrix; 2007a and 2007b) and the Due Diligence Report prepared by Weiss Associates (Weiss) (Weiss; 2007). Additional information provided to ESA for this investigation included soil and groundwater data collected by Weiss at the Amonos site. ESA reviewed the Weiss data for technical adequacy and included the data in this report as appropriate.

This report presents a summary of the investigation methods and procedures, ESA's quality assurance and quality control verification, investigation results, and an evaluation of environmental conditions based on the data collected. ESA understands that development of water supplies at the Amonos site is not expected as part of the potential future site development; therefore, consideration of water supply development is not addressed in this report. This investigation and resulting report is based on ESA's proposal and bid for Phase II services dated September 4, 2008.

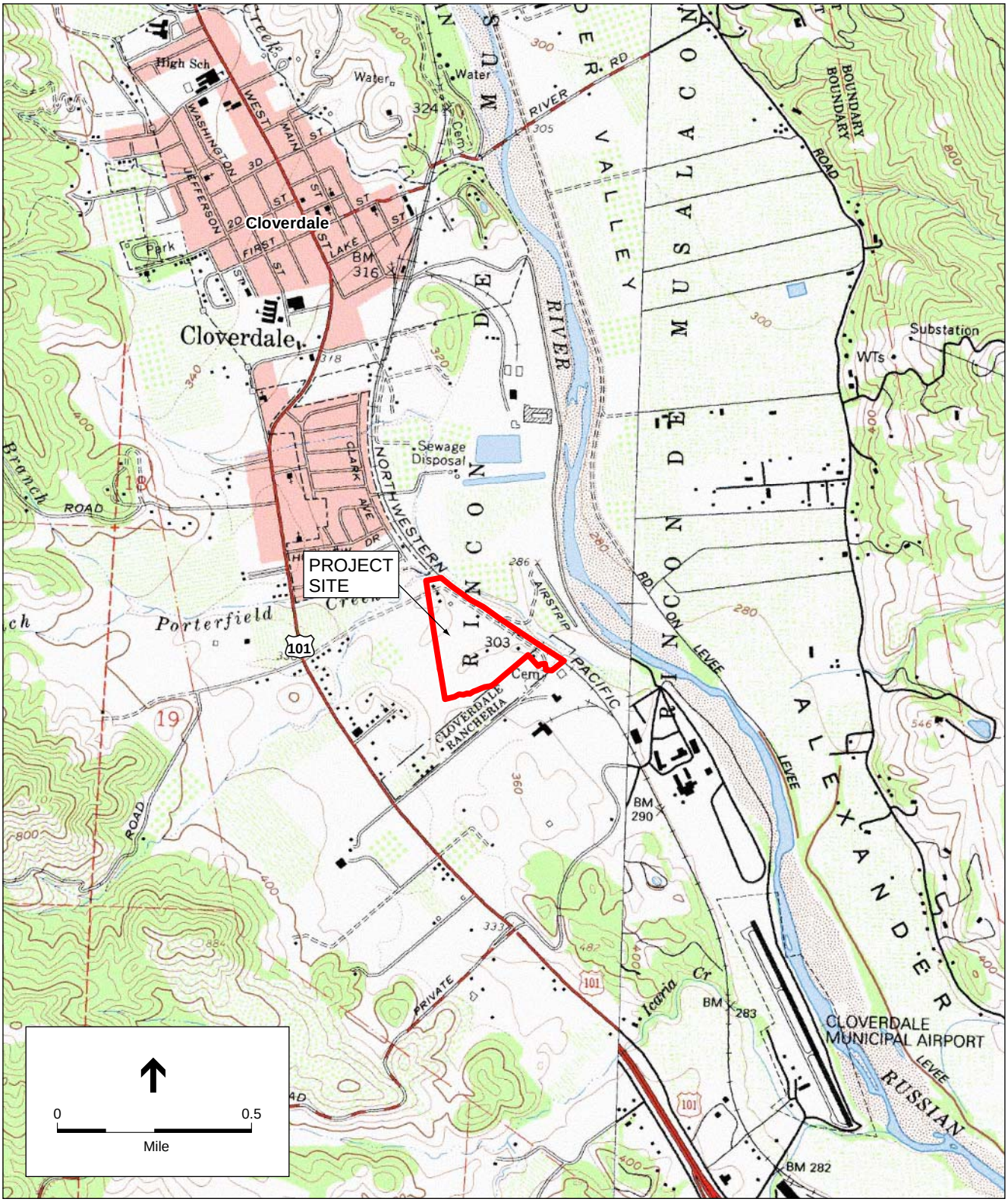
# 1. Objective

The objective of this Phase II investigation summary report was to evaluate the information and data gathered by Geomatrix and Weiss, conduct a site reconnaissance, and issue a Phase II report summarizing the data collected and findings. The scope of the Phase II investigation summary was based on conversations with PJAMM, review of the existing Phase I reports, and soil and groundwater data provided to ESA. Based on ESA's review of available information, and considering the soil and groundwater investigation completed by Weiss, ESA has developed conclusions and recommendations with regards to soil and groundwater contamination as it pertains to future site development.

# 2. Site Overview

## 2.1 Site Location and Description

The Amonos site is located in a rural area of Cloverdale, east and across Highway 101 from the downtown area and west of the Russian River (**Figure 1**). The site is bordered by Highway 101 and Asti Road to the west, Porterfield Creek to the north, Lile Lane to the east, and the unnamed creek to the south. The Amonos site is comprised of four separate parcels; parcel number 116-




SOURCE: USGS

Amonos Site, Phase II Environmental Site Investigation . 207737

**Figure 1**
Site Vicinity Map

310-035 is a 17-acre property, parcel number 116-310-040 is an 8.5 acre property, parcel number 116-310-020 is a 2 acre property, and parcel number 116-310-039 is a 5 acre property. Wooded areas are present along the southern and eastern boundaries of the site and near residential dwellings located on each property. The majority of the site is open grassland that is currently used for horse grazing pasture.

The Amonos site slopes gently to the east and consists of rolling topography with three swales, one along the southern boundary where the un-named creek flows eastward towards the Russian River, one through the center of the property, where intermittent water flows, and one along the northeastern boundary of the property forming Porterfield Creek. The valleys are separated by two eastward sloping hills with site elevations ranging from 300 to 325 feet above mean sea level.

## 2.2 Site Geology

The Amonos site is located within the eastern flank of the northern Coast Ranges, which consist of a complex assemblage of igneous, sedimentary, and metamorphic rocks. The mixture of rocks found throughout the northern Coast Ranges is often referred to as a mélange that includes blocks of ultramafic and mafic compositions in a sheared ultramafic matrix. Surface sediments in the area consist of clays, sands, and silts that are underlain by fractured bedrock consisting of dark greenish-gray shale of the Franciscan Formation. Based on subsurface investigation results obtained from boring logs recorded by Weiss, the alluvium extends from the surface to depths ranging between 4 and 65 feet. Generally, the thicker sediments are located in the valleys and the thinner sediments are present on the ridges. Below the unconsolidated sediments are siltstone and shale recorded to depths up to 90 feet below ground surface (bgs).

## 2.4 Site Hydrogeology

Groundwater beneath the Amonos site is present in the alluvium and underlying bedrock. Artesian conditions observed within a localized area of the alluvium along the east central portion of the site at depths of approximately 20 feet bgs. Depth to groundwater in the installed monitoring wells ranges from approximately 7 feet bgs to 23 feet bgs, and the groundwater gradient is generally east towards Russian River.

Groundwater present in fractures within the underlying bedrock was observed at depths of 8 to 21 feet bgs, with a groundwater gradient that appears to be towards the southeast. Based on information presented in documents related to the MGM Brake Assembly Plant (the MGM site) located southwest of the Amonos site, shallow groundwater flow appears to occur in valleys following topography (EKI, 2002; Geomatrix, 2007b). The MGM site is an open remediation case with the North Coast Regional Water Quality Control Board (NCRWQCB) with active remediation for various contaminants of concern, as discussed in more detail below.

# 3. Investigation Activities

Weiss drilled 15 borings ranging from 50 feet to 90 feet in depth, and installed 9 monitoring wells ranging from 20 feet to 93 feet below ground surface (bgs), and collected soil, rock and/or groundwater samples from the borings and groundwater samples from the wells. These activities were conducted from September 24, 2007 through May 23, 2008, in six separate mobilizations.

## 3.1 Pre-Field Investigation Activities

Weiss prepared a drilling workplan and submitted it to the Sonoma County Environmental Health Division and appropriate permits were issued by that agency. Permits are included in Appendix A. The proposed boring locations were marked and Underground Service Alert (USA) was contacted to identify and mark the locations of underground utilities relative to the proposed drilling locations. A private utility locating service, Cruz Brothers Inc. of Scotts Valley, California, was also contracted to verify that the proposed well sites were not co-located with existing underground utilities. Prior to initiating drilling, pilot holes for the borings were hand augured and widened by post-hole digger to 5 feet bgs to confirm the absence of buried utilities.

## 3.2 Field Activities

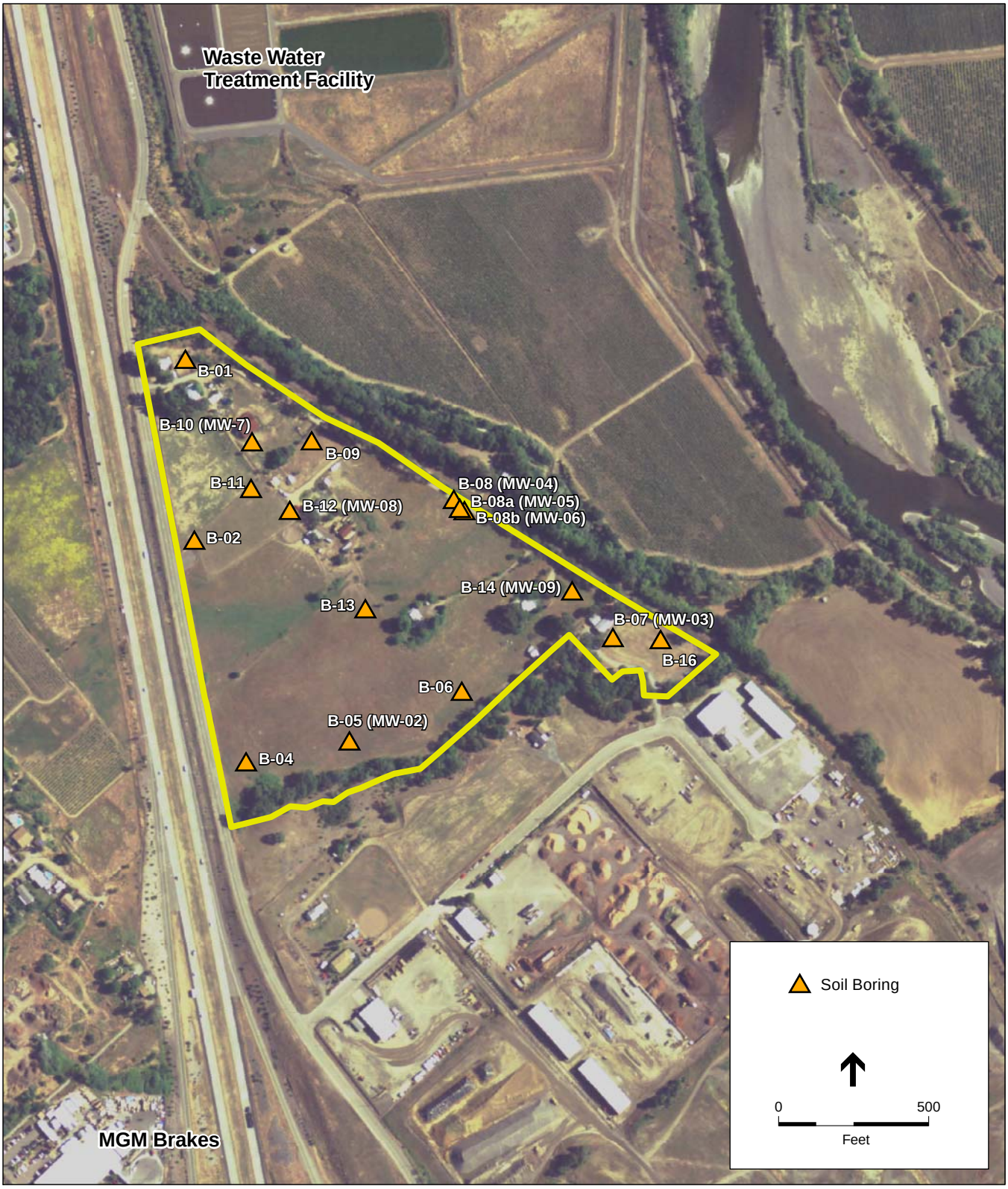
### Exploratory Soil and Rock Borings

Weiss directed the drilling of a total of 15 exploratory soil and rock borings to total depths ranging from 30 feet to 90 feet bgs. Westex/Western Strata Exploration, Inc., of Clarksburg, California advanced 8-inch diameter boreholes into alluvium using a hollow stem auger rig, and 6-inch diameter boreholes into bedrock using an air rotary rig. A temporary steel casing was advanced behind the air-rotary cutting head to seal off the hole and prevent collapse. Drilling activities for this task were conducted from September 24 to October 17, 2007, as permitted by weather and site access conditions and rig availability. Soil boring locations are illustrated on **Figure 2**. Field notes are included as Appendix A.

All logging and sampling activities were performed under the supervision of a California Professional Geologist. Hollow-stem auger borings were continuously cored and logged by hand. Air rotary borings were logged from observation of extracted cuttings. All exploratory logs were compiled using the Unified Soil Classification System (USCS). Based on information provided and reviewed by ESA, it appears that Weiss applied industry-accepted standards and procedures for exploratory drilling and soil/bedrock logging. Boring logs are included in Appendix A.

Soil boring B-08 exhibited artesian water conditions at 20 feet bgs.[1] The artesian conditions observed in soil boring B-08 could have been due to the surface elevation of the Russian River and high groundwater in the surrounding strata. When the boring was advanced to 70 feet bgs, the

[1] Groundwater flowing up and out of a well or borehole indicates an artesian condition. Artesian conditions occur when groundwater is under greater than atmospheric pressures, such as water–bearing zones that are confined under an impervious geologic strata.




SOURCE: Wiess Associates

Amonos Site, Phase II Environmental Site Investigation . 207737

**Figure 2**
Site Map and Soil Boring
Sample Locations

water level dropped to 9.35 feet bgs. Because of the shallow artesian conditions in this boring, an additional boring was advanced (B-08a) and drilled to 90 feet bgs and the upper alluvium section was sealed and placed behind solid casing, and a third boring (B-08b) was drilled to a depth of 20 feet bgs to further investigate shallow groundwater conditions along the eastern boundary of the Amonos site. B-08 was completed as a monitoring well (MW-04) uniquely in the alluvium, and B-08a was completed as a monitoring well (MW-05) uniquely in the bedrock, and B-08b was completed as a monitoring well in the shallow alluvium (MW-06).

### *Soil and "Grab" Groundwater Sampling*

Surface soil, subsurface soil at the alluvium bedrock interface, and grab groundwater samples were collected for chemical analysis during drilling of each of the 15 new boreholes. The field sampling logs do not describe soil sampling techniques.

Grab groundwater samples were collected from the alluvium at the first encounter of groundwater. Prior to collecting the grab groundwater samples from the borings, the borehole was blown dry and water was allowed to flow from the formation into the borehole. Once the sample was collected, the borehole was blown dry a second time and casing was advanced to seal off the water zone in the alluvium and then drilling continued down to bedrock. Once groundwater was encountered in the bedrock, the borehole was blown dry again and groundwater was allowed to flow into the borehole from the formation prior to collecting a grab groundwater sample from the bedrock.

Following the drilling and sampling, the 15 exploratory borings were properly destroyed by backfilling with neat Portland cement grout, concurrent with well installation activities (described below), and according to state and local standards.

## Monitoring Well Installation

Weiss directed the installation of a total of 9 groundwater monitoring wells at selected boring locations (as illustrated on **Figure 2**) to total depths ranging from 20 feet to 90 feet bgs, based on soil and rock types and groundwater recharge conditions encountered in the 15 exploratory soil borings. Based on artesian conditions observed in B-08, a three well cluster was installed to monitor potential artesian conditions in the shallow alluvium well and to investigate water quality.

It is assumed that the exploratory borings locations identified for monitoring well installation were converted to groundwater monitoring wells based on the description of backfilling activities described above. TestAmerica, Inc., of Rancho Cordova and Anaheim, California was retained to drill and install the 9 monitoring wells by advancing 8-inch and 10-inch borings into bedrock using an air rotary rig. Drilling activities for the well installation task were implemented on December 17, 2007, and from January 14 to 15, February 19 to 21, and March 11 to 14, 2008, as permitted by weather and site access conditions and rig availability (Appendix A, Field Logs). Based on the available information, Weiss and TestAmerica followed industry-accepted standards and procedures for installing the groundwater monitoring wells.

### Monitoring Well Development

Weiss and TestAmerica conducted well development activities from April 8 to 11, 2008 after the nine groundwater monitoring wells were complete and concrete and grout seal materials had attained sufficient strength. The wells were developed to remove fine sediments from each well and well annulus by either bailing the well or pumping the well with a submersible pump at 1 gallon per minute (gpm) for intervals ranging from 30 minutes to 2 hours. Subsequent to pumping and removal of approximately 16 to 490 gallons of water as necessary for each well development, stabilization parameters were within the ranges established in the field protocols for dissolved oxygen (DO, ± 10%), specific conductance (± 10%), pH (± 0.2), turbidity (<5-50 nephelometric turbidity units [NTUs]), and temperature (± 0.3º C) for three consecutive readings. Based on review of the well development procedures, it appears that Weiss and TestAmerica followed industry-accepted field standards and procedures to ensure that cross-contamination of wells did not occur. Following well development, each monitoring well was surveyed for elevation (Appendix A).

## 3.3 Sample and Analysis Usage

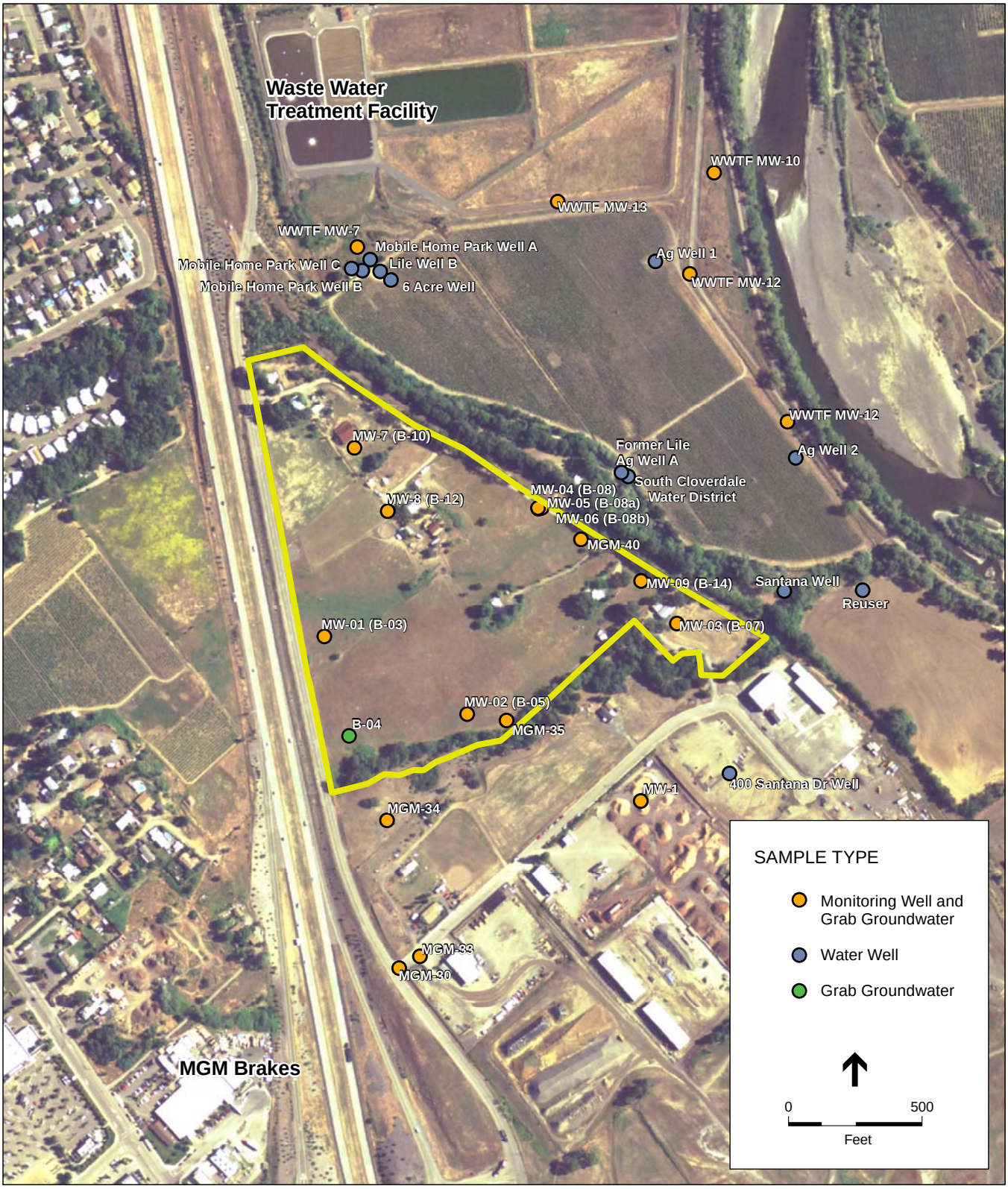
In its Phase I investigation, Geomatrix identified potential *recognized environmental conditions* (RECs) at the Amonos site that required additional investigation. According to the ASTM Standard (as presented in Geomatrix, 2007a), a REC is defined as:

> "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to public health or the environment that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies."

The Geomatrix findings are based on the historical uses of the properties and a neighboring site with known contamination and active remediation (Geomatrix 2007a; Geomatrix, 2007b). The soil and groundwater investigation conducted by Weiss addressed the RECs identified by Geomatrix. Soil and groundwater sampling locations are illustrated on **Figures 2** and **3**, and sample location and designated data uses are summarized on **Tables 1** and **2**.

### Historical Uses

Certain historical uses of the properties that comprise the Amonos site were not considered RECs on the basis of visual observation. Site reconnaissance indicated no evidence of environmental impact to on-site soils or vegetation and certain historical activities involving chemicals (such as activities inside the barn) are considered de minimis because the floor is intact and the chemicals stored there are handled appropriately and stored with secondary containment.




Amonos Site, Phase II Environmental Site Investigation . 207737

SOURCE: Wiess Associates

**Figure 3**
Site Map and Groundwater
Sample Locations

**TABLE 1**
**AMONOS SITE PHASE II INVESTIGATION SAMPLE MATRIX**
**SHALLOW AND DEEP SOIL LOCATIONS**
**CLOVERDALE, CALIFORNIA**

| Sample Location | Sample Depth/ Screen Interval (ft bgs) | Total Depth (ft bgs) | Metals (EPA 6010/6020/ 7470) | VOCs (EPA 8260) | TPH-gro (EPA 8015) | TPH-dro (EPA 8015) | TPH-moro (EPA 8015) | Pesticides (EPA 8081) | PCBs (EPA 8082) | Data Uses |
|---|---|---|---|---|---|---|---|---|---|---|
| B-01 | 0 | 40 | x | x | X | x | x | x | x | 1,2 |
| | 36 | | x | x | X | x | x | | | 1,2 |
| B-02 | 0 | 40 | x | x | X | x | x | | | 2,3 |
| | 35 | | x | x | X | x | x | | | 2 |
| B-03 | 0 | 35 | x | x | X | x | x | | | 2,3 |
| | 25 | | | x | X | x | x | | | 2 |
| | 35 | | x | | | | | | | 2 |
| B-04 | 0 | 70 | x | x | X | x | x | | | 2,3 |
| B-05 | 0 | 50 | x | x | X | x | x | | | 2,3 |
| B-06 | 46 | | x | x | X | x | x | | | 2 |
| | 0 | 30 | x | x | X | x | x | | | 2,3 |
| | 25 | | x | x | X | x | x | | | 2 |
| B-07 | 0 | 50 | x | x | X | x | x | | | 2,3 |
| B-08 | 0 | | x | x | X | x | x | | | 1,2,3 |
| | 68 | | x | x | X | x | x | | | 1,2 |
| B-09 | 0 | 45 | x | x | X | x | x | | | 1,2,3 |
| B-10 | 0 | 50 | x | x | X | x | x | x | x | 2,3 |
| | 45 | | x | x | X | x | x | | | 2 |
| B-11 | 0 | 40 | x | x | X | x | x | x | x | 1,2,3 |
| | 35 | | x | x | X | x | x | | | 1,2 |
| B-12 | 0 | 45 | x | x | X | x | x | x* | x | 1,2,3 |
| | 42 | | x | x | X | x | x | | | 1,2 |
| B-13 | 0 | 50 | x | x | X | x | x | x | x | 1,2,3 |
| | 45 | | x | x | X | x | x | | | 1,2 |
| B-14 | 0 | 70 | x | x | X | x | x | | | 2,3 |
| | 53 | | x | x | X | x | x | | | 2 |
| B-16 | 0 | 55 | x | x | X | x | x | | | 2,3 |
| | 55 | | x | x | X | x | x | | | 2 |

NOTES:

ft bgs = feet below ground surface
VOCs = Volatile organic compounds
TPH-gro = Total petroleum hydrocarbons – gasoline range organics
TPH-dro = Total petroleum hydrocarbons – diesel range organics
TPH-moro = Total petroleum hydrocarbons – motor oil range organics

* = 6 step out surface soil samples were collected at location B-12.
1 = Investigation results used to evaluate residual contamination from above ground storage tanks removed in the 1980's.
2 = Investigation results used to evaluate the use of pesticides during historical agricultural operations.
3 = Investigation results used to evaluate the migration of VOCs from neighboring MGM Brakes Assembly Plant

**TABLE 2**
**AMONOS SITE PHASE II INVESTIGATION SAMPLE MATRIX**
**GRAB GROUNDWATER AND MONITORING WELL**
**CLOVERDALE, CALIFORNIA**

| Sample Location | Sample Depth/ Screen Interval | Metals (EPA 6010/ 6020/7470) | VOCs (EPA 8260) | TPH-gro (EPA 8015) | TPH-dro (EPA 8015) | TPH-moro (EPA 8015) | Pesticides (EPA 8081) | PCBs (EPA 8082) | Data Uses |
|---|---|---|---|---|---|---|---|---|---|
| Grab Groundwater Samples | | | | | | | | | |
| B-01 | 24 | x | x | x | x | x | | | 1,2,3 |
| B-02 | 30 | x | x | x | x | x | | | 1,2,3 |
| B-03 (MW-01) | 7.5 | x | x | x | x | x | | | 1,2,3 |
| | 10 | x | x | x | x | x | | | 1,2,3 |
| B-04 | 2.5 | x | x | x | x | x | | | 1,2,3 |
| B-05 (MW-02) | 45 | x | x | x | x | x | | | 1,2,3 |
| B-06 | 17 | x | x | x | x | x | | | 1,2,3 |
| B-07 (MW-03) | 41 | x | x | x | x | x | | | 1,2,3 |
| B-08 (MW-04) | +1.25 | x | x | x | x | x | | | 1,2,3 |
| B-08a (MW-05) | 70 | x | x | x | x | x | | | 1,2,3 |
| B-09 | 25 | x | x | x | x | x | | | 1,2,3 |
| | 30.8 | x | x | x | x | x | | | 1,2,3 |
| B-10 (MW-07) | 27.5 | x | x | x | x | x | | | 1,2,3 |
| | 45 | x | x | x | x | x | | | 1,2,3 |
| B-11 | 24 | x | x | x | x | x | | | 1,2,3 |
| B-12 (MW-08) | 28 | x | x | x | x | x | x | x | 1,2,3 |
| | 33 | x | x | x | x | x | x | x | 1,2,3 |
| B-13 | 38 | x | x | x | x | x | | | 1,2,3 |
| B-14 (MW-09) | 45 | x | x | x | x | x | | | 1,2,3 |
| B-16 | 45 | x | x | x | x | x | | | 1,2,3 |
| Groundwater Monitoring Well Samples | | | | | | | | | |
| MW-01 | 9-19 | x | x | | x | x | | | 1,2,3 |
| MW-02 | 40-50 | x | x | | x | x | | | 1,2,3 |
| MW-03 | 40-50 | x | x | | x | x | | | 1,2,3 |
| MW-04 | 55-65 | x | x | | x | x | | | 1,2,3 |
| MW-05 | 80-90 | x | x | | x | x | | | 1,2,3 |
| MW-06 | 10-20 | x | x | | x | x | | | 1,2,3 |
| MW-07 | 25-35 | x | x | | x | x | | | 1,2,3 |
| MW-08 | 20-30 | x | x | | x | x | | | 1,2,3 |
| MW-09 | 55-65 | x | x | | x | x | | | 1,2,3 |

NOTES:

1 = Investigation results used to evaluate residual contamination from above ground storage tanks removed in the 1980's.
2 = Investigation results used to evaluate the use of pesticides during historical agricultural operations.
3 = Investigation results used to evaluate the migration of VOCs from neighboring MGM Brakes Assembly Plant

Potential RECs associated with historical uses of the site include the following:

- Three 500-gallon aboveground fuel storage tanks were previously located on exposed soil at the northern ranch site on the Hayes Property. No staining or distressed vegetation was observed in the area. The tanks were removed in the mid-1980s.

- As a former plum and grape farm, pesticides, including lime, sulfur, and "winter oil" were applied within the central portion of the Hayes Property until the 1980s. There may be residual pesticides in the area and around the ranch site, where the chemicals were stored.

### Neighboring Sites

Previous work by Geomatrix identified an REC at the Amonos site because it is located in close vicinity of the MGM Brakes Assembly Plant (the MGM site). The MGM site has a historical release of chlorinated solvents with a suspected dense non-aqueous phase liquid (DNAPL) source area and concentrations of volatile organic compounds (VOCs) are present in groundwater. As noted by Geomatrix (2007b), impacted groundwater has moved preferentially in the backfill of a sewer that runs along the southern side of the Amonos site and then northward up Lile Lane, and in surface water and groundwater moving along the un-named creek. Geomatrix noted that at the time of their investigation, it was unclear if impact to the Amonos site is limited to the areas around the southern creek along the sanitary sewer line or extends more broadly across the Amonos site. Geomatrix concluded that there was a potential for DNAPL and impacted groundwater associated with the MGM site to migrate onto the Amonos site and therefore, recommended additional investigation. Weiss included necessary field assessment work to address this concern.

## 3.4 Chemical Analyses of Soil and Groundwater Samples

As previously discussed, previous work by Weiss advanced 15 soil borings at the Amonos site and soil samples were collected from each boring. In addition, the nine groundwater monitoring wells were installed and sampled for various chemicals of concern, as summarized on **Tables 1** and **2**.

### Sampling Containers, Preservation, and Holding Times

Weiss submitted soil samples for analysis of metals, VOCs, total petroleum hydrocarbons (TPH) as gasoline-range organics (TPH-gro), diesel-range organics (TPH-dro), and motor oil-range organics (TPH-moro), pesticides, and polychlorinated biphenyls (PCBs). Soil samples were collected in brass tubes for undisturbed soils, and disturbed soil samples were collected in polymer or glass containers.

Grab groundwater samples were analyzed for metals, VOCs, TPH-gro, TPH-dro, TPH-moro, pesticides, PCBs, and nitrate as nitrogen. Each sample was collected in an appropriately sized container prepared by the laboratory. Groundwater samples were also collected for the groundwater monitoring wells using a micropurge sampling technique and analyzed for metals, VOCs, TPH-dro, TPH-moro, and nitrate.

Soil and water quality analyses were performed by Curtis & Tompkins, LTD, a California state-certified laboratory, using EPA Methods 6010/6020/7410 for metals, 8260B for VOCs, 8015 for TPH, 8081A for pesticides, 8082 for PCBs, and 300.0 for nitrate as nitrogen. All samples were analyzed within the appropriate holding time for each of the analyses unless otherwise noted.

### Quality Assurance and Control Verification

The quality assurance (QA) objectives for this Phase II Investigation report focused on assessing the appropriateness of data generated during the Phase II activities (precision, accuracy, completeness, comparability, and representative application and use), and evaluating the quality of data collected before the data was used as a basis for analysis. Quality control (QC) procedures included data reduction and validation for field and laboratory activities, and data acceptance criteria were defined and achieved. The soil and groundwater activities conducted by Weiss included the collection of samples throughout the site and along the property boundaries. ESA linked the soil and groundwater sample locations with the RECs identified by the Phase I investigation, as summarized in **Tables 1** and **2**. Based on review of the data provided to ESA, it appears that Weiss generally adhered to industry-accepted methods and procedures for soil and groundwater sample collection, analysis and reporting. Appendix B provides a detailed summary of the analytical data validation process and resulting data qualifiers are discussed.

In general, results of "grab" groundwater samples can be considered suspect because they may not necessarily represent actual groundwater conditions and can be inherently unreliable. The uncertainty stems from several factors including the difficulty in isolating specific groundwater flow zones, potential for cross-contamination during sampling, and impacts to groundwater from drilling equipment. Due to the generally undependable nature of grab groundwater sample results, this investigation relies on the analytical results from the water samples collected from the monitoring wells. Results of the groundwater samples collected from wells are more reliable because groundwater monitoring wells were installed and sampled following proper well development procedures. Analytical data from monitoring wells are considered more representative of groundwater conditions within the screened interval of the groundwater monitoring wells.

# 4. Screening Criteria

To facilitate the evaluation of the analytical results of the soil and groundwater samples collected at the Amonos site, the data were compared using the San Francisco Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESLs; SFRWQCB, 2008) as the primary screening values for soil and groundwater. The ESLs that were used reflect both a residential and an industrial/commercial land use scenario and consider groundwater where groundwater is a current or potential source of drinking water.

The ESLs are considered to be conservative. Under most circumstances, and within the limitations described, the presence of a chemical in soil, soil gas, or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant, long term (chronic) threat to human health and the environment. Additional evaluation will generally be necessary at sites where a chemical is present at concentrations above the corresponding ESL.

Active remediation may or may not be required depending on site specific conditions and considerations. The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is warranted (SFRWQCB, 2008).

## 4.1 Background Concentrations of Metals

Metals were detected in the soil and groundwater samples collected at the Amonos site. Some of these concentrations are considered elevated but can be attributed to naturally-occurring background concentrations. Elevated concentrations of metals in soil can occur due to both natural and anthropogenic sources. Naturally occurring concentrations of metals depend on the geology of the source rock and the weathering processes and depositional environments of a given area. In the Coast Ranges geomorphic province, naturally occurring metals are common due to the ultramafic and mafic parent rock present in the mélange of the northern Coast Ranges. Although, elevated concentrations of metals can also be introduced to soils by industrial activities (anthropogenic sources), such as through the application of herbicides, the use and storage of various chemicals, and the use of chemically treated woods.

Several reports document background concentrations of metals in soils collected throughout California from a variety of geologic units and soils. In Professional Paper 1270, "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States" (USGS, 1984), the USGS cites a range of concentrations of naturally occurring metals in soil. In its paper entitled, "Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory", Lawrence Berkeley National Laboratory (LBNL) cited a range of concentrations of metals in soil samples collected from the Great Valley sediments in the East Bay Hills. Additionally, the City of Oakland conducted a survey of background metal concentration studies and compiled additional literature resources to determine relevant background metal concentrations of soils (City of Oakland, 2008); a summary table of background metal concentrations compiled by the City of Oakland is included as **Table 3**, and includes the USGS and LBNL literature values.

# 5. Investigation Results and Findings

Soil and groundwater samples were collected from the site and along the property boundaries as illustrated on **Figures 2** and **3**. **Tables 1** and **2** provide a summary of the sample rationale and chemical analyses used to evaluate potential environmental concerns based on historical site use and neighboring environmental contamination. Observations and analytical results are presented in the sections below. Laboratory reports are provided in Appendix C.

## 5.1 Metals

### Deep and Shallow Soils

Shallow and deep soil samples were analyzed for metals using EPA Method 6010 (and EPA Method 7471A for mercury). Analytical results are summarized in **Table 4**.

**TABLE 3**
**BACKGROUND METAL CONCENTRATIONS IN SOIL**
**SUMMARY OF PREVIOUS STUDIES**
**(concentrations reported in milligrams per kilogram [mg/kg])**

| Source | Antimony | Arsenic | Beryllium | Cadmium | Chromium | Copper | Lead | Mercury | Nickel | Selenium | Silver | Thallium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lawrence Berkeley National Laboratories[1] | 5.5 | 19.1 | 1.0 | 2.7 | 99.6 | 69.4 | 16.1 | 0.4 | 119.8 | 5.6 | 1.8 | 27.1 | 106.1 |
| -Colluvian & Fill[1] | 5.9 | 14 | 0.9 | 1.5 | 91.4 | 59.6 | 14.7 | 0.3 | 120.2 | 5.6 | 1.7 | 42.5 | 91.5 |
| -Great Valley Group[1] | 6.3 | 31 | 1.0 | 3.2 | 59.0 | 99.7 | 21.5 | 0.6 | 69.7 | 4.8 | 2.2 | 8.7 | 135.9 |
| -Moraga Formation[1] | 6.1 | 9.3 | 0.8 | 2.6 | 142.2 | 54.1 | 8.9 | 0.3 | 100.4 | 4.7 | 2 | 38.9 | 84.7 |
| -Orinda Formation[1] | 5.2 | 17.8 | 1.1 | 3.3 | 95.2 | 66.9 | 14.8 | 0.3 | 144.3 | 7 | 1.9 | 19.8 | 98.3 |
| -San Pablo Group[1] | 7.1 | 15.7 | 0.8 | 2.9 | 78.9 | 40.9 | 10.3 | 0.4 | 125.9 | 4.9 | 1.5 | 10.9 | 97.7 |
| San Leandro, CA[2] | <3-<15 | 1.8-5.9 | <0.25-<1.30 | <0.25-<1.30 | 24.8-43.0 | 11.8-68.0 | 3.3-10.4 | <0.10 | 2.93-43.6 | <0.25-<2.50 | <0.50-<2.50 | <0.50-<5.00 | 9.3-61.3 |
| Union City, CA[3] | 5 | 6.92-9.34 | 0.5-0.81 | 0.5-1.30 | 46.5-112 | 28.2-60.1 | 19.8-148 | 0.1-0.36 | 32.4-60.6 | 0.5 | 0.5 | 5.0 | 97.1-474 |
| Western U.S.[4] | -- | 1-50 | -- | 0.1-0.7 | 1-1,000 | 2-100 | 20-100 | 0.01-0.3 | 5-500 | -- | -- | -- | 10-300 |

NOTES:

1 Lawrence Berkeley National Laboratory (LBNL) Environmental Restoration Program, 1995. 500 samples were taken from 71 locations representing 5 geologic units at LBNL: Colluvium & Fill, Great Valley group, Moraga formation, Orinda formation and San Pablo group. Concentrations listed are Upper 95% Confidence Limits of data from 71 monitoring well borings.
2 Chemical Testing on Background Soil Samples: Roberts Landing Development Site, San Leandro, CA, 1994.
3 Site Wide Remedial Investigation: Pacific States Steel Corp. Union City, CA, 1992.
4 USEPA (found in Remedial Investigation Report, Hercules Properties, Inc., 1991).

SOURCE: City of Oakland, 2008

**TABLE 4**
**AMONOS SITE PHASE II INVESTIGATION**
**ANALYTICAL RESULTS FOR DETECTED METALS IN SHALLOW AND DEEP SOIL SAMPLES**
**CLOVERDALE, CALIFORNIA**
**(soil concentrations in milligrams per kilogram [mg/kg])**

| Sample Location | Sample Identification | Depth (ft bgs) | Date Sampled | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Copper | Lead | Mercury | Molyb-denum | Nickel | Selenium | Silver | Thallium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shallow Soil Samples | | | | | | | | | | | | | | | | | | | | |
| B-01 | B-1-SS-0.0' * | 0 | 10/2/2007 | 1.2 | **7.3** | 200 | 0.68 | <0.25 | 52 | 20 | 27 | 19 | 0.084 | 0.31 | 89 | 1.9 | <0.25 | <0.50 | **47** | 87 |
| B-02 | B-02-SS-0.0' * | 0 | 9/25/2007 | <0.50 | **5.3** | 160 | 0.53 | <0.25 | 100 | 23 | 31 | 5.6 | 0.23 | <0.25 | **230** | 1.2 | <0.25 | <0.50 | **56** | 42 |
| B-03 | B-03-SS-0.0 * | 0 | 9/25/2007 | 1.1 | **5.2** | 80 | 0.33 | <0.25 | 70 | 18 | 17 | 18 | 0.22 | <0.25 | 100 | <0.50 | <0.25 | <0.50 | **41** | 41 |
| B-04 | B-4-SS-0.0' * | 0 | 10/3/2007 | 0.65 | **8.4** | 150 | 0.44 | <0.25 | 110 | 26 | 36 | 11 | 0.081 | <0.25 | **160** | 2.3 | <0.25 | <0.50 | **64** | 60 |
| B-05 | B-5-SS-0.0' * | 0 | 10/3/2007 | <0.50 | **9.7** | 150 | 0.41 | <0.25 | 82 | 18 | 30 | 9.3 | 0.053 | <0.25 | 120 | 2 | <0.25 | <0.50 | **53** | 55 |
| B-06 | B-6-SS-0.0' * | 0 | 10/4/2007 | 0.93 | **7.2** | 130 | 0.42 | <0.25 | 90 | 22 | 25 | 9.6 | 0.055 | <0.25 | 110 | <0.50 | <0.25 | <0.50 | **59** | 48 |
| B-07 | B-7-SS-0.0 | 0 | 10/11/2007 | 1.4 | **6.8** | 200 | 0.45 | <0.25 | 40 | 12 | 42 | 10 | 0.21 | <0.25 | 61 | 1.8 | <0.25 | <0.50 | **45** | 120 |
| B-08 | B-8-SS-0.0' + | 0 | 10/8/2007 | 1.4 | **5.1** | 130 | 0.36 | <0.25 | 92 | 22 | 26 | 7.3 | 0.049 | <0.25 | 130 | <0.50 | <0.25 | <0.50 | **57** | 48 |
| B-09 | B-9-SS-0.0 | 0 | 10/11/2007 | 1.2 | **5.8** | 73 | 0.35 | <0.25 | 77 | 18 | 18 | 14 | 0.39 | <0.25 | 94 | 1.8 | <0.25 | <0.50 | **45** | 30 |
| B-10 | B-10-SS-0.0' * | 0 | 10/1/2007 | 0.57 | **4.9** | 110 | 0.37 | 0.95 | 71 | 15 | 16 | 15 | 0.28 | <0.25 | 72 | 1.5 | <0.25 | <0.50 | **49** | 340 |
| B-11 | B-11-SS-0.0' * | 0 | 9/26/2007 | <0.50 | **5.9** | 100 | 0.41 | <0.25 | 62 | 20 | 26 | 18 | 0.23 | 0.51 | 100 | <0.50 | <0.25 | <0.50 | **47** | 47 |
| B-13 | B-13-SS-0.0' * | 0 | 10/4/2007 | <0.50 | **6.7** | 85 | 0.34 | <0.25 | 65 | 16 | 17 | 12 | 0.88 | <0.25 | 73 | 1.5 | <0.25 | <0.50 | **49** | 35 |
| B-14 | B-14-SS-0.0 | 0 | 10/8/2007 | 1.6 | **5.1** | 140 | 0.41 | <0.25 | 100 | 19 | 28 | 6.4 | 0.18 | <0.25 | **200** | 1 | <0.25 | <0.50 | **49** | 47 |
| B-16 | B-16-SS-0.0' | 0 | 10/16/2007 | 5.9 | **6.0** | 120 | 0.48 | <0.25 | 24 | 9 | 27 | 8.4 | 0.023 | <0.25 | 33 | 1.2 | <0.25 | <0.50 | **27** | 61 |
| B-12 | B-12-SS-0.0' * | 0 | 9/26/2007 | <0.50 | **5.9** | 74 | 0.36 | <0.25 | 78 | 16 | 21 | 21 | 0.18 | <0.25 | 100 | 0.76 | <0.25 | <0.50 | **43** | 60 |
| B-12 | B-12-SS-0.0' * | 0 | 10/1/2007 | 0.85 | **6.8** | 73 | 0.33 | <0.25 | 63 | 17 | 24 | 33 | 0.19 | <0.25 | 83 | 1.5 | <0.25 | <0.50 | **40** | 54 |
| | | | Residential ESL | 6.3 | 0.39 | 750 | 4.0 | 1.7 | 750 | 40 | 225 | 200 | 1.3 | 40 | 150 | 10 | 20 | 1.3 | 16 | 600 |
| | | | Commercial/Industrial ESL | 40 | 1.6 | 1500 | 8.0 | 7.4 | 750 | 80 | 225 | 750 | 10 | 40 | 150 | 10 | 40 | 16 | 200 | 600 |
| Deep Soil Samples | | | | | | | | | | | | | | | | | | | | |
| B-01 | B-1-SS-36' * | 36 | 10/3/2007 | <0.50 | 8.7 | 110 | 0.34 | <0.25 | 170 | 29 | 31 | 4.4 | 0.17 | 0.59 | **350** | 3.7 | <0.25 | <0.50 | 43 | 42 |
| B-02 | B-02-SS-35' | 35 | 9/25/2007 | <0.50 | 7.6 | 170 | 0.47 | <0.25 | 29 | 12 | 60 | 9.6 | 0.15 | <0.25 | 44 | 0.7 | 0.33 | <0.50 | 44 | 120 |
| B-03 | B-03-SS-25.0 * | 25 | 9/25/2007 | <0.50 | 2.4 | 140 | 0.19 | <0.25 | 320 | **130** | 49 | 3.1 | 0.55 | 3.3 | **2100** | 2.8 | <0.25 | <0.50 | 22 | 31 |
| B-05 | B-5-SS-46' * | 46 | 10/3/2007 | <0.50 | 8.3 | 81 | 0.39 | <0.25 | 43 | 11 | 17 | 4.9 | 0.04 | <0.25 | 39 | 1.6 | <0.25 | 0.63 | 55 | 55 |
| B-06 | B-6-SS-25' * | 25 | 10/4/2007 | <0.50 | **16** | 82 | 0.49 | <0.25 | 47 | 17 | 46 | 8.4 | 0.11 | <0.25 | 73 | 2.9 | <0.25 | <0.50 | 52 | 75 |
| B-08 | B-8-SS-68' + | 68 | 10/9/2007 | 0.64 | 5.6 | 110 | 0.41 | <0.25 | 120 | 12 | 45 | 8.2 | 0.26 | <0.25 | 48 | 1.8 | <0.25 | <0.50 | 41 | 60 |
| B-11 | B-11-SS-35' * | 35 | 9/26/2007 | <0.50 | 8.2 | 110 | 0.46 | <0.25 | 40 | 16 | 52 | 6.7 | 0.072 | 0.28 | 69 | 1.5 | <0.25 | <0.50 | 45 | 68 |
| B-13 | B-13-SS-45' * | 45 | 10/4/2007 | <0.50 | **29** | 36 | 0.34 | <0.25 | 22 | 17 | 44 | 7.8 | 0.43 | 1.1 | 46 | 3.9 | 0.25 | 1.1 | 35 | 61 |
| B-14 | B-14-SS-53' * | 53 | 10/8/2007 | 1.7 | 6.5 | 72 | 0.31 | <0.25 | 32 | 11 | 31 | 4.9 | 0.095 | 0.67 | 53 | 1.4 | <0.25 | <0.50 | 33 | 38 |
| B-16 | B-16-SS-55' | 55 | 10/17/2007 | 6.3 | 5.3 | 230 | 0.40 | <0.25 | 28 | 11 | 47 | 9.7 | 0.18 | <0.25 | 38 | 2.8 | <0.25 | <0.50 | 40 | 74 |
| B-12 | B-12-SS-42' * | 42 | 10/1/2007 | <0.50 | 9.2 | 160 | 0.51 | <0.25 | 42 | 16 | 59 | 6.4 | 0.12 | 1 | 74 | <0.50 | <0.25 | <0.50 | 44 | 85 |
| B-10 | B-10-SS-45' * | 45 | 10/1/2007 | <0.50 | 6.7 | 190 | 0.49 | <0.25 | 67 | 17 | 72 | 6.8 | 0.11 | 4.3 | 120 | <0.50 | <0.25 | <0.50 | 46 | 61 |
| | | | Residential ESL | 310 | 15 | 2500 | 100 | 39 | 2500 | 94 | 2500 | 750 | 58 | 2500 | 260 | 2500 | 2500 | 62 | 770 | 2500 |
| | | | Commercial/Industrial ESL | 310 | 15 | 2600 | 100 | 39 | 5000 | 94 | 5000 | 750 | 58 | 3900 | 260 | 3900 | 3900 | 62 | 770 | 5000 |

**Notes:**
ft bgs = feet below ground surface
* = soil sample collected in a polymer container
+ = soil sample container type is not noted on chain of custody record
< = analyte not detected above laboratory reporting limit

ESL = Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

Soil samples collected from the site contained metal concentrations indicative of naturally-occurring background levels. Those samples collected from shallow and deep intervals at locations B-1 through B-14 and B-16 contained all or some of the following metals above their respective analytical reporting limit: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

Arsenic, nickel, and vanadium concentrations detected in shallow soil samples were the only metals detected above the relevant residential ESL, while arsenic and nickel concentrations were above the relevant industrial/commercial ESL. The concentration range of arsenic (5 mg/kg to 10 mg/kg) and vanadium (27 mg/kg to 57 mg/kg) coupled with the consistent distribution of these metals throughout the shallow soils at the site indicate that the arsenic and vanadium concentrations detected are likely naturally-occurring and at background levels. Background arsenic and vanadium concentrations can exceed ESL limits in many locations throughout the San Francisco Bay Area. LBNL reports a range of background arsenic concentration between 9.3 mg/kg and 31.0, and the USGS reports an average background vanadium concentration for the western US as 70 mg/kg. Three detections exceeded the ESL of 150 mg/kg. Given the range of concentrations detected and the potential that background concentrations of nickel can exceed ESLs in the San Francisco Bay Area, the three concentrations of nickel over the ESL are considered background and do not suggest a contaminant source.

A few detected concentrations of arsenic, cobalt, and nickel from deep soil samples exceeded the residential ESLs. The arsenic and nickel concentrations are generally below the range of published values for background metals concentrations except for detected concentration of nickel at 2,100 mg/kg at 25 feet (Boring B-03). The anomalously high concentration of nickel at 2,100 mg/kg is suspect because it is at a depth that precludes potential surface contaminant sources (high nickel concentrations were not found in the surface sample above) and the historical and neighboring RECs do not suggest that industrial processes have introduced nickel into the environment. The nickel detection found at boring B-03 is an order of magnitude higher than the remainder of background nickel concentrations detected at the site, that range consistently between 38 mg/kg and 120 mg/kg, and the next highest nickel concentration in deep soils is 350 mg/kg. The high nickel detection could be due to metals contained in the natural alluvial/bedrock materials at this location. Based on results of soil samples elsewhere on the site, the nickel concentrations detected in soils appear localized. The uncharacteristically high concentration of nickel detected in the deep alluvial soils is not considered an environmental concern for future site development because there is not an identified exposure pathway to sensitive receptors due to its depth.

A concentration of cobalt at 130 mg/kg was detected in a sample from 25 feet. The concentration is inconsistent with the other detected concentrations of cobalt that range between 11 mg/kg and 29 mg/kg. While it exceeds the ESL for cobalt by 36 mg/kg, it is not an indication of an environmental concern because it was detected at a depth that precludes a surface contaminant source and it is an isolated, elevated detection. Note that this detection of cobalt was in the same sample as the 2,100 mg/kg detection of nickel discussed above, which provides further evidence that the soil sample intersected alluvial material with particularly high natural metals

concentrations. The uncharacteristically high concentration of cobalt detected in the deep alluvial soils is not considered an environmental concern for future site development because there is not an identified exposure pathway to sensitive receptors due to its depth.

### Groundwater

Analytical results of metals detected in grab groundwater and groundwater monitoring well samples are summarized on **Table 5**, along with the corresponding ESLs. Metals detected in grab groundwater samples include antimony, arsenic, barium, chromium, lead, molybdenum, nickel, selenium, vanadium, and zinc. Of these detected metals in grab groundwater samples, only antimony, chromium, molybdenum, nickel, selenium, and vanadium had detected concentrations above the relevant groundwater ESL. As mentioned previously, grab groundwater samples can be inherently unreliable due to several factors including the difficulty in isolating specific groundwater flow zones, potential for cross-contamination, and impacts to groundwater from drilling equipment. Due to the generally undependable nature of grab groundwater sample results, this investigation relies on the analytical results from the water samples collected from the monitoring wells.

With the exception of a few metals concentrations above the ESLs, the groundwater beneath the Amonos site contains naturally occurring metals concentrations, and do not indicate contamination from a surface contaminant source. Chromium was detected in one well at 390 µg/l, above the ESL of 50 µg/l. This detection is an isolated detection at a concentration uncharacteristic with other wells. Although this concentration of chromium exceeds the ESLs, it is likely a naturally-occurring concentration characteristic of the alluvial geology and not indicative of a surface source of contamination. Molybdenum and vanadium were detected in groundwater monitoring wells slightly above the respective ESL but these concentrations are also considered characteristic of the background geologic environment and not considered an indicator of a surface contaminant source.

## 5.2 Total Petroleum Hydrocarbons (TPH)

Shallow and deep soil samples were analyzed for gasoline-range organics (TPH-gro), diesel-range organics (TPH-dro), and motor oil-range organics (TPH-moro) using EPA method 8015. Results of the TPH analyses are summarized on **Table 6**. TPH-gro was not detected in shallow or deep soil samples, TPH-dro and TPH-moro were detected at low concentrations below the relevant ESLs for shallow and deep soils for residential and commercial/industrial land use scenarios for shallow soils.

Grab groundwater samples were analyzed for TPH-gro, TPH-dro, and TPH-moro, and results are summarized on **Table 7**. TPH-gro was not detected in grab groundwater samples. Both TPH-dro and TPH-moro were detected above the relevant ESLs for groundwater. TPH-dro was detected in eight of the 21 grab groundwater samples collected, and TPH-dro was detected in nine of the 21 grab groundwater samples collected. Note that the laboratory reporting limit for TPH-moro was above the ESL for 11 of the 21 grab groundwater samples. As mentioned previously, grab groundwater samples can be inherently unreliable due to several factors including the difficulty in isolating specific groundwater flow zones, potential for cross-contamination, and impacts to

**TABLE 5**
**AMONOS SITE PHASE II INVESTIGATION**
**ANALYTICAL RESULTS FOR DETECTED METALS IN GRAB AND MONITORING WELLGROUNDWATER SAMPLES**
**CLOVERDALE, CALIFORNIA**
**(water concentrations in micrograms per liter [µg/l])**

| Sample Location | Sample Identification | Date Sampled | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium (total) | Cobalt | Copper | Lead | Mercury | Molyb-denum | Nickel | Selenium | Silver | Thallium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grab Groundwater Samples | | | | | | | | | | | | | | | | | | | |
| B-01 | B-1-GW-24' | 10/2/2007 | <10 | <5.0 | 610 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.4 | <0.20 | **40** | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-02 | B-02-GW-30' | 9/25/2007 | <10 | <6.1 | 200 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-01 (B-03) | B-03-GW-10' | 9/25/2007 | <10 | <6.1 | 100 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | **13** | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-01 (B-03) | B-03-GW-7.5 | 9/27/2007 | <10 | <5.0 | 470 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.4 | <0.20 | **270** | **37** | <10 | <5.0 | <10 | <5.0 | <20 |
| B-04 | B-4-GW-2.5' | 10/17/2007 | <10 | <6.1 | 200 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | 12 | 7.5 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-02 (B-05) | B-5-GW-45' | 10/3/2007 | **16** | <6.1 | 130 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | 6.6 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-06 | B-6-GW-17' | 10/4/2007 | <10 | <6.1 | 81 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | 5.2 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-03 (B-07) | B-7-GW-41 | 10/11/2007 | <10 | <6.1 | 51 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | **170** | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-04 (B-08) | B-8-GW-+1.25' | 10/9/2007 | <10 | <6.1 | 54 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | **130** | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-05 (B-08A) | B-8A-GW-70' | 10/17/2007 | **30** | <6.1 | 620 | <2.0 | <5.0 | **150** | <5.0 | <5.0 | <3.0 | <0.20 | **65** | <5.0 | **31** | <5.0 | <10 | **35** | <20 |
| B-09 | B-9-GW-25 | 10/11/2007 | <10 | <6.1 | 61 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-09 | B-9-GW-30.8' | 10/17/2007 | <10 | <6.1 | 110 | <2.0 | <5.0 | 11 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | 6.6 | <20 |
| MW-07 (B-10) | B-10-GW-27.5' | 10/1/2007 | <10 | <5.0 | 85 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.4 | <0.20 | 10 | **12** | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-07 (B-10) | B-10-GW-45' | 10/2/2007 | <10 | <5.0 | 210 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.4 | <0.20 | 8.3 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-11 | B-11-GW-24' | 9/26/2007 | <10 | <6.1 | 330 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-08 (B-12) | B-12-GW-28 | 9/28/2007 | <10 | <5.0 | 140 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.4 | <0.20 | 25 | <5.0 | <10 | <5.0 | <10 | <5.0 | 28 |
| MW-08 (B-12) | B-12-GW-33' | 10/1/2007 | <10 | <5.0 | 160 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.4 | <0.20 | 23 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-13 | B-13-GW-38' | 10/4/2007 | **41** | 9.1 | 51 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | 31 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-09 (B-14) | B-14-GW-45' | 10/8/2007 | <10 | <6.1 | 230 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | **77** | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-16 | B-16-GW-45' | 10/17/2007 | **17** | <6.1 | 67 | <2.0 | <5.0 | **370** | <5.0 | <5.0 | 3.3 | <0.20 | **54** | <5.0 | <10 | <5.0 | <10 | **23** | <20 |
| Groundwater Monitoring Well Samples | | | | | | | | | | | | | | | | | | | |
| MW-01 (B-03) | 0508-01 | 5/19/2008 | <10 | <5.0 | 120 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-02 (B-05) | 0508-02 | 5/19/2008 | <10 | 8.7 | 21 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | **36** | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-03 (B-07) | 0508-03 | 5/19/2008 | <10 | <5.0 | 21 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | 21 |
| B-08/MW-04 | 0508-04 | 5/20/2008 | <10 | 12 | 170 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-08A/MW-05 | 0508-05 | 5/20/2008 | <10 | <5.0 | 110 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | 13 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-08A/MW-05 | 0508-12 | 5/20/2008 | <10 | <5.0 | 120 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | 14 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-08B/MW-06 | 0508-06 | 5/20/2008 | <10 | <5.0 | 18 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| B-10/MW-07 | 0508-07 | 5/19/2008 | <10 | <5.0 | 67 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| MW-08 (B-12) | 0508-08 | 5/19/2008 | <10 | <5.0 | <5.0 | <2.0 | <5.0 | **390** | <5.0 | <5.0 | <3.0 | <0.20 | 8.7 | <5.0 | <10 | <5.0 | <10 | **18** | <20 |
| B-14/MW-09 | 0508-09 | 5/19/2008 | <10 | <5.0 | 200 | <2.0 | <5.0 | <5.0 | <5.0 | <5.0 | <3.0 | <0.20 | <5.0 | <5.0 | <10 | <5.0 | <10 | <5.0 | <20 |
| | | Groundwater ESL | 6.0 | 36 | 1000 | 0.53 | 0.25 | 50 | 3.0 | 3.1 | 2.5 | 0.025 | 35 | 8.2 | 5.0 | 0.19 | 2.0 | 15 | 81 |

**Notes:**
< = analyte not detected above laboratory reporting limit

ESL = Environmental Screening Levels, from “Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater” where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

**TABLE 6**
**AMONOS SITE PHASE II INVESTIGATION**
**ANALYTICAL RESULTS FOR VOCS AND TPH IN SHALLOW AND DEEP SOIL SAMPLES**
**CLOVERDALE, CALIFORNIA**
**(soil concentrations in milligrams per kilogram [mg/kg])**

| Sample Location | Sample Identification | Depth (ft bgs) | Date Sampled | 2-Butanone | Methylene Chloride | Other VOCs | TPH-gro | TPH-dro | TPH-moro |
|---|---|---|---|---|---|---|---|---|---|
| Shallow Soil Samples | | | | | | | | | |
| B-01 | B-1-SS-0.0' * | 0 | 10/2/2007 | <0.0098 | <0.02 | <0.0044-<0.050 | <0.97 | 34 Y | 100 |
| B-02 | B-02-SS-0.0' * | 0 | 9/25/2007 | <0.0089 | <0.018 | <0.0044-<0.050 | <0.98 | 30 Y | 150 |
| B-03 | B-03-SS-0.0 * | 0 | 9/25/2007 | <0.01 | <0.02 | <0.0044-<0.050 | <0.97 | 26 H Y | 150 H L |
| B-04 | B-4-SS-0.0' * | 0 | 10/3/2007 | 0.069 | <0.019 | <0.0044-<0.050 | <0.98 | 21 Y | 100 |
| B-05 | B-5-SS-0.0' * | 0 | 10/3/2007 | <0.0094 | <0.019 | <0.0044-<0.050 | <1 | 26 Y | 110 |
| B-06 | B-6-SS-0.0' * | 0 | 10/4/2007 | <0.0098 | <0.02 | <0.0044-<0.050 | <0.96 | 23 Y | 69 |
| B-07 | B-7-SS-0.0 | 0 | 10/11/2007 | <0.0093 | <0.019 | <0.0044-<0.050 | <1 | 28 Y | 140 |
| B-08 | B-8-SS-0.0' + | 0 | 10/8/2007 | <0.0094 | 0.071 | <0.0044-<0.050 | <1 | 29 Y | 240 |
| B-09 | B-9-SS-0.0 | 0 | 10/11/2007 | <0.0088 | <0.018 | <0.0044-<0.050 | <0.93 | 15 Y | 81 |
| B-10 | B-10-SS-0.0' * | 0 | 10/1/2007 | <0.0093 | <0.019 | <0.0044-<0.050 | <0.95 | 18 Y | 86 |
| B-11 | B-11-SS-0.0' * | 0 | 9/26/2007 | <0.0098 | <0.02 | <0.0044-<0.050 | <1 | 21 H Y | 100 H L |
| B-12 | B-12-SS-0.0' * | 0 | 9/26/2007 | <0.0096 | <0.019 | <0.0044-<0.050 | <1 | 11 H Y | 66 H L |
| B-12 | B-12-SS-0.0' * | 0 | 10/1/2007 | <0.0091 | <0.018 | <0.0044-<0.050 | <0.94 | 10 Y | 60 |
| B-13 | B-13-SS-0.0' * | 0 | 10/4/2007 | <0.0094 | <0.019 | <0.0044-<0.050 | <0.97 | 26 Y | 94 |
| B-14 | B-14-SS-0.0 | 0 | 10/8/2007 | <0.0091 | <0.018 | <0.0044-<0.050 | <1.1 | 28 Y | 140 |
| B-16 | B-16-SS-0.0' | 0 | 10/16/2007 | <0.0096 | <0.019 | <0.0044-<0.050 | <1 | 10 Y | 31 |
| | Residential ESL | | | 3.9 | 0.077 | NA | 83 | 83 | 370 |
| | Commercial/Industrial ESL | | | 3.9 | 0.077 | NA | 83 | 83 | 2500 |
| Deep Soil Samples | | | | | | | | | |
| B-01 | B-1-SS-36' * | 36 | 10/3/2007 | <0.0096 | <0.019 | <0.0045-<0.049 | <1.1 | 17 Y | 53 |
| B-02 | B-02-SS-35' | 35 | 9/25/2007 | <0.0096 | <0.019 | <0.0045-<0.049 | <0.95 | 30 Y | 42 |
| B-03 | B-03-SS-25.0 * | 25 | 9/25/2007 | <0.0098 | <0.02 | <0.0045-<0.049 | <0.95 | 26 H Y | 110 H L |
| B-05 | B-5-SS-46' * | 46 | 10/3/2007 | <0.0096 | <0.019 | <0.0045-<0.049 | <0.99 | 3.7 Y | 7.4 |
| B-06 | B-6-SS-25' * | 25 | 10/4/2007 | <0.0098 | <0.02 | <0.0045-<0.049 | <0.96 | 7.3 Y | 8.3 |
| B-08 | B-8-SS-68' + | 68 | 10/9/2007 | <0.0094 | <0.019 | <0.0045-<0.049 | <0.99 | 17 Y | 11 |
| B-10 | B-10-SS-45' * | 45 | 10/1/2007 | <0.0094 | <0.019 | <0.0045-<0.049 | <1.0 | 42 Y | 190 |
| B-11 | B-11-SS-35' * | 35 | 9/26/2007 | <0.0096 | <0.019 | <0.0045-<0.049 | <1 | 15 H Y | 24 H L |
| B-12 | B-12-SS-42' * | 42 | 10/1/2007 | <0.0089 | <0.018 | <0.0045-<0.049 | <0.96 | 11 Y | 34 |
| B-13 | B-13-SS-45' * | 45 | 10/4/2007 | <0.0096 | <0.019 | <0.0045-<0.049 | <1.0 | 8.9 Y | 17 |
| B-14 | B-14-SS-53' * | 53 | 10/8/2007 | <0.0096 | <0.019 | <0.0045-<0.049 | <1 | 19 | 35 |
| B-16 | B-16-SS-55' | 55 | 10/17/2007 | <0.0093 | <0.019 | <0.0045-<0.049 | <1.0 | 6.3 Y | <5.0 |
| | Residential ESL | | | 3.9 | 0.077 | NA | 83 | 83 | 5000 |
| | Commercial/Industrial ESL | | | 3.9 | 0.077 | NA | 83 | 83 | 5000 |

**Notes:**
ft bgs = feet below ground surface
* = soil sample collected in a polymer container
+ = soil sample container type is not noted on chain of custody record
< = analyte not detected above laboratory reporting limit
VOCs = volatile organic compounds
TPH = total petroleum hydrocarbons
TPH-gro = total petroleum hydrocarbons – gasoline range organics
TPH-dro = total petroleum hydrocarbons – diesel range organics
TPH-moro = total petroleum hydrocarbons – motor oil range organics

ESL = Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

**TABLE 7**
**AMONOS SITE PHASE II INVESTIGATION**
**ANALYTICAL RESULTS FOR VOCS AND TPH IN GRAB AND MONITORING WELLGROUNDWATER SAMPLES**
**CLOVERDALE, CALIFORNIA**
**(water concentrations in micrograms per liter [µg/l])**

| Sample Location | Sample Identification | Date Sampled | VOCs | TPH-gro | TPH-dro | TPH-moro |
|---|---|---|---|---|---|---|
| Grab Groundwater Samples | | | | | | |
| B-01 | B-1-GW-24' | 10/2/2007 | <0.5 - <10 | <50 | 53 Y | **<300** |
| B-02 | B-02-GW-30' | 9/25/2007 | <0.5 - <10 | <50 | <50 | **<300** |
| B-03/MW-01 | B-03-GW-7.5 | 9/27/2007 | <0.5 - <10 | <50 | 79 Y | **120 J** |
| B-03/MW-01 | B-03-GW-10' | 9/25/2007 | <0.5 - <10 | <50 | **120 H Y** | **180 J** |
| B-04 | B-4-GW-2.5' | 10/17/2007 | <0.5 - <10 | <50 | <50 | **81 J** |
| B-05/MW-02 | B-5-GW-45' | 10/3/2007 | <0.5 - <10 | <50 | **260 Y** | **290 J** |
| B-06 | B-6-GW-17' | 10/4/2007 | <0.5 - <10 | <50 | 77 Y | **110 J** |
| B-07/MW-03 | B-7-GW-41 | 10/11/2007 | <0.5 - <10 | <50 | <50 | **<300** |
| B-08/MW-04 | B-8-GW-+1.25' | 10/9/2007 | <0.5 - <10 | <50 | **180 Y** | **<300** |
| B-08/MW-04 | B-8-GW-+1.25' | 10/9/2007 | <0.5 - <10 | <50 | <50 b | **<300 b** |
| B-08A/MW-05 | B-8A-GW-70' | 10/17/2007 | <0.5 - <10 | <50 | **350 Y** | **170 J** |
| B-09 | B-9-GW-25 | 10/11/2007 | <0.5 - <10 | <50 | 57 Y | **<300** |
| B-09 | B-9-GW-30.8' | 10/17/2007 | <0.5 - <10 | <50 | <50 | **<300** |
| B-10/MW-07 | B-10-GW-27.5' | 10/1/2007 | <0.5 - <10 | <50 | <50 | **<300** |
| B-10/MW-07 | B-10-GW-45' | 10/2/2007 | <0.5 - <10 | <50 | 52 Y | **<300** |
| B-11 | B-11-GW-24' | 9/26/2007 | <0.5 - <10 | <50 | <50 | **<300** |
| B-12/MW-08 | B-12-GW-28 | 9/28/2007 | <0.5 - <10 | <50 | **760 Y** | **670** |
| B-12/MW-08 | B-12-GW-33' | 10/1/2007 | <0.5 - <10 | <50 | **110 Y** | **120 J** |
| B-13 | B-13-GW-38' | 10/4/2007 | <0.5 - <10 | <50 | 74 Y | **<300** |
| B-14/MW-09 | B-14-GW-45' | 10/8/2007 | <0.5 - <10 | <50 | **280 Y** | **370** |
| B-16 | B-16-GW-45' | 10/17/2007 | <0.5 - <10 | <50 | **390 Y** | **220 J** |
| Groundwater Monitoring Well Samples | | | | | | |
| B-03/MW-01 | MW-01 | 5/19/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-05/MW-02 | MW-02 | 5/19/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-07/MW-03 | MW-03 | 5/19/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-08/MW-04 | MW-04 | 5/20/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-08A/MW-05 | MW-05 | 5/20/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-08A/MW-05 | MW-05 | 5/20/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-08B/MW-06 | MW-06 | 5/20/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-10/MW-07 | MW-07 | 5/19/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-12/MW-08 | MW-08 | 5/19/2008 | <0.5 - <10 | NA | <50 | **<300** |
| B-14/MW-09 | MW-09 | 5/19/2008 | <0.5 - <10 | NA | <50 | **<300** |
| | | Groundwater ESL | -- | 100 | 100 | 100 |

NOTES:

< = analyte not detected above laboratory reporting limit
VOCs = volatile organic compounds
TPH = total petroleum hydrocarbons
NA = not analyzed

TPH-gro = total petroleum hydrocarbons – gasoline range organics
TPH-dro = total petroleum hydrocarbons – diesel range organics
TPH-moro = total petroleum hydrocarbons – motor oil range organics

H = heavier hydrocarbons contributed to the quantification
L = lighter hydrocarbons contributed to the quantification
Y = sample exhibits chromatographic pattern which does not resemble standard
J = estimated value

ESL = Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

groundwater from drilling equipment. Due to the generally undependable nature of grab groundwater sample results, this investigation relies on the analytical results from the water samples collected from the monitoring wells.

The nine groundwater monitoring wells were sampled and analyzed for TPH-dro and TPH-moro and the results are summarized on **Table 7**. TPH-dro and TPH-moro were not detected in any of the groundwater monitoring well samples. Note that the laboratory reporting limit for TPH-moro was above the ESL for the nine groundwater samples analyzed.

## 5.3 Volatile Organic Compounds

Shallow and deep soil samples were collected and analyzed for VOCs using EPA method 8260B and the results are summarized in **Table 6**. 2-Butanone (also known as methyl ethyl ketone) was detected above the laboratory detection limit in the surface sample collected at B-04, and methylene chloride was detected above the laboratory detection limit at location B-08. The detections of 2-butanone and methylene chloride were below the relevant ESL for shallow soils (3.9 mg/kg and 0.077 mg/kg, respectively, for both residential and commercial/industrial land use scenario). It should be noted that both 2-Butanone and methylene chloride are found in household solvents and degreasers. In addition, they are often found in soil and groundwater samples as cross contaminants introduced in the analytical laboratory.

VOCs were not detected above the laboratory reporting limit in the deep soil samples. Similarly, VOCs were not detected above the laboratory reporting limit in grab groundwater samples or in samples collected from the groundwater monitoring wells, as summarized in **Table 7**.

### Neighboring MGM Site

The potential for DNAPL and impacted groundwater associated with the MGM site to migrate onto the Amonos site required additional investigation according to the Phase I conducted by Geomatrix. Evaluation of remedial investigation and groundwater monitoring reports of the MGM site indicate that VOCs have been migrating off the MGM site through groundwater conduits associated with storm drain lines, an underground industrial waste line, and an underground sanitary sewer line. An additional conduit is also associated with a potential west-to-east alignment of the creek where a fracture system may be controlling both the creek alignment and groundwater flow on the northeast side of the MGM site (EKI, 2002).

Previous investigations conducted by Erler & Kalinowski, Inc. (EKI) on behalf of MGM Brakes Assembly Plant have delineated a potential extent of DNAPL below the main assembly plant and along two preferential flow paths, the extent of which remains on the MGM site. Further investigation of soil gas concentrations indicated that soil gas concentrations of VOCs were present just above the DNAPL plume. Sub-slab soil gas samples were collected in September of 1999 with the highest detected VOCs being trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE). TCE concentrations ranged from 1.542 micrograms per cubic meter ($\mu g/m^3$) to 1,257 $\mu g/m^3$ and cis-1,2-DCE concentrations ranged from 1.832 $\mu g/m^3$ to 464 $\mu g/m^3$ (EKI, 2000). The concentrations of TCE detected in soil gas are above the current ESL for residential land use (1,200 $\mu g/m^3$), but

below the current ESL for commercial land use (4,100 µg/$m^3$); the concentrations of cis-1,2-DCE were below the current ESL for residential and commercial/industrial land use (7,300 µg/$m^3$ and 20,000 µg/$m^3$, respectively). These elevated soil gas concentrations would be expected above a DNAPL source zone, and where elevated concentrations of VOCs are detected in soil. As noted by the SFRWQCB, soil gas data should be collected for additional evaluation of potential indoor-air impacts at sites with areas of VOC contaminated soil (SFRWQCB, 2008).

Additionally, surface and shallow groundwater samples collected along the unnamed creek indicate that in 1997, TCE, cis-1,2- DCE, and vinyl chloride were detected at elevated concentrations. Data for these samples were presented in EKI's "Summary Remedial Investigation Report and Final Remedial Action Plan" dated May 7, 2002. Groundwater samples were collected along transects; TCE concentrations ranged from less than 0.5 µg/l to 1,200 µg/l; cis-1,2-DCE concentrations ranged from less than 0.5 µg/l to 6,600 µg/l, and vinyl chloride concentrations ranged from less than 0.5 µg/l to less than 250 µg/l with one detection of 9.3 µg/l (EKI, 2002).

Subsequent to these findings, EKI, on behalf of MGM Brakes Assembly Plant and under RWQCB oversight, expanded their groundwater extraction system to capture the off-site migration of VOCs along the identified preferential flow paths, however additional remediation activities may be required to ensure that VOCs are fully captured by the remediation systems within the vicinity of the unnamed creek and the underground sanitary sewer line, which both run along the southern boarder of the Amonos site.

However, recent groundwater monitoring of shallow groundwater within the vicinity of the unnamed creek indicate that TCE and cis-1,2-DCE have decreased significantly since 1997. Surface and shallow groundwater samples were collected from the same surface water monitoring locations and installed piezometers on September 18, 2007 and analyzed for VOCs; the analytical results were downloaded from the State Water Resources Control Board (SWRCB) Geotracker website in December 2008 (SWRCB, 2008). Detected concentrations of TCE ranged from less than 0.5 µg/l to 2.95 µg/l in collected surface water samples, and TCE ranged from less than 0.5 µg/l to 1.02 µg/l in shallow groundwater samples; detected concentrations of cis-1,2-DCE ranged from less than 0.5 µg/l to 2.84 µg/l in collected surface water samples, and from less than 0.5 µg/l to 4.25 µg/l in shallow groundwater. These recent concentrations of TCE and cis-1,2-DCE in surface water and shallow groundwater are below the respective ESLs of 5 µg/l for TCE and 6 µg/l for cis-1,2-DCE (the ESLs are the same for surface water and groundwater).

Three MGM groundwater monitoring wells are located adjacent to or on the Amonos site, including MGM-30 (screened from 15.5 feet bgs to 25.5 feet bgs), MGM-35 (screened from 5 feet bgs to 15 feet bgs), and MGM-40 (screened from 5.5 feet bgs to 9.5 feet bgs). The location of these wells is illustrated on **Figure 3**. These wells were sampled on September 18, 2007 and analyzed for VOCs; the analytical results were downloaded from the SWRCB Geotracker website in December 2008 (SWRCB, 2008). Detected concentrations of TCE ranged from 1.28 µg/l at MGM-35, 3.38 µg/l at MGM-40, and 118 µg/l at MGM-30; detected concentrations of cis-1,2-DCE ranged from 0.75 µg/l at MGM-35, 1.38 µg/l at MGM-40, and 38.9 µg/l at MGM-30. These

detected concentrations indicate that shallow groundwater on the Amonos site (as measured from MGM-35 and MGM-40) are below the respective ESLs for TCE and cis-1,2-DCE.

## 5.4 Pesticides and Polychlorinated Biphenols (PCBs)

Analytical results of pesticides and PCBs for surface soils and grab groundwater samples are summarized on **Table 8**. Surface soil samples were collected from B-1 and B-10 through B-13 and analyzed for pesticides using EPA method 8081and PCBs using EPA method 8082. Pesticide compounds 4,4-DDT, 4,4-DDE, and 4,4-DDD and PCB compound Arochlor were detected above the laboratory reporting limit. None of the detected concentrations were above the relevant ESLs.

Grab groundwater samples were collected from boring location B-12 at a depth of 27 and 31 feet bgs, respectively. Pesticides and PCBs were not detected in the grab groundwater samples. Please note that the laboratory reporting limit for pesticides and PCBs was above the ESL for the two grab groundwater samples.

# 6. Conclusions

This Phase II Investigation reviewed and evaluated previous Phase I studies and soil and groundwater sampling and analysis work, which was previously conducted to assess the potential impacts to soil and groundwater at the Amonos site in Cloverdale, California. Available information and data reviewed for this site does not suggest that ongoing or historical site uses have resulted in significant soil or groundwater contamination on the site.

Concentrations of metals in the soil and groundwater appear to be indicative of naturally-occurring background levels although there are a few instances of metals concentrations exceeding the ESLs. Considering the geologic environment, especially in the northern Coast Ranges region, it is not uncommon for background metals to exceed ESLs. Of the elevated metals concentrations detected, the results do not suggest a surface contaminant source or more widespread soil and groundwater contamination.

TPH and VOCs did not exceed Environmental Screening Levels (ESLs) established by the State of California to protect human health and the environment. Additionally, the environmental impact to the Amonos site from the MGM Brake facility is negligible. A release of industrial solvents occurred at the MGM Brake facility located southwest and across Highway 101 from the Amonos site many years ago and the plume has migrated offsite. The MGM Brake site is currently under regulatory clean up oversight by the Regional Water Quality Control Board, which is requiring continued monitoring and remediation activities. Although there is reported concentrations of volatile organic compounds (VOCs) in the groundwater flowing through backfill of an offsite sewer main, the impact to groundwater appears minor, localized within the backfill, and contained within the identified preferential flow paths. Investigation results indicate that VOCs from the MGM site have not migrated onto the Amonos site above the relevant ESLs.

Based on the findings of this Phase II, soil and groundwater contamination does not appear to present a significant issue for the proposed future development at the Amonos site.

**TABLE 8**
**AMONOS SITE PHASE II INVESTIGATION**
**ANALYTICAL RESULTS FOR PESTICIDES IN SOIL SAMPLES**
**AND GRAB GROUNDWATER SAMPLES**
**CLOVERDALE, CALIFORNIA**

| Sample Location | Sample Identification | Date Sampled | 4,4'-DDD | 4,4'-DDE | 4,4'-DDT | alpha-Chlordane | gamma-Chlordane | Aroclor-1260 |
|---|---|---|---|---|---|---|---|---|
| Shallow Soil Samples (reported in milligrams per kilogram) | | | | | | | | |
| B-10 | B-10-SS-0.0' | 10/1/2007 | <3.3 | <3.3 | <3.3 | <1.7 | <1.7 | <12 |
| B-11 | B-11-SS-0.0' | 9/26/2007 | <3.3 | <3.3 | <3.3 | <1.7 | <1.7 | <12 |
| B-12 | B-12-SS-0.0' | 9/26/2007 | <3.3 | 4.8 | <3.3 | <1.7 | <1.7 | 49 |
| B-12 | B-12-SS-0.0' | 10/1/2007 | <3.3 | 7.6 | <3.3 | <1.7 | <1.7 | <12 |
| B-12 | B-12-SS-0.0'-EAST 2.5 | 10/17/2007 | <3.3 | 5.4 | <3.3 | <1.7 | <1.7 | 19 |
| B-12 | B-12-SS-0.0'-EAST 5.0 | 10/17/2007 | <3.3 | 5.9 | <3.3 | <1.7 | <1.7 | <12 |
| B-12 | B-12-SS-0.0'-NORTH 2.5 | 10/17/2007 | <3.3 | 3.6 | <3.3 | <1.7 | <1.7 | <12 |
| B-12 | B-12-SS-0.0'-NORTH 5.0 | 10/17/2007 | <3.3 | 4.4 | <3.3 | <1.7 | <1.7 | <12 |
| B-12 | B-12-SS-0.0'-SOUTH 2.5 | 10/17/2007 | <3.3 | <3.3 | <3.3 | <1.7 | <1.7 | <12 |
| B-12 | B-12-SS-0.0'-SOUTH 5.0 | 10/17/2007 | <3.3 | 3.5 | <3.3 | <1.7 | <1.7 | <12 |
| B-12 | B-12-SS-0.0'-WEST 2.5 | 10/17/2007 | <3.3 | <3.3 | <3.3 | <1.7 | <1.7 | <12 |
| B-12 | B-12-SS-0.0'-WEST 5.0 | 10/17/2007 | <3.3 | <3.3 | <3.3 | <1.7 | <1.7 | <12 |
| B-13 | B-13-SS-0.0' | 10/4/2007 | <3.3 | <3.3 | <3.3 | <1.7 | <1.7 | <12 |
| B-01 | B-1-SS-0.0' | 10/2/2007 | 5.7 | 17 | 94 | 6.1 C | 15 C | <12 |
| | | Residential ESL | 2.4 | 1.7 | 1.7 | 0.44 | 0.22 | 0.22 |
| | | Commercial/Industrial ESL | 10 | 4.0 | 4.0 | 1.7 | 0.74 | 0.74 |
| Grab Groundwater Samples (reported in micrograms per liter) | | | | | | | | |
| B-12 | B-12-GW-28' | 9/28/2008 | <0.1 b | <0.1 b | <0.1 b | <0.05 b | <0.05 b | <0.50 b |
| B-12 | B-12-GW-33' | 10/1/2007 | <0.1 | <0.1 | <0.1 | <0.05 | <0.05 | <0.50 |
| | | Groundwater ESL | 0.0010 | 0.0010 | 0.0010 | 0.0040 | 0.0040 | 0.014 |

NOTES:

* = soil sample collected in a polymer container
+ = soil sample container type is not noted on chain of custody record
< = analyte not detected above laboratory reporting limit

b = sample was prepared outside of hold time

ESL = Environmental Screening Levels, from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater where groundwater is a current or potential drinking water resource (SFRWQCB, 2008).

# 7. Limitations and Exceptions

The opinions and recommendations presented in this report are based upon the scope of services, information obtained from PJAMM from previous site investigation activities, and the schedule as agreed upon by ESA and PJAMM. Site specific activities performed by Weiss Associates, and Geomatrix Consultants, and information collected regarding these activities, were reviewed by ESA to the extent practical for use in this Phase II Investigation Report. To the extent that ESA relied upon any information prepared by other parties not under contract to ESA, ESA makes no representation as to the accuracy or completeness of such information beyond the reasonable evaluation of site activities and analytical data received. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and

level of skill and care under similar conditions and circumstances established by the environmental consulting industry. It must be recognized, however, that this Phase II was intended for the purpose of determining and characterizing the potential extent for contamination, based on the observations from a Phase I Environmental Site Assessment and does represents a conclusive or complete site characterization. ESA's ability to interpret investigation results is dependant on the availability of the data and the extent of the investigation activities. The conclusions and recommendations presented in this Phase II pertain to the conditions judged to be present or applicable at the site (Amonos site, Cloverdale California) and the time the work was performed. ESA developed its opinions in accordance with accepted site assessment and engineering practices for this time and specific site. It should be understood that some of the findings presented in this report are based on analytical results of soil and groundwater samples collected at select onsite locations. These results may not reflect conditions at locations not sampled. As such, 100 percent confidence in Phase II conclusions cannot reasonably be achieved. The interpretations and conclusions contained in this report represent our professional opinions. Other than this, no warranty is implied or intended.

# 8. Signature of Environmental Professionals

This Phase II Investigation Report has been prepared by ESA staff whose signature appears below. The recommendations, specifications, and methodologies presented herein were prepared and presented in accordance with generally accepted practices at the time that this report was prepared, and are true and correct to the best of my knowledge.

Prepared by:

Peter B. Hudson
Senior Geologist
PG # 6730, CEG # 2348 Expires 10/31/09

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# APPENDIX A

Drilling Permits
Field Notes
Boring Logs
Well Elevation Survey Results

# PERMITS

Villegas
printing & copycenter
707.545.8990
fax: 707.545.0229 3551 Westwind Blvd., Santa Rosa, CA 95403

# FAX COVER SHEET

Date: 9/17/07
To: Jessica Rotich
Company: Weiss Associates
Phone: 510-450-6000
Fax: 510-547-5043

From: Gini Gandhar
Phone:
Company:
Message: Here are the permit copies.

*If there is any problem with this transmission, plase call (707) 545-8990. Thank you.*

| *For Office Use Only* |
|---|
| Address _____ |
| _____ |
| Site ID# _____ |
| Permit # _____ |

I hereby agree to comply with all laws and regulations of the County of Sonoma and State of California pertaining to water well construction. I will telephone (707) 565-6565, 48 hours in advance, to notify the Environmental Health Specialist when completing or destroying a well. I will furnish the Director of Health Services and the owner a legible copy of the State Water Well Driller's Report within 15 days; and a copy of the Summary Report, including sample results, should be received by this Department within 90 days in order to obtain final approval on this well permit. I acknowledge that the application will become a permit *only* after site approval and payment of fee. I understand that this permit is not transferable and expires one year from date of issuance.

Gordon D. Jones Date 9/14/07

Signature of Well Driller—*no proxies*

Insurance Carrier State Fund Expiration Date 02/01/08

Once all wells/borings are installed, submit a Well Driller's Log and/or Summary Report to complete permit process.

Indicate on attached plot plan the exact location of well(s) with respect to the following items: property lines, water bodies or water courses drainage pattern, roads, existing wells, sewer main and laterals and private sewage disposal systems or other sources of contamination or pollution. INCLUDE DIMENSIONS. The validity of this permit depends upon the accuracy of the information provided by the applicant.

Conditions of permit:

FOR OFFICE USE ONLY – ENVIRONMENTAL HEALTH DIVISION

Permit approved by _____ Date ____/____/____

Constr. approved by _____ Observed? [ ] Yes [ ] No Well # _____ Date ____/____/____

RWQCB / LOP approval _____ Date ____/____/____

| APN # | Propery Address | Property Owner Address | Phone # |
|---|---|---|---|
| 116-310-039 | 80 El Rancho Dr. | Vern Lile, 80 El Rancho Dr.<br>Cloverdale, CA 95425 | 707-894-2977 |
| 116-310-040 and<br>116-310-035 | 250 Lile Lane through<br>496 Lile Lane, Cloverdale, CA | Micky Hayes, Pacific Gulf LLC, 1225 Walters Lane<br>Yreka, CA 96907 | 530-841-1818 |
| 116-310-020 | 585 Santana Dr., Cloverdale, CA | Lety Ruiz 585 Santana Dr, Cloverdale, CA 95425 | 707-669-0393 |

SEP-18-2007 09:36A FROM:UPCC PRINTING 707 545 0229 TO:15105475043 P.4/7

COUNTY OF SONOMA — DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH DIVISION
475 Aviation Blvd., Suite 220, Santa Rosa, CA 95403
Phone (707) 565-6565 Fax (707) 565-6525 www.sonoma-county.org

APPLICATION FOR DRILLING PERMIT
for Regional Board Lead/Environmental Assessment / LOP Lead

| For Office Use Only | |
|---|---|
| Amount paid | |
| Receipt number | |
| Payment date | Rev code |
| Site ID# | |
| Permit # | |

Well type: [✓] Monitoring well [ ] Recovery extraction well [ ] Boring [ ] Injection well [ ] Destruct [✓] Environmental assessment
[ ] Soil gas survey [ ] Direct push [ ] Air sparging/venting [ ] Remediation well [ ] Other

Well depth 50' Boring depth

# On-site well/boring 7 ID # 10M, 8N, 14M, 7M, 5M, 3M, 4M # Off-site well/boring — ID # —

Submit legal right-of-entry/off-site well address/encroachment permit

On-site Address 250 through 496 Lile Lane/585 Santana Dr Cloverdale CA 95425 APN# 116-310-039, 116-310-040, 116-310-035, 116-310-020

Facility Name None

On-site Owner See attached sheet Phone

Street City State Zip

Responsible Party Confidential Client Phone 503-221-2261

Street One SW Columbia St, Ste 950 City Portland State OR Zip 97258

Consultant Weiss Associates Phone 510-450-6162

Street 5801 Christie Ave. City Emeryville State CA Zip 94608

License #/Type 606481

Drilling Contractor Western States Exploration Inc. Phone 916-744-1440

Street P.O. Box 657 City Clarksburg State CA Zip 95612

C-57 License # CALIC # 552198

Type of work: [✓] Initial investigation 7 # Wells [ ] Subsequent investigation # Wells [ ] Destruct # Wells

Groundwater investigation due to: [ ] Underground tank [ ] Surface impoundment [✓] Environmental assessment
[ ] Surface disposal practice—specify involved industry
[ ] Other

Perforated intervals ~40-50' Chemical constituents VOCs, TPHg/d/MO, Nitrate

Disposal method for soil cuttings * Disposal method for development water **

Drilling method Air Rotary Case Hammer Method of drill equip. rinsate containment 55 gallon drums

If destroying a well, abandonment method —

Submit plot plan of wells in relation to all sewer or septic lines.

***Is well to be constructed within:*** 100 feet of a septic tank or leachfield? [ ] Yes [✓] No
50 feet of any sanitary sewer line? [✓] Yes [ ] No
25 feet of any private sanitary sewer line? [ ] Yes [✓] No

In addition, all monitoring wells must include ***identification system*** affixed to interior surface:

1) Well identification 2) Well type 3) Well depth 4) Well casing diameter 5) Perforated intervals

Well identification number and well type shall be ***affixed*** to the ***exterior surface*** security structure.

* Cuttings will be sampled + stored onsite. If cuttings are not contaminated, they will stockpiled onsite. If cuttings are contaminated they will be disposed using an appropriate waste hauler.

** Same as soil cuttings, will be stored onsite pending analysis.

COUNTY OF SONOMA — DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH DIVISION
475 Aviation Blvd., Suite 220, Santa Rosa, CA 95403
Phone (707) 565-6565 Fax (707) 565-6525 www.sonoma-county.org

APPLICATION FOR DRILLING PERMIT
for Regional Board Lead/Environmental Assessment / LOP Lead

| For Office Use Only | |
|---|---|
| Amount paid | |
| Receipt number | |
| Payment date | Rev. code |
| Site ID# | |
| Permit # | |

Well type: [ ] Monitoring well [ ] Recovery extraction well [✓] Boring [ ] Injection well [ ] Destruct [✓] Environmental assessment
[ ] Soil gas survey [ ] Direct push [ ] Air sparging/venting [ ] Remediation well [ ] Other

Well depth ____ Boring depth 50'

# On-site well/boring 9 ID # 1,2,6,9,11,12,13,15+ 16 # Off-site well/boring — ID # —

Submit legal right-of-entry/off-site well address/encroachment permit

On-site Address 250 through 496 Lile Lane/585 Santana Dr, Cloverdale CA 95425 APN# 116-310-039, 116-310-040, 116-310-035, 116-310-020

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Street ____ City ____ State ____ Zip ____

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Street One SW Columbia St; Ste 950 City Portland State OR Zip 97258

Consultant Weiss Associates Phone 510-450-6162

Street 5801 Christie Ave City Emeryville State CA Zip 94608

License #/Type 606481

Drilling Contractor Western Strata Exploration, Inc. Phone 916-744-1440

Street P.O. Box 657 City Clarksburg State CA Zip 95612

C-57 License # CA LIC# 552198

Type of work: [✓] Initial investigation ____ # Wells [ ] Subsequent investigation ____ # Wells [ ] Destruct ____ # Wells

Groundwater investigation due to: [ ] Underground tank [ ] Surface impoundment [✓] Environmental assessment
[ ] Surface disposal practice—specify involved industry
[ ] Other

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***Is well to be constructed within:*** 100 feet of a septic tank or leachfield? [ ] Yes [✓] No
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| *For Office Use Only* |
|---|
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| Site ID# _____ |
| Permit # _____ |

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Gordon Johnson Date 9/14/07

Signature of Well Driller—*no proxies*

Insurance Carrier State Fund Expiration Date 02/01/08

Once all wells/borings are installed, submit a Well Driller's Log and/or Summary Report to complete permit process.

Indicate on attached plot plan the exact location of well(s) with respect to the following items: property lines, water bodies or water courses drainage pattern, roads, existing wells, sewer main and laterals and private sewage disposal systems or other sources of contamination or pollution. INCLUDE DIMENSIONS. The validity of this permit depends upon the accuracy of the information provided by the applicant.

Conditions of permit:

_____

_____

_____

_____

_____

_____

_____

_____

❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖ ❖

FOR OFFICE USE ONLY – ENVIRONMENTAL HEALTH DIVISION

Permit approved by _____ Date ____/____/____

Constr. approved by _____ Observed? [ ] Yes [ ] No Well # _____ Date ____/____/____

RWQCB / LOP approval _____ Date ____/____/____

drilling permit.doc (Revised August 2006) Copies: White—File Yellow—Driller Pink—Consultant Gold—Owner/Resp. Party

| APN # | Propery Address | Property Owner Address | Phone # |
|---|---|---|---|
| 116-310-039 | 80 El Rancho Dr. | Vern Lile, 80 El Rancho Dr. Cloverdale, CA 95425 | 707-894-2977 |
| 116-310-040 and 116-310-035 | 250 Lile Lane through 496 Lile Lane, Cloverdale, CA | Micky Hayes, Pacific Gulf LLC, 1225 Walters Lane Yreka, CA 96907 | 530-841-1818 |
| 116-310-020 | 585 Santana Dr., Cloverdale, CA | Lety Ruiz 585 Santana Dr, Cloverdale, CA 95425 | 707-669-0393 |

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# FIELD NOTES

**FIELD ACTIVITY LOG**

Weiss Associates

Project Name: Perry Johnson Date: April 07, 2008 Page 1 of 1

Project #: 379-1824-15-3 Project Manager: JEA

Name: JMD

Vehicle (Field Use): Weiss X Personal ____ Rental ____

Odometer in: ____ Odometer out: ____ Mileage: X

Total Hours Billed: 13.75 Other: ____

| Time | Activity Description |
|---|---|
| 0430 | Arrived @ shop, Mob |
| 0530 | Depart for site |
| 0800 | Onsite, checked w/ hotel to ensure was RTG for later/All ok Located mail center |
| 0830 | Met w/ Dave from TA. could not locate first ~~2~~ two wells, called REK, GG, RD + JEA, left messages w/all. |
| 0900 | REK returned call + helped w/ access issues |
| 0930 | @ MW-3, setup + ~~began development~~ |
| 1000 | Began surging + development. Standpipe is 29" above gs |
| 1030 | Well dry, Moving on to MW-2 will return, Door |
| 1110 | @ MW-2 began surge for 10 min + development Standpipe is 33" above gs. Well recharge slow. |
| 1145 | MW-2 Dry, will return, decon equip |
| 1215 | Lunch |
| 1245 | To MW-9, setup + surge. Casing bent around 25', Had to work past with every pass on the way down. Casing is 23.5" above gs. Extremely silty. Called JEA and asked how to proceed. Waited for response. |
| 1700 | Reached 10 casing volumes. Well did not clean up @ all. Called JEA, she said to ~~stop~~ for the day. Packed up |
| 1745 | Departed site. |
| 1800 | Checked into hotel |
| 1845 | ~~Done~~ Unloaded equip + Done |
| | ~~Done~~ |

| Time | Telephone Calls |
|---|---|
| 0830 | GG, RD, JEA, REK - Trying to find access points to wells, LM's |
| 1630 | JEA - Told her well isn't coming clean, waited for response |
| 1700 | JEA - Said to call it a day. Will proceed on 4/8/08. |

Weiss Associates

**Well Development Form**

**Project Name:** Perry Johnson

**Project No.:** 379-1824-15-3

Initials: JMD

Date: 4/7/08

PM: JEA

| | |
|---|---|
| Well ID: MW-09/B14 | Casing Diameter (in.): 2" |
| Well Development Method: Surge/Bailer | Well Depth (ft btoc): 64.52 |
| Depth to Water before Development: 20.35 | Screened Interval (ft btoc): 53-63' |
| Top of Casing Elevation: Standpipe is 23.5" Above bgs N/A | Sand Pack Interval (ft btoc): |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 1338 | 20.35 | Began surging | | | | | | surged for 10 min |
| – casing | bent, had to work surge block through | | | | | | | |
| 1400 | 23.62 | 7.87 | 17.7 | 749us | >1000 | Bailer | 8 | very silty/grey |
| 1425 | 24.31 | 7.70 | 17.0 | 788us | >1000 | | 16 | " " |
| 1449 | 24.01 | 7.64 | 17.2 | 770us | >1000 | | 24 | " " |
| 1450 | – Surged | for | 10 | min | | | | |
| 1520 | 24.70 | 7.60 | 17.4 | 767 | >1000 | | 32 | " " |
| 1537 | 25.68 | 7.60 | 17.4 | 787 | >1000 | | 40 | " " |
| 1550 | 25.90 | 7.54 | 17.4 | 785 | >1000 | | 48 | " " |
| 1550 | – Surged | for | 10 min | | | | | |
| 1615 | 24.08 | 7.57 | 17.7 | 757 | >1000 | | 56 | " " |
| 1630 | 24.38 | 7.56 | 17.6 | 760 | >1000 | | 64 | " " |
| 1650 | 24.67 | 7.66 | 17.3 | 755 | >1000 | | 72 | " " |
| 1705 | 24.50 | 7.69 | 17.2 | 740 | >1000 | | 80 | " " |
| – Stopping | for the | day | per | JEA | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 65.53 |
| Total Gallons Purged: 80 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: | Well Development Observer (Y/N, name): |

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

**FIELD ACTIVITY LOG**

Weiss Associates

Project Name: Perry Johnson/Cloverdale Date: 4/8/08 Page 1 of _____

Project #: 379-1824-15-3 Project Manager: JEA

Name: JMD

Total Hours Billed: 12

Vehicle (Field Use):
Weiss X Odometer in: _____
Personal _____ Odometer out: _____
Rental _____ Mileage: X

Other: _____

| Time | Activity Description |
|---|---|
| 0600 | Load equip. |
| 0630 | Met w/ Dave from TA. Setup for day |
| 0745 | Began surging MW-3 again |
| 0900 | Began bailing MW-3 |
| 0820 | Switched to Grundfos, set flow to 0.25 gpm to attempt allowing the well to keep up. |
| 0930 | Well dry. Moving on to MW-2, Decon all equip. |
| 1025 | Arrived @ MW-2. Had to wait for pesticide crew to clear roadway. Setup |
| 1030 | Began surge and development. |
| 1100 | Well MW-2 Dry. Will return. To MW-8 & setup |
| 1135 | Begin surge + bail |
| 1215 | Lunch, will return to MW-8, allowing recharge |
| 1245 | Back to MW-8. |
| 1330 | Completed development on MW-8, moved to MW-1. Turned off electric fence and collapsed fencing. Decon all equip. |
| 1420 | Began purging + bailing MW-1 |
| 1645 | Stopped @ 20 casing volumes. Per JEA. Packed up reconected fencing, Decon equip. |
| 1730 | Depart site |
| 1745 | unload equip. |
| 1800 | Done |
| | |
| 1830 | PW + phone meetings |
| 1900 | Done |

| Time | Telephone Calls |
|---|---|
| 1100 | JEA - she said TA will do air lift on MW-9 |
| 1830 | JEA - Planning for drums |
| | Dave w/ TA - Planning for drum delivery |

Weiss Associates

**Well Development Form**

**Project Name:** Perry Johnson

**Project No.:** 379-1824-15-3

Initials: JMQ

Date: 4/7/08

PM: JEA

| | |
|---|---|
| Well ID: MW-02/B-05 | Casing Diameter (in.): 2" |
| Well Development Method: Surge Block, Bailer | Well Depth (ft btoc): 42.76 |
| Depth to Water before Development: 7.57 | Screened Interval (ft btoc): 30'-40' |
| Top of Casing Elevation: Standpipe is 33" above gs N/A | Sand Pack Interval (ft btoc): 28'-42' |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 1110 | 7.57 | Began surging | | | | | | surged for 10 min |
| 1125 | — | 9.17 | 16.9 | 1490 us | >1000 | Bailer | 1 | initial |
| 1133 | 34.20 | 9.43 | 16.2 | 1459 | >1000 | | 6 | slowed down to allow rec |
| 1140 | 40.09 | 8.87 | 17.1 | 1476 | >1000 | | 9 | well dry/will return |
| — Returned 4/8/08 — | | | | | | | | |
| 1030 | 9.14 | — Began Surge for 10 min | | | | | | |
| 1045 | 26.72 | 8.25 | 16.7 | 1223 | >1000 | Bailer | 12 | Tan, clearing |
| 1055 | 40.01 | 8.06 | 17.2 | 1170 | >1000 | " | 18 | Brown, sheen |
| 1057 | Well dry - Will Return | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 42.79 |
| Total Gallons Purged: 18 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: | Well Development Observer (Y/N, name): |

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

**Well Development Form**

**Project Name:** Perry Johnson

**Project No.:** 379-1824-15-3

Initials: MP

Date: 4/7/08, 4/8,

PM: JEA

| | |
|---|---|
| Well ID: MW-3/B7 ~~MW-01/B-03~~ | Casing Diameter (in.): 2" |
| Well Development Method: Surge + Bail + pump | Well Depth (ft btoc): 52.80 |
| Depth to Water before Development: 19.12 | Screened Interval (ft btoc): 40' |
| Top of Casing Elevation: N/A casing standpipe is 29" | Sand Pack Interval (ft btoc): 38' |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 1004 | 19.12 | Surged for 10 min prior to purge | | | | | 0 | 1 min per ft of screen |
| 1015 | 34.32 | 7.56 | 17.4 | 2.61ms | >1000 | — | ~~0~~ | well drawing down |
| 1028 | 38.81 | 7.63 | 17.6 | 2.47ms | >1000 | — | 6 | well dry/will return |
| — | 4/8/08 | Returned to well | | | | | — | — |
| 0748 | 19.86 | - Began surge for 10 min | | | | | — | — |
| 0810 | 41.48 | 7.63 | 15.8 | 1560us | >1000 | — | 12 | Turbid |
| 0820 | 42.06 | 7.69 | 16.6 | 1369us | >1000 | 0.25gpm | 18 | " " switched to pu |
| 0845 | 44.81 | 7.68 | 14.9 | 1059us | 533 | 0.25 | 24 | Clearing, Tan |
| — | Surged for 10 Min | | | | | | | |
| 0915 | 46.28 | 7.68 | 17.7 | 1320us | >1000 | 0.25gpm | 30 | Turbid |
| 0930 | DRY | 7.50 | 18.2 | 1943us | >1000 | 0.5gpm | 36 | " " well dry |
| - Will Return later, Well Dry | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 52.93 |
| Total Gallons Purged: 36 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: | Well Development Observer (Y/N, name): |

Notes and Abbreviations:
cond. = electrical conductivity
DTW = depth to water measured in feet below top-of-casing (ft btoc)
NTU = nephelometric turbidity units
temp. = ground water temperature
turb. = turbidity

Weiss Associates

**Well Development Form**

**Project Name:** Perry Johnson

**Project No.:** 379-1824-15-3

Initials: JMD

Date: 4/8/08

PM: JEA

| | |
|---|---|
| Well ID: ~~MW-03/B-03~~ MW-1 | Casing Diameter (in.): 2" |
| Well Development Method: Surge/Bailer | Well Depth (ft btoc): 21.43 |
| Depth to Water before Development: 5.28 | Screened Interval (ft btoc): 10'-20' |
| Top of Casing Elevation: Standpipe is 27.5" above gs N/A | Sand Pack Interval (ft btoc): |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 1420 | - Begin Surging | | for 10 min | | | | | Soft bottom |
| 1435 | 8.52 | 8.75 | 16.2 | 706 | >1000 | | 3 | very silty, olive |
| 1440 | 8.34 | 8.29 | 15.9 | 697 | >1000 | | 6 | " sheen " |
| 1445 | 6.98 | 8.41 | 15.8 | 659 | >1000 | | 9 | silty, olive, sheen |
| - Surge for 10 min | | | | | | | | |
| 1500 | 9.64 | 8.20 | 16.2 | 638 | >1000 | | 12 | silty, olive, sheen |
| 1504 | 9.47 | 8.08 | 15.9 | 624 | >1000 | | 15 | " " |
| 1508 | 9.98 | 8.00 | 15.8 | 617 | >1000 | | 18 | " " |
| - | Surge for 10 min | | | | | | | |
| 1521 | 7.96 | 7.94 | 16.0 | 634 | >1000 | | 21 | olive, silty |
| 1524 | 7.78 | 7.91 | 15.9 | 621 | >1000 | | 24 | " " |
| 1527 | 6.12 | 8.01 | 15.2 | 619 | >1000 | | 27 | Brown, silty |
| - | Surge for 10 min | | | | | | | |
| 1543 | 7.82 | 7.90 | 15.9 | 637 | >1000 | | 30 | olive, silty |
| 1550 | 8.06 | 7.98 | 15.4 | 625 | >1000 | | 36 | switched to every 2 volns |
| 1557 | 8.11 | 7.80 | 15.4 | 620 | >1000 | | 42 | olive, silty |
| 1614 | 8.01 | 7.81 | 15.4 | 629 | >1000 | | 48 | Surged for 10 min |
| 1622 | 8.09 | 7.88 | 15.3 | 619 | >1000 | | 54 | olive, silty |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 22.00 |
| Total Gallons Purged: 54 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: | Well Development Observer (Y/N, name): |

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

**Well Development Form**

| | | | |
|---|---|---|---|
| ***Project Name:*** | Perry Johnson | Initials: | JMD |
| ***Project No.:*** | 379-1824-15-3 | Date: | 4/8/08 |
| | | PM: | JEA |

| | |
|---|---|
| Well ID: MW-08/B-12 | Casing Diameter (in.): 2" |
| Well Development Method: Surge, Bailer | Well Depth (ft btoc): 32.89 |
| Depth to Water before Development: 22.84 | Screened Interval (ft btoc): 20'-30' |
| Top of Casing Elevation: Standpipe is above N/A GS | Sand Pack Interval (ft btoc): |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 1135 | 22.84 | - Began | Surge for | 10 min | | | | soft bottom |
| 1150 | 28.49 | 12.12 | 18.5 | 2.70ms | 411 | 1gpm | 2 | clearing fast/sheen |
| 1152 | 29.83 | 12.18 | 18.0 | 2.72ms | 219 | | 4 | Tan |
| 1155 | 29.99 | 12.23 | 17.7 | 2.62ms | 206 | | 6 | Drawdown |
| - Surged well for 10 min | | | | | | | | |
| 1210 | 30.16 | 12.18 | 17.9 | 2.54ms | 252 | | 8 | |
| 1215 | 30.36 | 12.19 | 18.0 | 1976us | 270 | | 10 | |
| - Taking break to allow recharge | | | | | | | | |
| 1315 | 28.86 | 12.16 | 17.8 | 1708us | 185 | | 12 | |
| - Surged well for 10 min | | | | | | | | |
| 1320 | 28.98 | 12.16 | 18.0 | 1720 | 149 | | 14 | |
| 1324 | 30.03 | 12.14 | 17.6 | 1623 | 148 | | 16 | |
| - Done per JEA | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 32.75 |
| Total Gallons Purged: 16 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: | Well Development Observer (Y/N, name): |

Notes and Abbreviations:
cond. = electrical conductivity
DTW = depth to water measured in feet below top-of-casing (ft btoc)
NTU = nephelometric turbidity units
temp. = ground water temperature
turb. = turbidity

**FIELD ACTIVITY LOG**

Weiss Associates

Project Name: Perry Johnson / Cloverdale Date: 4/9/08 Page 1 of _____

Project #: 379-1824-15-3 Project Manager: JEA

Name: JMD

Total Hours Billed: 13 Other: _____

Vehicle (Field Use):
Weiss X Odometer in: _____
Personal _____ Odometer out: _____
Rental _____ Mileage: X

| Time | Activity Description |
|---|---|
| 0600 | Load truck |
| 0630 | Meet w/ Dave, setup & decon |
| 0715 | To MW-7 |
| 0900 | Began surging + developing MW-7 |
| 1015 | Completed 10 casing volumes. Well not clearing, moving on |
| 1030 | setup @ MW-6 |
| 1035 | Began surging + developing MW-6 |
| 1300 | completed 10 casing volumes on MW-6 |
| 1305 | Lunch |
| 1348 | Back to site, setup on MW-4 |
| 1418 | Began surge and development of MW-4 |
| 1800 | Completed 10 casing volumes on MW-4, Packed up, decon |
| 1830 | Depart site + unload equip. |
| 1900 | PW. |
| 1930 | Done |

| Time | Telephone Calls |
|---|---|

Weiss Associates

***Well Development Form***

***Project Name:*** Perry Johnson

***Project No.:*** 379-1824-15-3

Initials: JMP

Date: 4/9/08

PM: JEA

| | |
|---|---|
| Well ID: MW-07/B-10 | Casing Diameter (in.): 2" |
| Well Development Method: Surge/Bailer | Well Depth (ft btoc): 31.12 |
| Depth to Water before Development: 18.98 | Screened Interval (ft btoc): 25-35' |
| Top of Casing Elevation: standpipe is 39" above gs N/A | Sand Pack Interval (ft btoc): 22-36 |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 0810 | — Began surging for 10 min — | | | | | | | |
| 0840 | 20.94 | 7.72 | 15.8 | 714 | >1000 | | 3 | Brown, very silty |
| 0847 | 20.57 | 7.46 | 16.6 | 609 | >1000 | | 6 | " " |
| 0854 | 20.68 | 7.35 | 16.5 | 547 | >1000 | | 9 | surged for 10 min |
| 0913 | 20.36 | 7.29 | 16.4 | 571 | >1000 | | 12 | Brown, very silty |
| 0920 | 20.39 | 7.32 | 16.5 | 543 | >1000 | | 15 | " " |
| 0926 | 20.42 | 7.25 | 16.6 | 503 | >1000 | | 18 | surged for 10 min |
| 0943 | 20.46 | 7.17 | 16.7 | 504 | >1000 | | 24 | Brown, very silty |
| 0950 | 20.49 | 7.20 | 16.6 | 440 | >1000 | | 27 | " " |
| 1009 | 20.47 | 7.10 | 16.9 | 439 | >1000 | | 30 | surged for 10 min |
| — Well not getting any better — Stopping development | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 38.47 |
| Total Gallons Purged: 30 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: | Well Development Observer (Y/N, name): |

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

**Well Development Form**

**Project Name:** Perry Johnson

**Project No.:** 379-1824-15-3

Initials: JMD

Date: 4/9/08

PM: JEA

| | |
|---|---|
| Well ID: MW-06/B-08B | Casing Diameter (in.): 4" |
| Well Development Method: Surge/Bailer | Well Depth (ft btoc): 23.36 |
| Depth to Water before Development: 10.87 | Screened Interval (ft btoc): 10-20 |
| Top of Casing Elevation: Standpipe is 38" above gs N/A | Sand Pack Interval (ft btoc): 8-23 |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 1035 | — Begin Surging for | | | | 10 Min — | | | |
| 1049 | 17.91 | 8.00 | 16.9 | 319 | >1000 | | 8 | Brown, very silty |
| 1059 | 18.32 | 7.60 | 16.4 | 329 | >1000 | | 16 | " " drawdown |
| 1109 | 20.75 | 7.53 | 16.2 | 339 | >1000 | | 24 | " " |
| — | Surged for 10 min | | | | — | | | |
| 1125 | 19.22 | 7.43 | 17.0 | 238 | >1000 | | 32 | light Brown, clearing |
| 1135 | 20.86 | 7.24 | 16.5 | 269 | >1000 | | 40 | light Brown, turbid |
| 1145 | 22.50 | 7.33 | 16.1 | 227 | >1000 | | 50 | " " |
| — | Surged for 10 min | | | | — | | | |
| 1215 | 20.03 | 7.18 | 17.0 | 227 | >1000 | | 58 | " " |
| 1225 | 20.98 | 7.28 | 16.3 | 234 | >1000 | | 66 | " " |
| 1235 | 21.09 | 7.22 | 16.6 | 252 | >1000 | | 74 | " " |
| — Surged | for 10 | min | | | — | | | |
| 1255 | 21.00 | 7.20 | 16.5 | 248 | >1000 | | 82 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 23.51 |
| Total Gallons Purged: 82 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: | Well Development Observer (Y/N, name): |

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

Weiss Associates

***Well Development Form***

***Project Name:*** Perry Johnson

***Project No.:*** 379-1824-15-3

Initials: JMD

Date: 4/9/08

PM: JEA

| | |
|---|---|
| Well ID: MW-04/ B08 | Casing Diameter (in.): 4 |
| Well Development Method: Surge/Bailer/Pump | Well Depth (ft btoc): 68.81 |
| Depth to Water before Development: 19.70 | Screened Interval (ft btoc): 55-65 |
| Standpipe is 36" above gs<br>Top of Casing Elevation: N/A | Sand Pack Interval (ft btoc): 52-66 |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 1418 | Began Surging for 10 min | | | | | | | |
| 1458 | 30.05 | 8.01 | 18.9 | 538 | >1000 | Bailer | 32 | olive brown, silty |
| 1518 | 30.64 | 7.65 | 19.0 | 470 | >1000 | 2gpm | 64 | switched to pump |
| 1530 | 31.01 | 7.53 | 19.2 | 472 | >1000 | " " | 96 | olive brown, turbid |
| ~ | Surge for 10 min | | | | | | | |
| 1559 | 29.58 | 7.61 | 18.7 | 451 | >1000 | " " | 128 | " " |
| 1612 | 31.39 | 7.51 | 18.8 | 453 | >1000 | 2.5 | 160 | clearing |
| 1627 | 31.92 | 7.50 | 18.9 | 454 | >1000 | 2.5 | 192 | olive tan, turbid |
| ~ | Surge for 10 min | | | | | | | |
| 1656 | 32.01 | 7.64 | 19.0 | 448 | >1000 | 2.5 | 224 | " " |
| 1708 | 32.40 | 7.53 | 19.0 | 446 | >1000 | " " | 256 | " " |
| 1731 | 32.98 | 7.59 | 18.1 | 451 | >1000 | " " | 288 | " " |
| ~ | Surge for 10 min | | | | | | | |
| 1800 | 29.14 | 7.62 | 18.6 | 469 | >1000 | " " | 320 | " " |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 68.74 |
| Total Gallons Purged: 320 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: 2.5gpm | Well Development Observer (Y/N, name): |

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

**FIELD ACTIVITY LOG**

Weiss Associates

Project Name: Perry Johnson/Cloverdale Date: 4/10/08 Page 1 of 1

Project #: 379-1824-15-3 Project Manager: JEA

Name: JMD

Total Hours Billed: 10.75 Other:

Vehicle (Field Use):
Weiss X Odometer in:
Personal Odometer out:
Rental Mileage: 0

| Time | Activity Description |
|---|---|
| 0600 | Mob equip. |
| 0630 | Met w/ Dave from TA, prep for day |
| 0700 | To MW-5. Fixed 3" Grundfos pump |
| 0810 | Began surge on MW-5 |
| 0820 | Began development of MW-5 |
| 0930 | Found one drum that leaked, pumped water |
| ~~1003~~ | out into another drum and marked it as bad |
| 1030 | Pump failed, pulled + repaired |
| 1200 ~~1105~~ | Lunch |
| 1230 | Back to MW-5, surged for 10 min + developed |
| 1430 | completed Development of MW-5, Packed up |
| 1530 | PW |
| 1630 | Done w/ Development |
| 1715 | Worked on Mob for Sampling |

| Time | Telephone Calls |
|---|---|

Weiss Associates

***Well Development Form***

***Project Name:*** Perry Johnson

***Project No.:*** 379-1824-15-3

Initials: JMD

Date: 4/10/08

PM: JEA

| | |
|---|---|
| Well ID: MW-05/ B08A | Casing Diameter (in.): 4" |
| Well Development Method: Surge/ Pump | Well Depth (ft btoc): 9322 |
| Depth to Water before Development: 18.62 | Screened Interval (ft btoc): |
| Top of Casing Elevation: N/A | Sand Pack Interval (ft btoc): |

| Time | DTW (ft btoc) | pH | Temp. (°C) | Cond. (µS/cm) | Turb. (NTU) | Flow Rate | Gallons Purged | Comments |
|---|---|---|---|---|---|---|---|---|
| 0809 | — Began Surge for 10 min — | | | | | | | |
| 0855 | 44.13 | 8.65 | 19.5 | 578 | >1000 | 4 gpm | 49 | Brown, turbid, S odor |
| 0910 | 57.70 | 8.55 | 19.5 | 549 | >1000 | " " | 98 | Sheen " " |
| 0923 | 65.71 | 8.52 | 19.7 | 552 | >1000 | " " | 147 | " " |
| — Surge for 10 min — | | | | | | | ~~196~~ | |
| 1006 | ~~57.57~~ | 8.49 | 19.6 | 546 | >1000 | " " | 196 | " " |
| 1019 | 67.00 | 8.56 | 19.9 | 556 | >1000 | " " | 245 | " " |
| 1040 | 75.07 | 8.53 | 19.8 | 549 | >1000 | " " | 294 | Pump failure, repaired |
| 05 — Surge for 10 min — | | | | | | | | |
| 1250 | 48.64 | 8.65 | 19.7 | 562 | >1000 | " " | 343 | Brown, turbid, Strong odor |
| 1303 | 58.29 | 8.59 | 19.9 | 564 | >1000 | " " | 392 | " " |
| 1317 | 68.81 | 8.60 | 20.0 | 564 | >1000 | " " | 441 | " " |
| — Surge for 10 min — | | | | | | | | |
| 1420 | 50.20 | 8.60 | 20.1 | 559 | >1000 | " " | 490 | " " |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | |
|---|---|
| Total Pumping Time: | Well Depth after Development: 93.81 |
| Total Gallons Purged: 490 | Water Injected (Y/N, volume): N |
| Average Pumping Rate: 4 gpm | Well Development Observer (Y/N, name): |

Notes and Abbreviations:

cond. = electrical conductivity

DTW = depth to water measured in feet below top-of-casing (ft btoc)

NTU = nephelometric turbidity units

temp. = ground water temperature

turb. = turbidity

**FIELD ACTIVITY LOG**

Weiss Associates

Project Name: Perry Johnson/Cloverdale Date: 4/11/08 Page 1 of 1

Project #: 379-1824-15-3 Project Manager: JGA

Name: JMD

Total Hours Billed: 10 Other:

Vehicle (Field Use):
Weiss ☒ Odometer in:
Personal Odometer out:
Rental Mileage: X

| Time | Activity Description |
|---|---|
| 0600 | Packed up for day |
| 0645 | Checked out of hotel |
| 0715 | Met w/ Chuck Bartleson from Tyri's Corp. Went around site to find access points for Artesian Spring & River. |
| 0930 | @ river, setup for sampling. |
| 0945 | Collected sample from river, labled 0408-10 |
| 1015 | To Artesian spring. |
| 1045 | @ Artesian spring, setup for sampling |
| 1100 | Collected samples from Artesian Spring. |
| 1130 | Pack up for site departure, got gas. |
| 1200 | Depart site. |
| 1300 | @ Analytical Sciences lab for drop-off |
| 1315 | Depart for E-ville shop. |
| 1400 | @ E-ville, Dropped off remaining samples + COC's w/ Gini. |
| 1430 | Depart for MV. |
| 1545 | @ shop. DemOb |
| 1630 | Done |

| Time | Telephone Calls |
|---|---|
| 0930 | GG- Questions about sampling protocol. |

## WATER SAMPLING DATA SHEET

Weiss Associates

**PROJECT NAME:** Perry Johnson **Sample Location:** River **Sample ID:** 0408-10 River

**PROJECT NO:** 379--1824-15-3 **Sampled By:** JMD **Sample Date:** April 10, 2008

**Sample Time:** 0945

**WEATHER** ☒ Sunny ☐ Cloudy ☐ Rainy ☐ Foggy ☐ Windy Temp: 70

**SAMPLE TYPE** ☒ Original ☐ Duplicate ☐ Trip Blank ☐ Equip. Blank ☐ Other:

**SAMPLE SOURCE** ☐ Monitoring Well ☐ Extraction Well ☐ Piezometer ☐ System* ☒ Other: River

**CALIBRATION**

| Meter Type | Time | ID Number | Manufacturer | Calibration Performed and Results | | |
|---|---|---|---|---|---|---|
| pH (initial) | 0845 | 110777 | Oakton | ☒4 4.00 | ☒7 7.06 | ☒10 10.18 |
| pH (final) | | | | | | |
| Conductivity | | | | 1413 | | |
| Turbidity | | | | | | |
| Other: DO | | | | 100% | | |

☐ Teflon ☐ Stainless ☐ Brass

**TOTALIZER** Start: gal. Rate: gpm Time:

End: gal. Rate: gpm Time:

**PURGE VOLUMES & WATER QUALITY PARAMETER MEASUREMENTS**

| Time | Volume Purged | pH | Temp. °C | Ec µS/cm | Turbidity NTU | DO mg/L | ORP mV |
|---|---|---|---|---|---|---|---|
| 0945 | — | 8.09 | 12.16 | 230us | 6.09 | 15.59 | — |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Stabilization Goals: | | ± 0.1 | ± 0.3 °C | ± 3% | ± 10% | ± 10% | |
| Precision: | | 0.10 | 1.0 °C | 10 µS/cm | 0.1 NTU | | |

Odor: ☒ None ☐ Gasoline ☐ Diesel ☐ Solvent ☐ Sulfur ☐ Metallic ~~Duplicate~~ ☐ Other:

Solids: ☒ None ☐ Trace ☐ Small Quantity ☐ Mod. Quantity ☐ Large Quantity ~~Duplicate~~ ☐ Silt ☐ Sand ☐ Gravel ☐ Organic Material ☐ Other:

☐ Separate Phase Hydrocarbons ☐ Sheen ☐ Measurable Amount: mm

**SAMPLE LOG**

| Sample ID | Cont. Type | # of Containers | Volume (mL) | Preservative | Filtered (Y/N) | Other |
|---|---|---|---|---|---|---|
| 0408-10 | Poly | 1 | 500 | HNO3 | ~~Y~~ | |
| " " | Poly | 2 | 500 | None | N | |
| " " | Jar Plastic | 1 | 1000 | ~~None~~ | N | |
| " " | VOA | 4 | 40 | None | N | |
| " " | | | | | | |
| " " | | | | | | |

Final Check: VOAs free of air bubbles? ☒ Yes ☐ No ☐ N/A

**ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:**

* If sample source is anything other than treatment system sample port, Page 2 of the Water Sampling Data Sheet must be completed.

## WATER SAMPLING DATA SHEET

Weiss Associates

| | | | |
|---|---|---|---|
| **PROJECT NAM** Perry Johnson | **Sample Location:** River | **Sample ID:** | 0408-10 |
| **PROJECT NO:** 379--1824-15-3 | **Sampled By:** JMD | **Sample Date:** | April 10, 2008 |
| | | **Sample Time:** | 0945 |

**SAMPLE SOUI** ☐ Monitoring Well ☐ Extraction Well ☐ Piezometer ☐ System* ☒ Other: River

| **WELL MEASUREMENTS** | | Measurements | Well Conditions | |
|---|---|---|---|---|
| Water Level Meter No.: | | | locked? | Yes ☐ No ☐ |
| Depth to Water | DTW | ft. | casing | OK ☐ Not OK ☐ |
| Depth to Product | DTP | ft. | plugs | OK ☐ Not OK ☐ |
| Product Thickness | PT | ft. | seal | OK ☐ Not OK ☐ |
| Specified Well Depth | SWD | ft. | vault | OK ☐ Not OK ☐ |
| Measured Well Depth | MWD | ft. | Comments: | |
| Well Diameter | D | inches | | |

| **PURGE CALCULATIONS** | Formula | Value | Actual gal. Purged: |
|---|---|---|---|
| Standing Water Height | SWH = MWD - DTW | ft. | |
| Well Casing Volume | WCV = SWH * $V_D$ | gal. | |
| Well Casing Volumes to be Purged | N | | |
| Total to be Purged | = WCV * N | gal. | ☐ Low-flow/micro-purge method |

| **PURGE EQUIPMENT** | | | Dedicated: ☐ Yes | ☐ No | | |
|---|---|---|---|---|---|---|
| Pump ID#: | ☐ Bladder | ☐ Submersible | ☐ Sump | ☐ Peristaltic | ☐ Other: | |
| Tubing: | ☐ Disposable | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Silicone | ☐ Tygon |
| Bailer ID#: | ☐ Disposable | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Other: | |
| Sample Port: | | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Stainless | ☐ Brass |
| Purge Equipment Decontamination | | | Decon: ☐ Yes | ☐ No | ☐ N/A | |
| Method: | | ☐ Steam | ☐ Alconox | ☐ DI Water | ☐ Other | |

| **PURGE TIME AND WELL RECOVERY** | | | 1st Purge | 2nd Purge | 3rd Purge | 4th Purge |
|---|---|---|---|---|---|---|
| Purged Dry? | ☐ No ☐ Yes | Start: | | | | |
| DTW during Pu | ft. | Stop: | | | | |
| SWH during Pu | ft. | Elapsed Time: | | | | |
| MWD - 80%SW | ft. | DTW: | | | | |
| % Recovery at Sample Time: | % | Total Purge Volume: | | | Total Purge Time: | |

| **SAMPLE EQUIPMENT** | | | Dedicated: ☐ Yes | ☐ No | | |
|---|---|---|---|---|---|---|
| Pump ID#: | ☐ Bladder | ☐ Submersible | ☐ Sump | ☐ Peristaltic | ☐ Other: | |
| Tubing: | ☐ Disposable | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Silicone | ☐ Tygon |
| Bailer ID#: | ☐ Disposable | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Other: | |
| Sample Port: | | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Stainless | ☐ Brass |
| Sample Equipment Decontamination | | | Decon: ☐ Yes | ☐ No | ☐ N/A | |
| Method: | | ☐ Steam | ☐ Alconox | ☐ DI Water | ☐ Other | |

**ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:**

**Formulas/Conversions:**

cylinder volume = $\pi r^2 h$

r = well radius (ft) $t^3$ = 7.48 gallons

h = height of water column (ft)

$V_{2\text{-inch casing}}$ = 0.163 gallons/ft

$V_{3\text{-inch casing}}$ = 0.367 gallons/ft

$V_{4\text{-inch casing}}$ = 0.653 gallons/ft

$V_{6\text{-inch casing}}$ = 1.47 gallons/ft

$V_{8\text{-inch casing}}$ = 2.61 gallons/ft

* If sample source is anything other than treatment system sample port, Page 2 of the Water Sampling Data Sheet must be completed.

## WATER SAMPLING DATA SHEET

Artesian Spring

PROJECT NAM Perry Johnson | Sample Location: ~~#REF!~~ | Sample ID: ~~#REF!~~ 0408-11

PROJECT NO: 379--1824-15-3 | Sampled By: JMD | Sample Date: April 10, 2008

Sample Time: 1100

| | | | | | | |
|---|---|---|---|---|---|---|
| WEATHER | ☒ Sunny | ☐ Cloudy | ☐ Rainy | ☐ Foggy | ☐ Windy | Temp: 75 |
| SAMPLE TYPE | ☒ Original | ☐ Duplicate | ☐ Trip Blank | ☐ Equip. Blank | ☐ Other: | |
| SAMPLE SOUI | ☐ Monitoring Well | ☐ Extraction Well | ☐ Piezometer | ☐ System* | ☒ Other: Artesian Spring | |

**CALIBRATION**

| Meter Type | Time | ID Number | Manufacturer | Calibration Performed and Results | | |
|---|---|---|---|---|---|---|
| pH (initial) | 0845 | 110777 | Oakton | ☒4 4.00 | ☒7 7.06 | ☒10 10.18 |
| pH (final) | | | | | | |
| Conductivity | | | | 1413 | | |
| Turbidity | | | | | | |
| Other: DO | | | | 100% | | |

☐ ~~Teflon~~ ☐ Stainless ☐ Brass

| | | | | | |
|---|---|---|---|---|---|
| TOTALIZER | Start: | gal. | Rate: | gpm | Time: |
| | End: | gal. | Rate: | gpm | Time: |

**PURGE VOLUMES & WATER QUALITY PARAMETER MEASUREMENTS**

| Time | Volume Purged | pH | Temp. °C | Ec µS/cm | Turbidity NTU | DO mg/L | ORP mV |
|---|---|---|---|---|---|---|---|
| 1100 | — | 7.65 | 15.9 | 325 us | 9.04 | 8.85 | — |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Stabilization Goals: | | ± 0.1 | ± 0.3 °C | ± 3% | ± 10% | ± 10% | |
| Precision: | | 0.10 | 1.0 °C | 10 µS/cm | 0.1 NTU | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Odor: | ☒ None | ☐ Gasoline | ☐ Diesel | ☐ Solvent | ☐ Sulfur | ☐ Metallic |
| Duplicate | ☐ Other: | | | | | |
| Solids: | ☒ None | ☐ Trace | ☐ Small Quantity | ☐ Mod. Quantity | ☐ Large Quantity | |
| Duplicate | ☐ Silt | ☐ Sand | ☐ Gravel | ☐ Organic Material | | ☐ Other: |
| | ☐ Separate Phase Hydrocarbons | | ☐ Sheen | ☐ Measurable Amount: | | mm |

**SAMPLE LOG**

| Sample ID | Cont. Type | # of Containers | Volume (mL) | Preservative | Filtered (Y/N) | Other |
|---|---|---|---|---|---|---|
| 0408-11 | Poly | 1 | 500 | $HNO_3$ | Y | |
| " " | Poly | 2 | 500 | None | N | |
| " " | Plastic Jar | 1 | 100 | $Na_2S_2O_3$ | N | |
| " " | VOA | 4 | 40 | None | N | |
| | | | | | | |
| | | | | | | |

Final Check: VOAs free of air bubbles? ☒ Yes ☐ No ☐ N/A

**ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:**

* If sample source is anything other than treatment system sample port, Page 2 of the Water Sampling Data Sheet must be completed.

# WATER SAMPLING DATA SHEET

Weiss Associates

PROJECT NAM Perry Johnson | Sample Location: Artesian Spring #REF! | Sample ID: ~~#REF!~~ 0408-11

PROJECT NO: 379--1824-15-3 | Sampled By: JMD | Sample Date: April 1[illegible], 2008

Sample Time: 1100

SAMPLE SOUI ☐ Monitoring Well ☐ Extraction Well ☐ Piezometer ☐ System* ☒ Other: Artesian spring

| WELL MEASUREMENTS | | Measurements | Well Conditions | |
|---|---|---|---|---|
| Water Level Meter No.: | | | locked? | Yes ☐ No ☐ |
| Depth to Water | DTW | ft. | casing | OK ☐ Not OK ☐ |
| Depth to Product | DTP | ft. | plugs | OK ☐ Not OK ☐ |
| Product Thickness | PT | ft. | seal | OK ☐ Not OK ☐ |
| Specified Well Depth | SWD | ft. | vault | OK ☐ Not OK ☐ |
| Measured Well Depth | MWD | ft. | Comments: | |
| Well Diameter | D | inches | | |

| PURGE CALCULATIONS | Formula | Value | Actual gal. Purged: |
|---|---|---|---|
| Standing Water Height | SWH = MWD - DTW | ft. | |
| Well Casing Volume | WCV = SWH * $V_D$ | gal. | |
| Well Casing Volumes to be Purged | N | | |
| Total to be Purged | = WCV * N | gal. | ☐ Low-flow/micro-purge method |

| PURGE EQUIPMENT | | | Dedicated: ☐ Yes ☐ No | | | |
|---|---|---|---|---|---|---|
| Pump ID#: | ☐ Bladder | ☐ Submersible | ☐ Sump | ☐ Peristaltic | ☐ Other: | |
| Tubing: | ☐ Disposable | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Silicone | ☐ Tygon |
| Bailer ID#: | ☐ Disposable | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Other: | |
| Sample Port: | | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Stainless | ☐ Brass |
| Purge Equipment Decontamination | | | Decon: ☐ Yes | ☐ No | ☐ N/A | |
| Method: | | ☐ Steam | ☐ Alconox | ☐ DI Water | ☐ Other | |

| PURGE TIME AND WELL RECOVERY | | | 1st Purge | 2nd Purge | 3rd Purge | 4th Purge |
|---|---|---|---|---|---|---|
| Purged Dry? | ☐ No ☐ Yes | Start: | | | | |
| DTW during Pu | ft. | Stop: | | | | |
| SWH during Pu | ft. | Elapsed Time: | | | | |
| MWD - 80%SW | ft. | DTW: | | | | |
| % Recovery at Sample Time: | % | Total Purge Volume: | | | Total Purge Time: | |

| SAMPLE EQUIPMENT | | | Dedicated: ☐ Yes ☐ No | | | |
|---|---|---|---|---|---|---|
| Pump ID#: | ☐ Bladder | ☐ Submersible | ☐ Sump | ☐ Peristaltic | ☐ Other: | |
| Tubing: | ☐ Disposable | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Silicone | ☐ Tygon |
| Bailer ID#: | ☐ Disposable | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Other: | |
| Sample Port: | | ☐ PVC | ☐ Polyethylene | ☐ Teflon | ☐ Stainless | ☐ Brass |
| Sample Equipment Decontamination | | | Decon: ☐ Yes | ☐ No | ☐ N/A | |
| Method: | | ☐ Steam | ☐ Alconox | ☐ DI Water | ☐ Other | |

**ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:**

Formulas/Conversions:

cylinder volume = $\pi r^2 h$

r = well radius (ft) $ft^3 = 7.48$ gallons

h = height of water column (ft)

$V_{2\text{-inch casing}} = 0.163$ gallons/ft

$V_{3\text{-inch casing}} = 0.367$ gallons/ft

$V_{4\text{-inch casing}} = 0.653$ gallons/ft

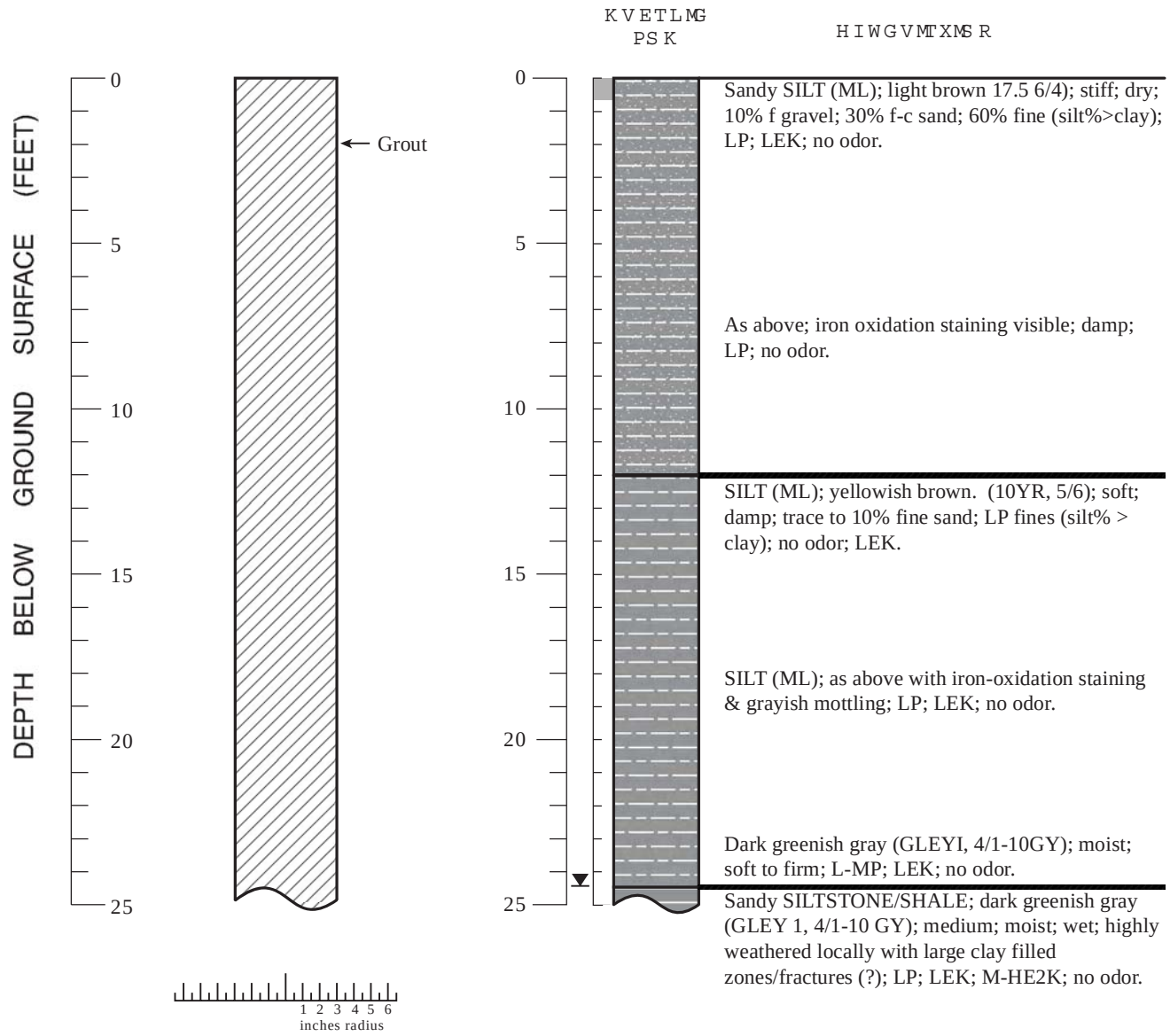
$V_{6\text{-inch casing}} = 1.47$ gallons/ft

$V_{8\text{-inch casing}} = 2.61$ gallons/ft

* If sample source is anything other than treatment system sample port, Page 2 of the Water Sampling Data Sheet must be completed.

# BORINGS LOGS AND WELL CONSTRUCTION DETAILS

# F s v m r k $ F 1 4 5




## EXPLANATION

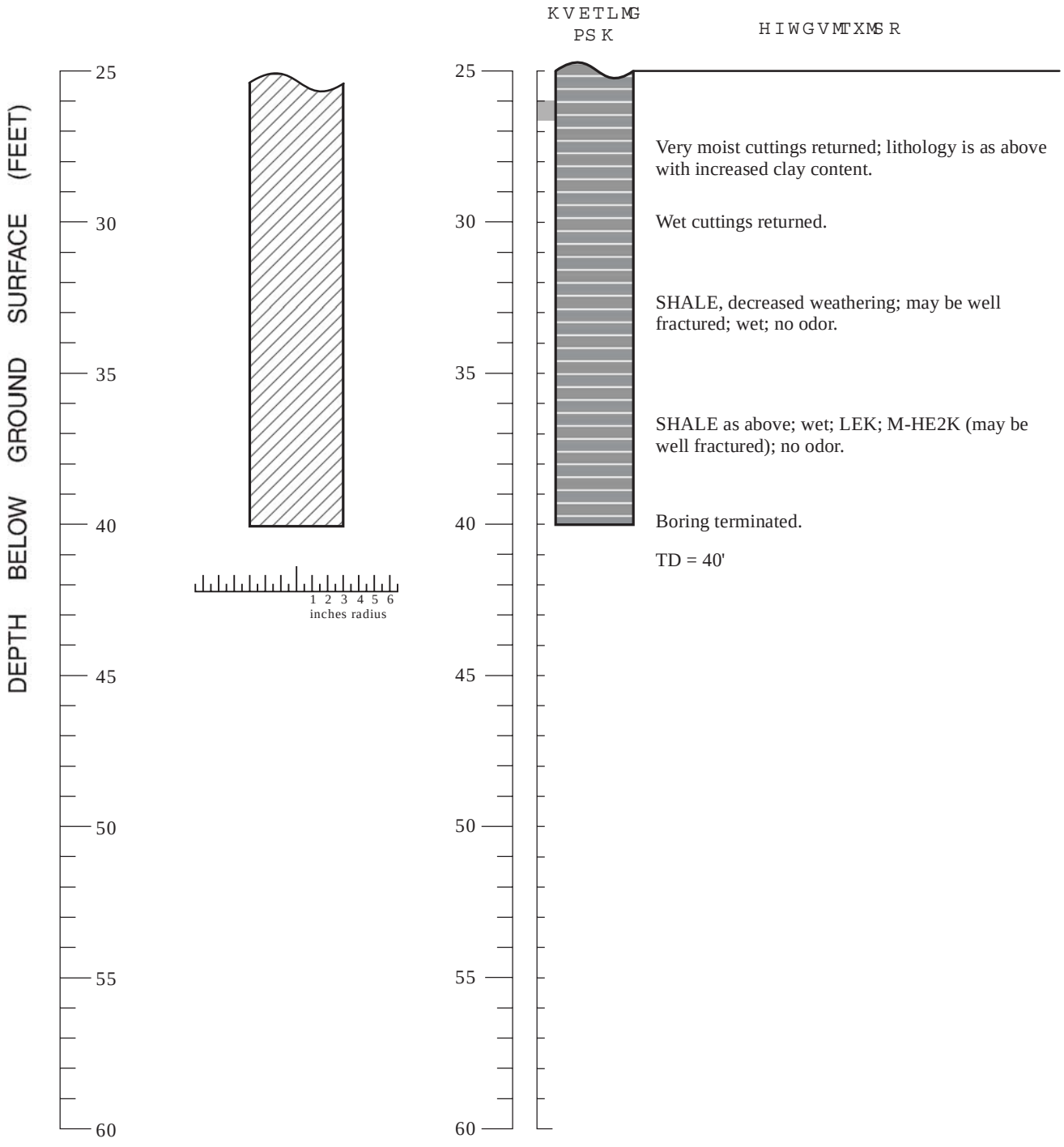
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Westex |
| License Number: | C57-552198 |
| Driller: | Mark Dockerey |
| Drilling Method: | Air rotary |
| Date Drilled: | 10/02/07 |
| Well Head Completion: | N/A |
| Type of Sampler: | Split Spoon |
| Ground Surface Elevation: | 323.9' |

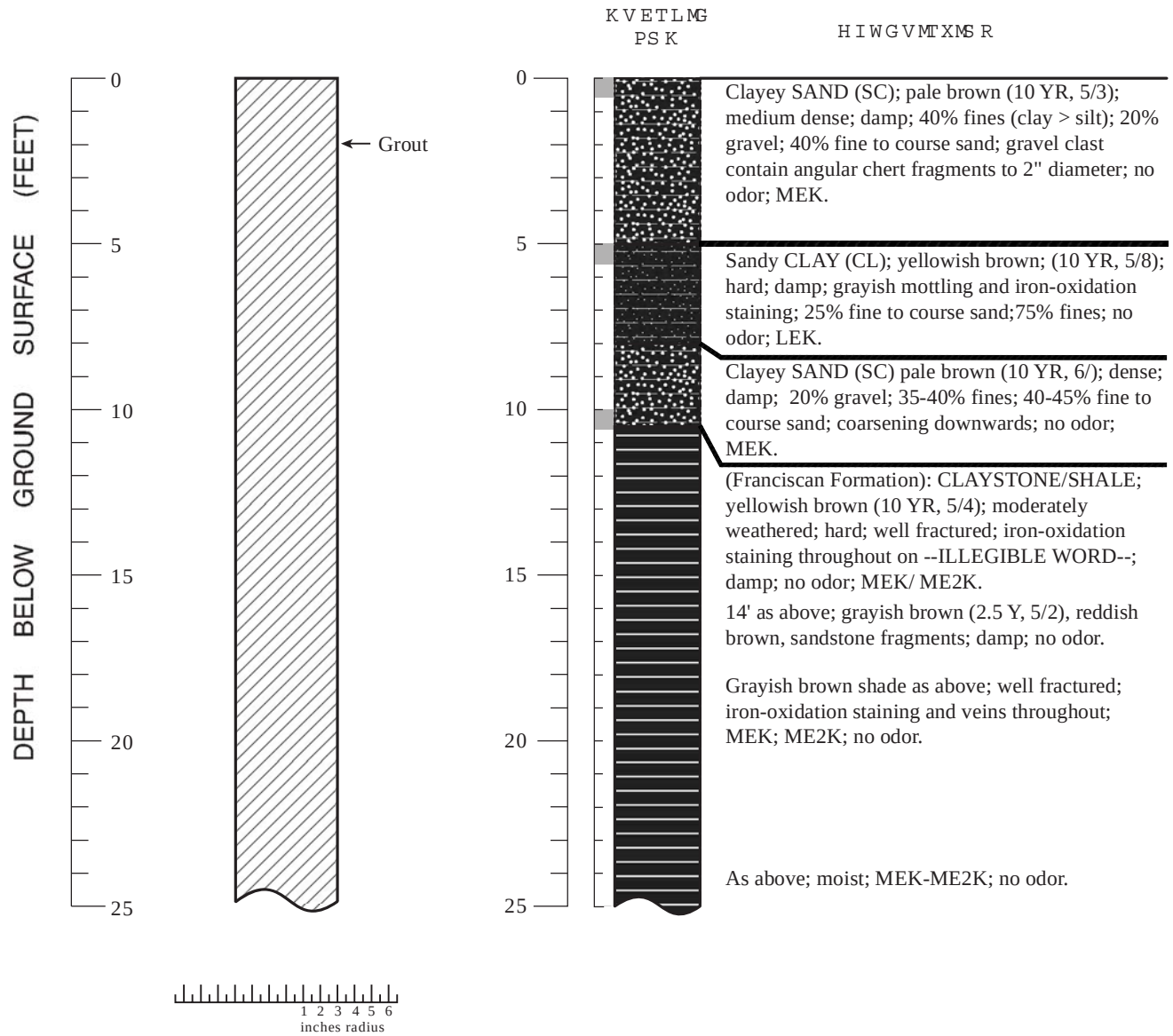
Boring Log - B-01 - Amonos Site, Cloverdale, California

# F s v m r k $ F 1 4 5 $ , g s r x 2 -




Boring Log - B-01 - Amonos Site, Cloverdale, California

F svmrk $F 146




## EXPLANATION

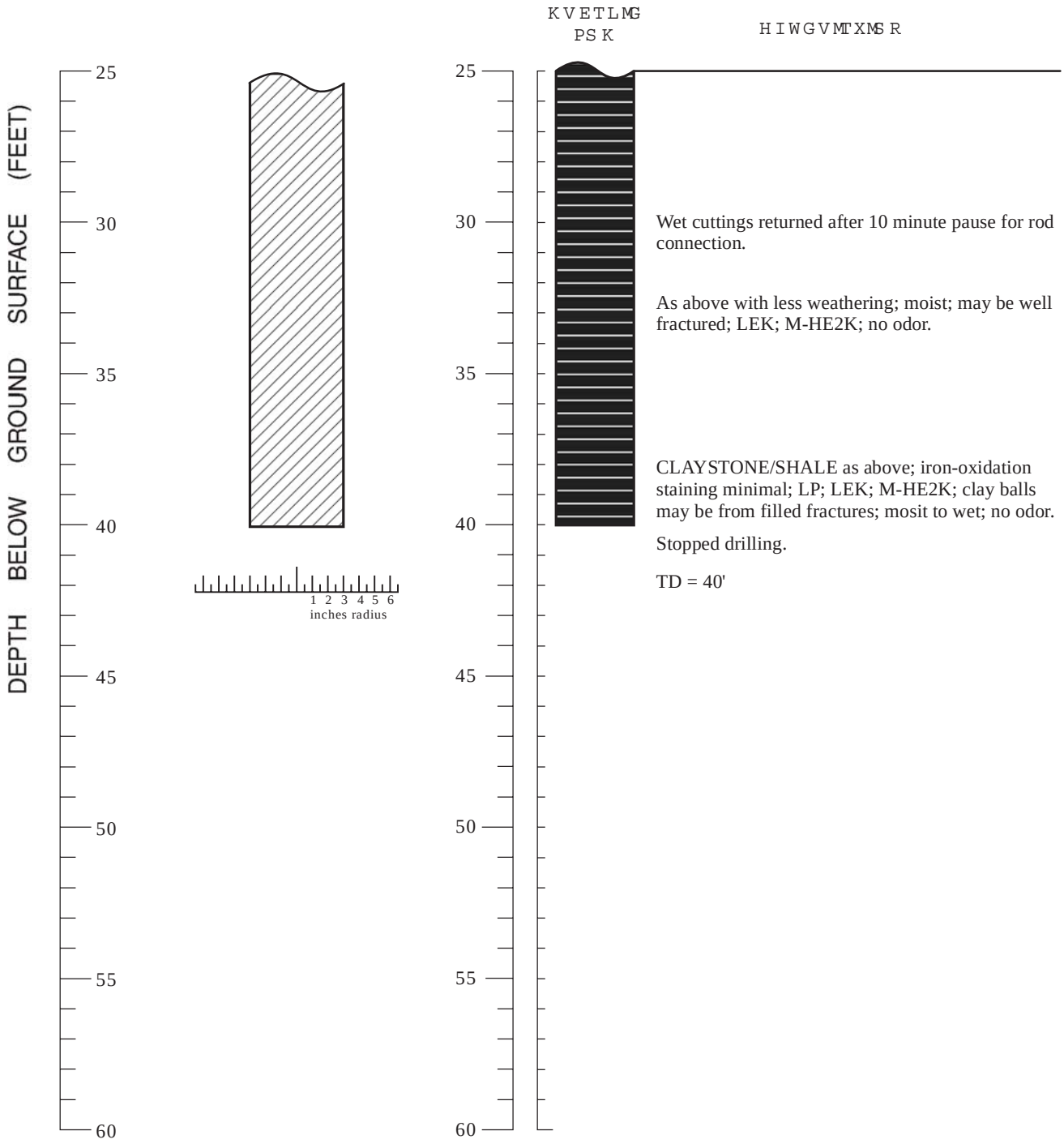
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, G. Gandhok |
| Supervisor: | Joyce Adams |
| Drilling Company: | Westex |
| License Number: | C57-552198 |
| Driller: | Mark Dockrey |
| Drilling Method: | Air Rotery |
| Date Drilled: | 09/25/07 |
| Well Head Completion: | N/A |
| Type of Sampler: | Split Spoon |
| Ground Surface Elevation: | 328.8' |

Boring Log - B-02 - Amonos Site, Cloverdale, California

# F svmrk$F 14 6$,gsrx2-




Wet cuttings returned after 10 minute pause for rod connection.

As above with less weathering; moist; may be well fractured; LEK; M-HE2K; no odor.

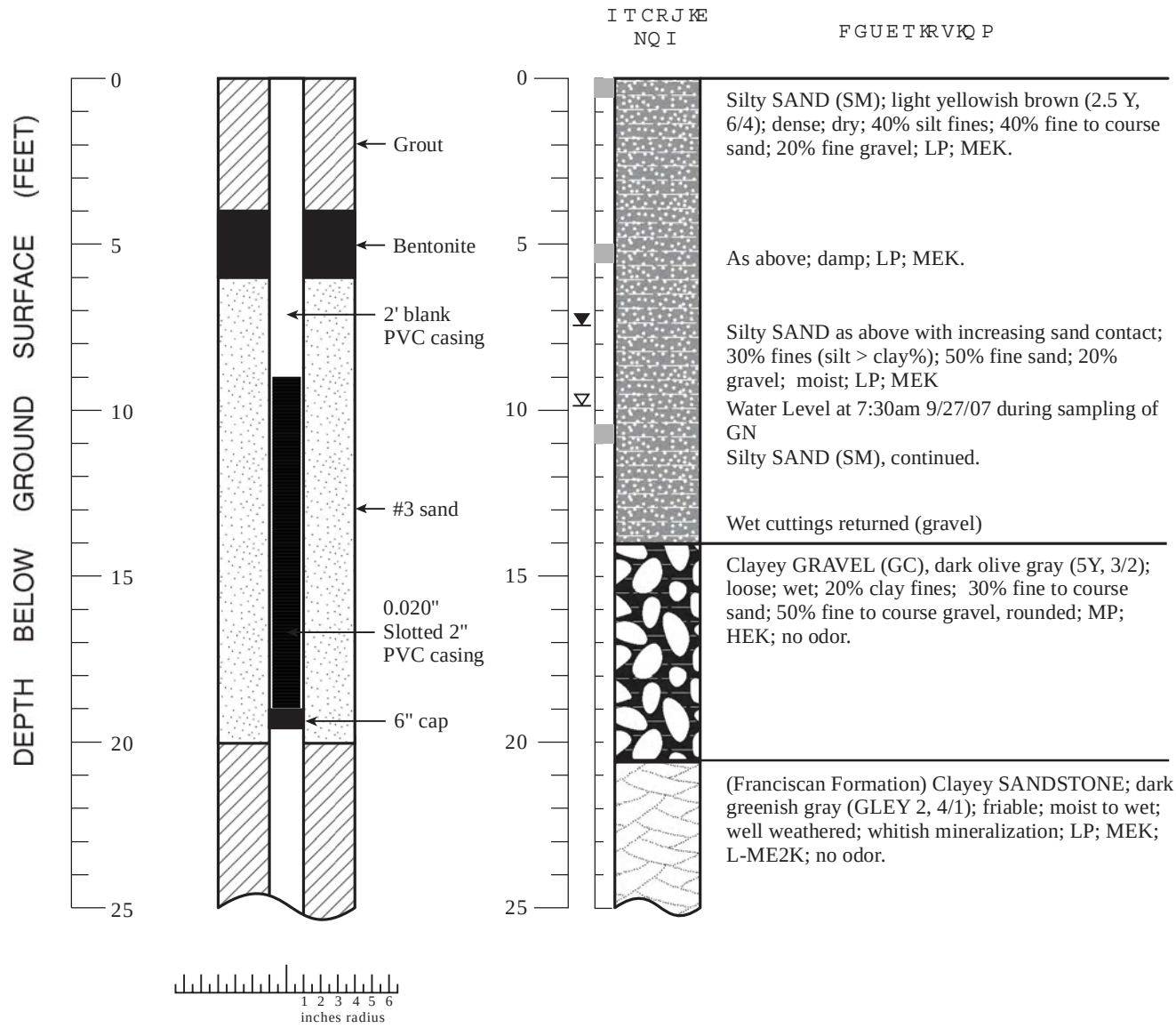
CLAYSTONE/SHALE as above; iron-oxidation staining minimal; LP; LEK; M-HE2K; clay balls may be from filled fractures; mosit to wet; no odor.

Stopped drilling.

TD = 40'

Boring Log - B-02 - Amonos Site, Cloverdale, California

# Dqtkpi"D/251Y GNN"O Y /23




## EXPLANATION

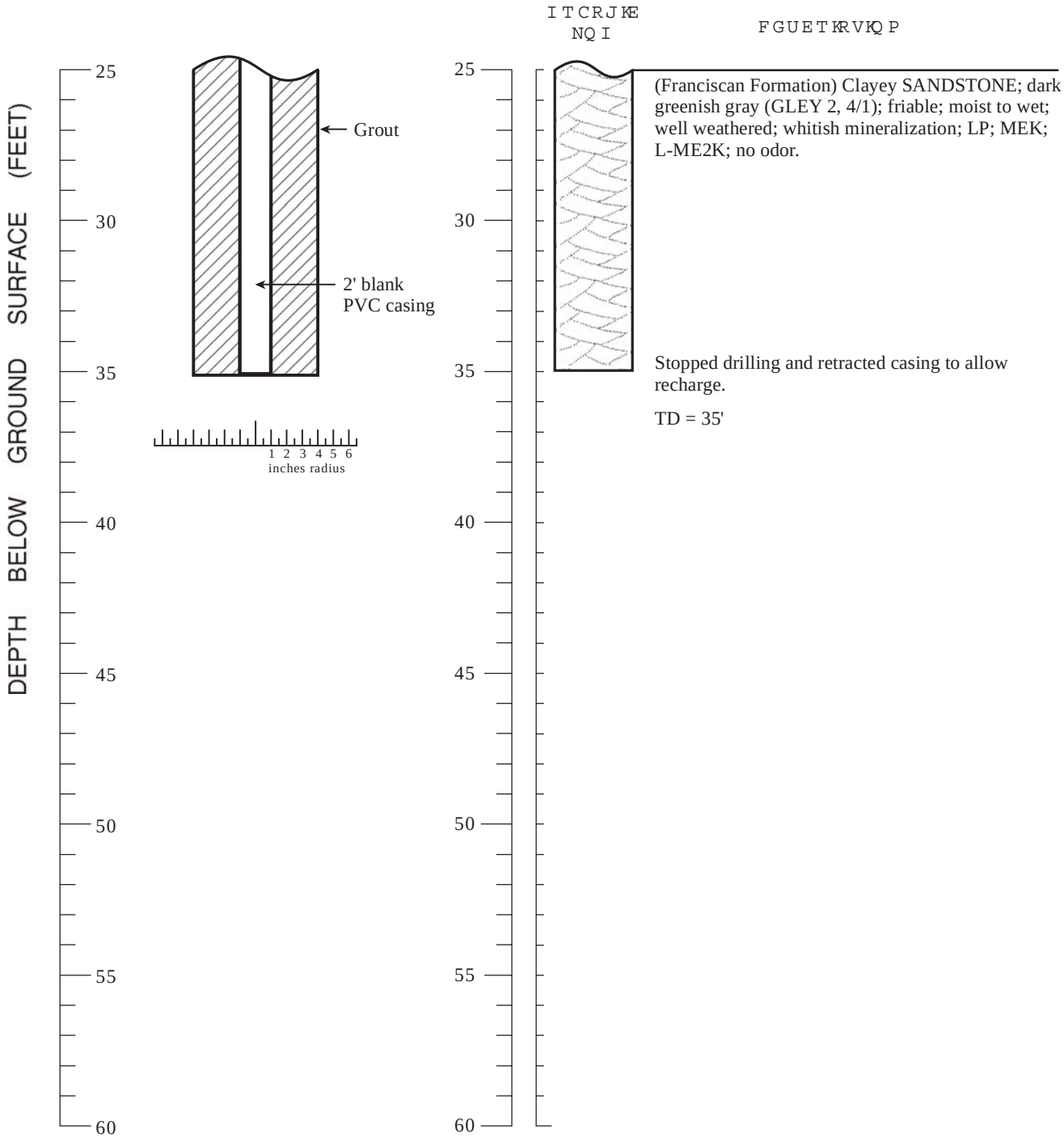
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Luis Torres |
| Drilling Method: | Hollow Stem Auger |
| Date Drilled: | 12/17/07 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing Elevation: | 320.69 |

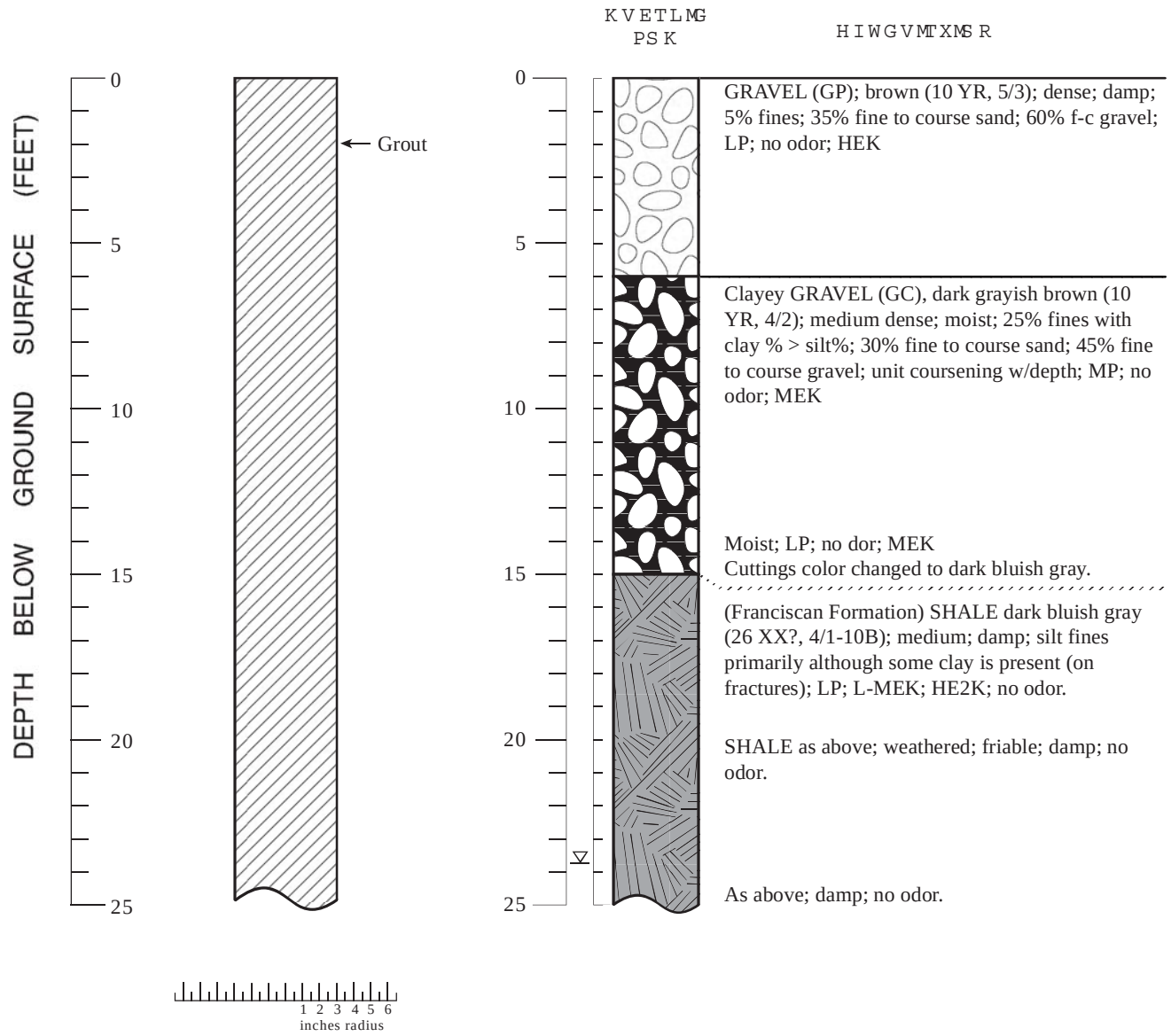
Boring Log/Well Construction Details - B-03/MW-01 - Amonos Site, Cloverdale, California

# Dqtkpi"D251Y gnn"O Y /23"*eqpv0+




Boring Log/Well Construction Details - B-03/MW-01 - Amonos Site, Cloverdale, California

# F svmrk $F 148




## EXPLANATION

- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

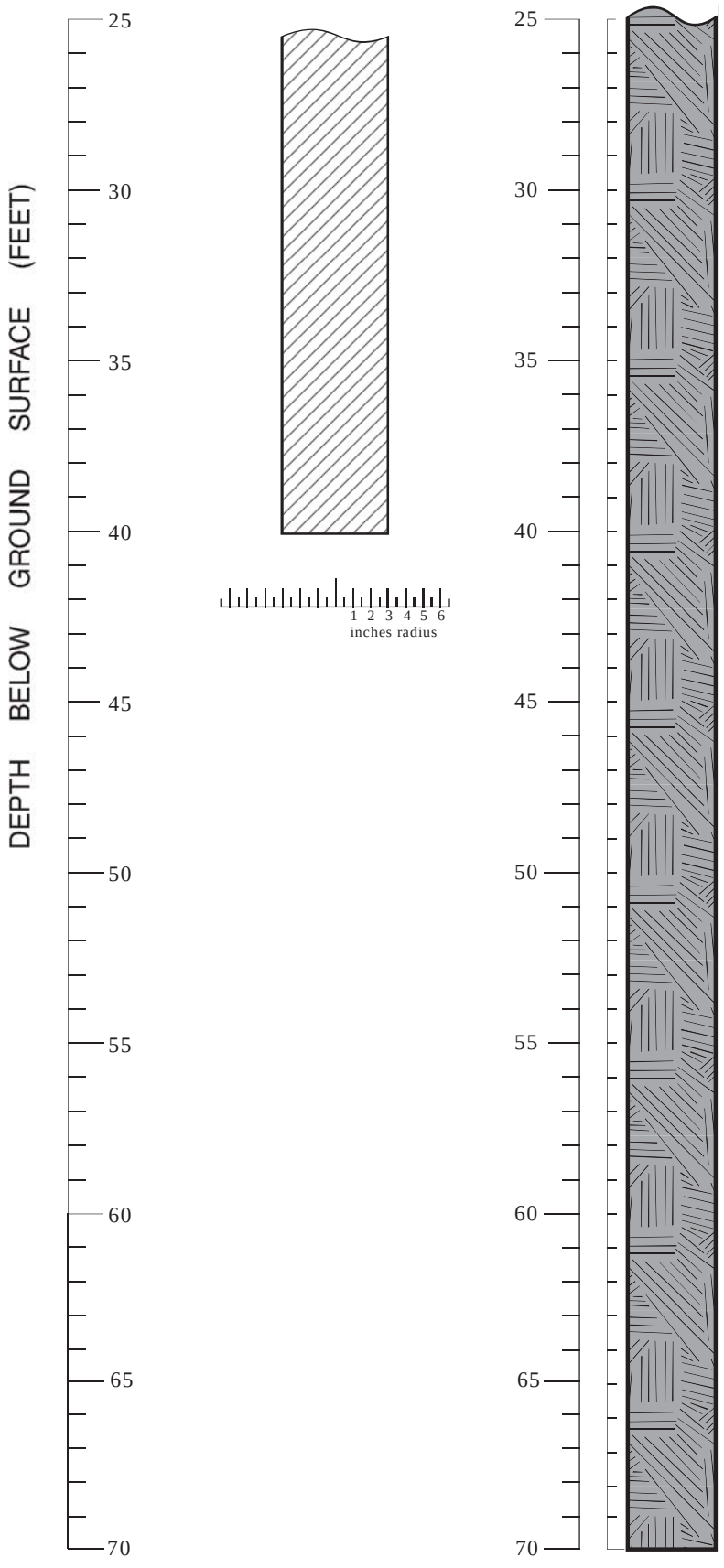
Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, G. Gandhok |
| Supervisor: | Joyce Adams |
| Drilling Company: | Westex |
| License Number: | C57-552198 |
| Driller: | Mark Dockrey |
| Drilling Method: | Air rotary |
| Date Drilled: | 10/3/07 |
| Well Head Completion: | N/A |
| Type of Sampler: | Split Spoon |
| Ground Surface Elevation: | 314.3' |

Boring Log - B-04 -Amonos Site, Cloverdale, California

F s v m r k $F 1 4 8 $, g s r x 2 -

H I W G V M T X M S R




As above; damp; no odor.

SHALE dark gray to black; trace whitish mineralization observed; damp; LEK; ME2K; no odor.

As above.

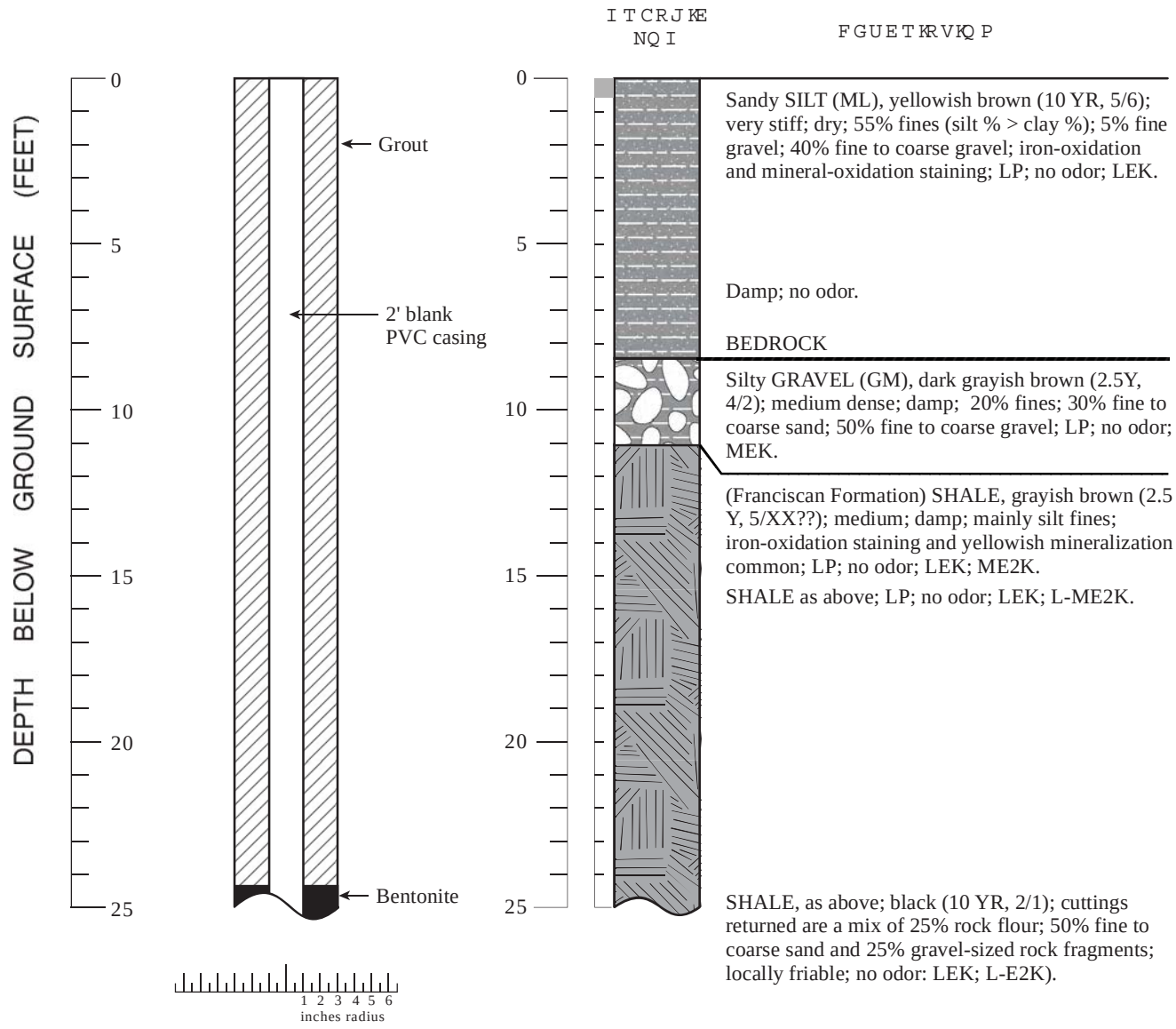
SHALE as above; primarily silt fine; LP; damp; LEK; ME2K (may be well fractured); no odor.

SILTSTONE/SHALE as above.

Stopped drilling.
TD = 70'

Boring Log - B-04 - Amonos Site, Cloverdale, California

# Dqtkpi"D/271Y GNN"O Y /24




## EXPLANATION

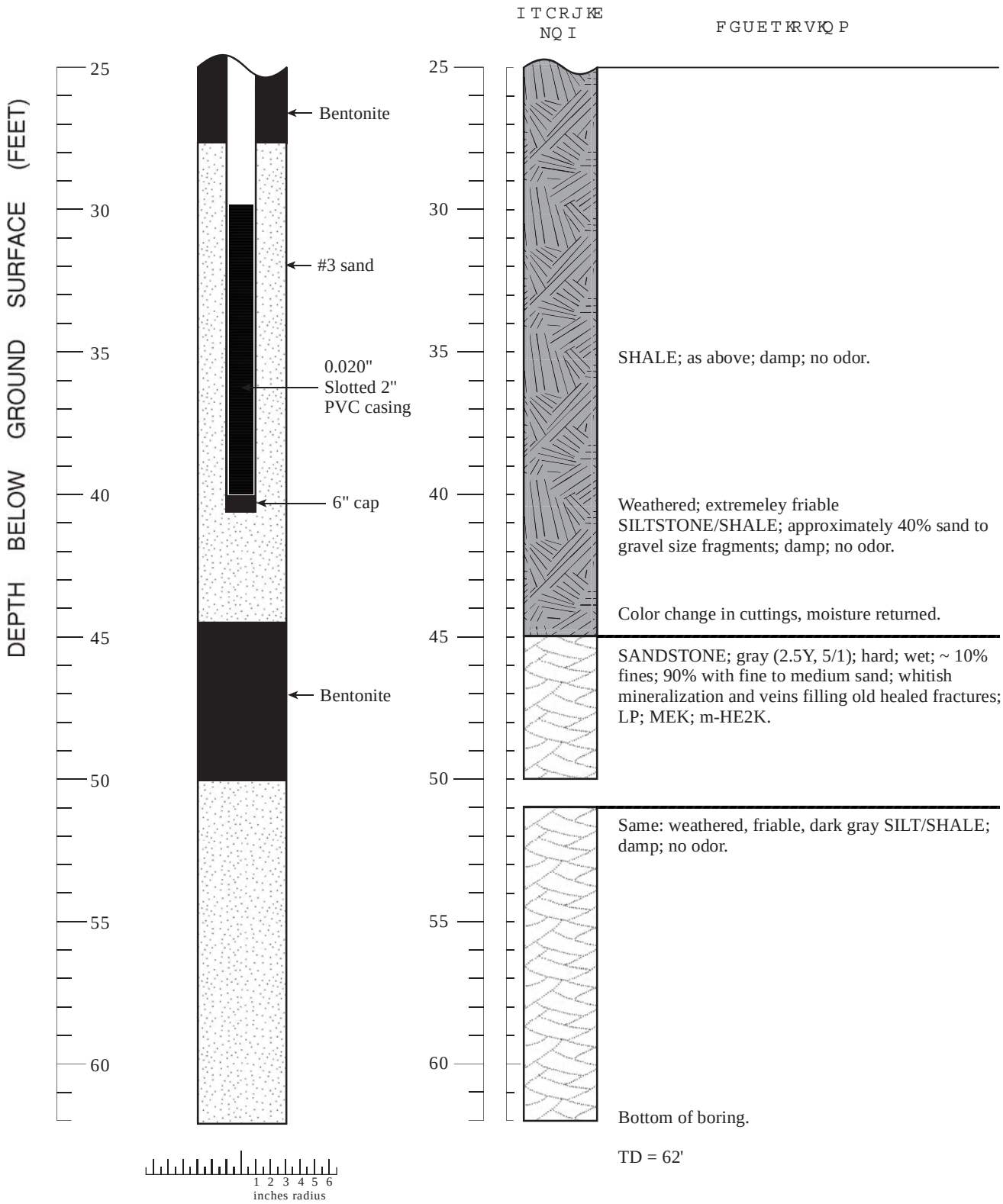
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Nick Letsch |
| Drilling Method: | Air Rotary 6" |
| Date Drilled: | 03/12/08 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing Elevation: | 314.86 |

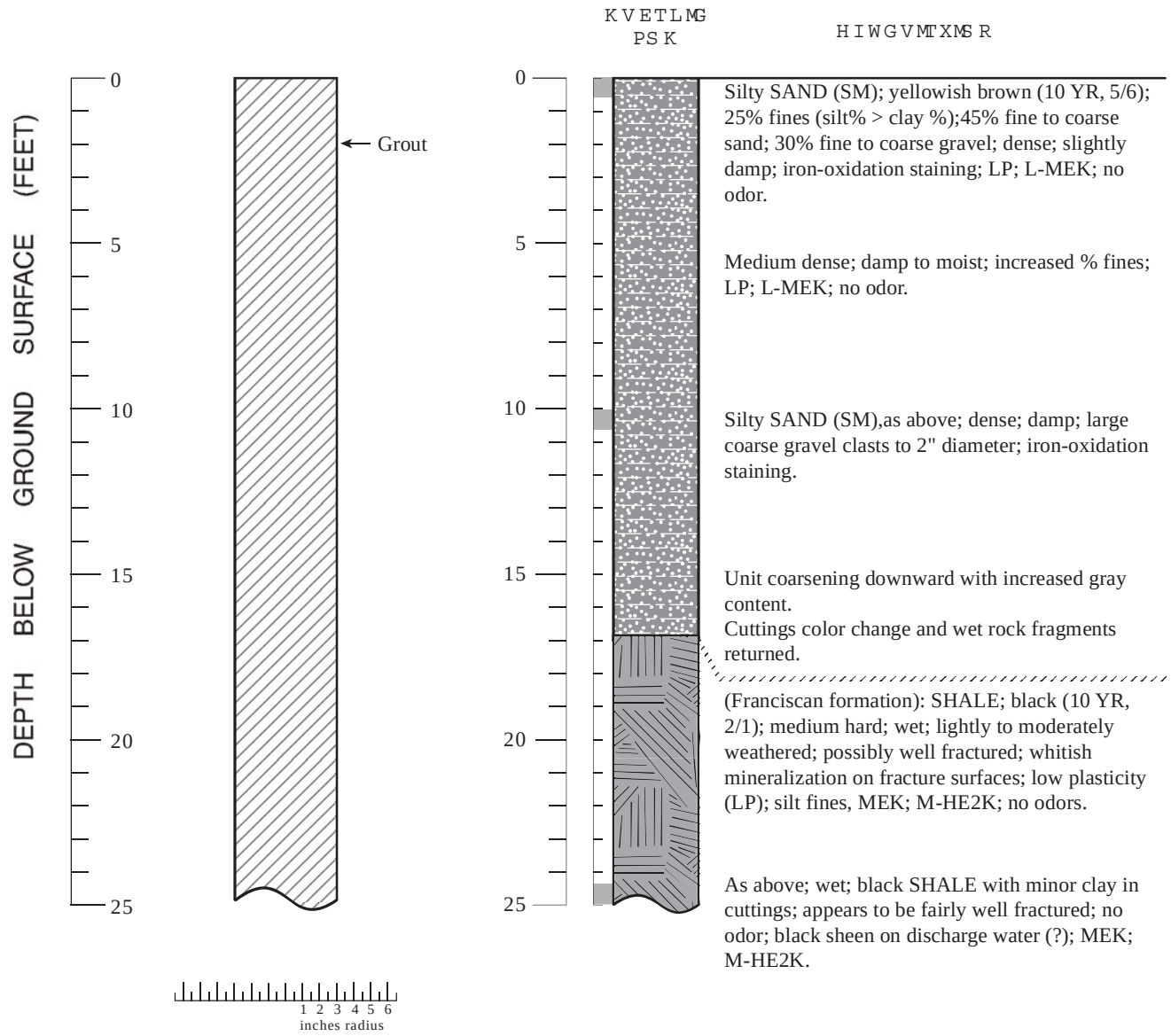
Boring Log/Well Construction Details - B-05/MW-02 - Amonos Site, Cloverdale, California

# Dqtkpi"D/271Y GNN"OY/24"*eqpv0+




Boring Log/Well Construction Details - B-05/MW-02 - Amonos Site, Cloverdale, California

# F s v m r k $ F 14 :




## EXPLANATION

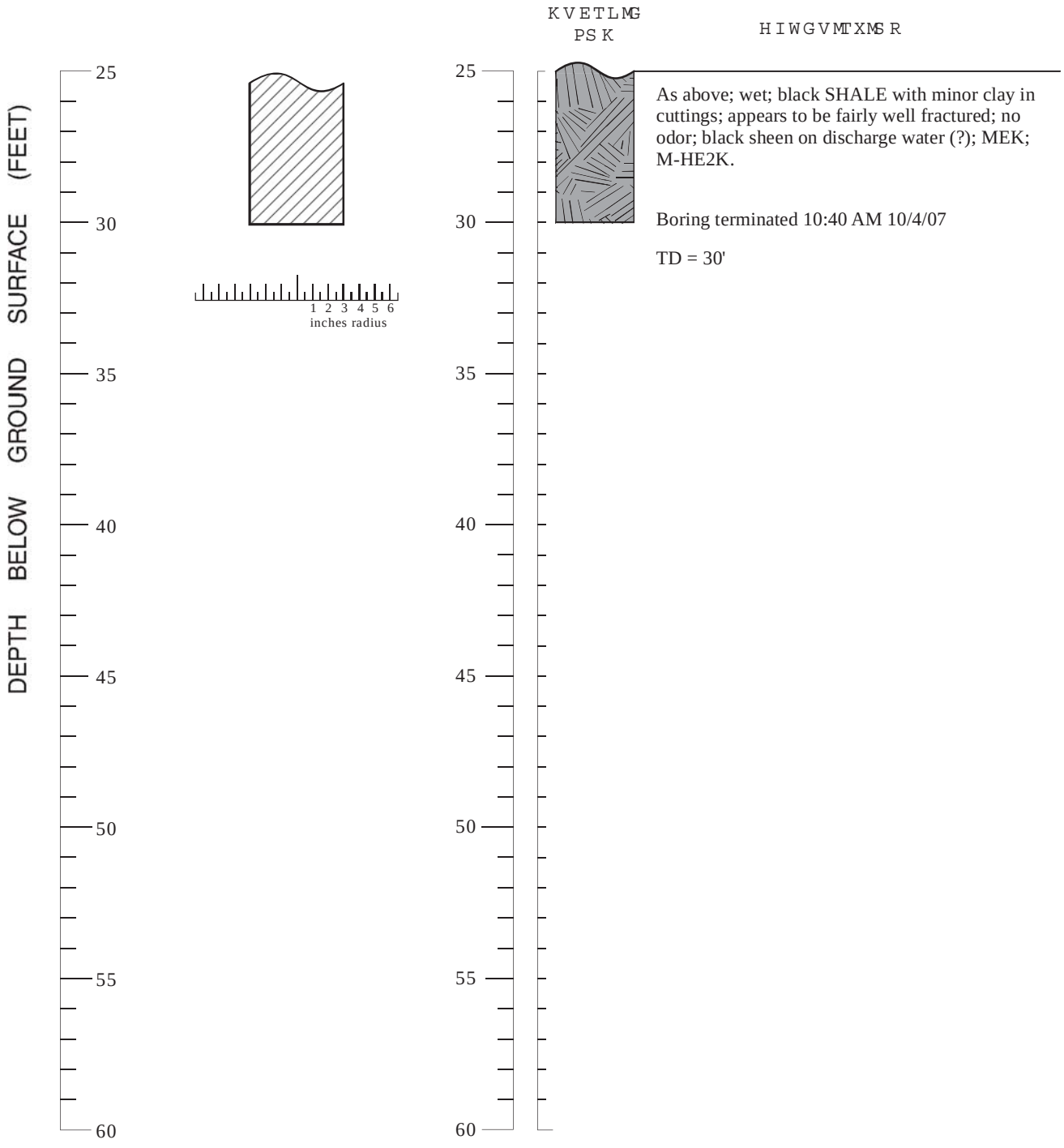
- ▼ Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, G. Gandhok |
| Supervisor: | Joyce Adams |
| Drilling Company: | Westex |
| License Number: | C57-552198 |
| Driller: | Mark Dockrey |
| Drilling Method: | Air Rotery |
| Date Drilled: | 10/04/07 |
| Well Head Completion: | N/A |
| Type of Sampler: | Split Spoon |
| Ground Surface Elevation: | 309.5' |

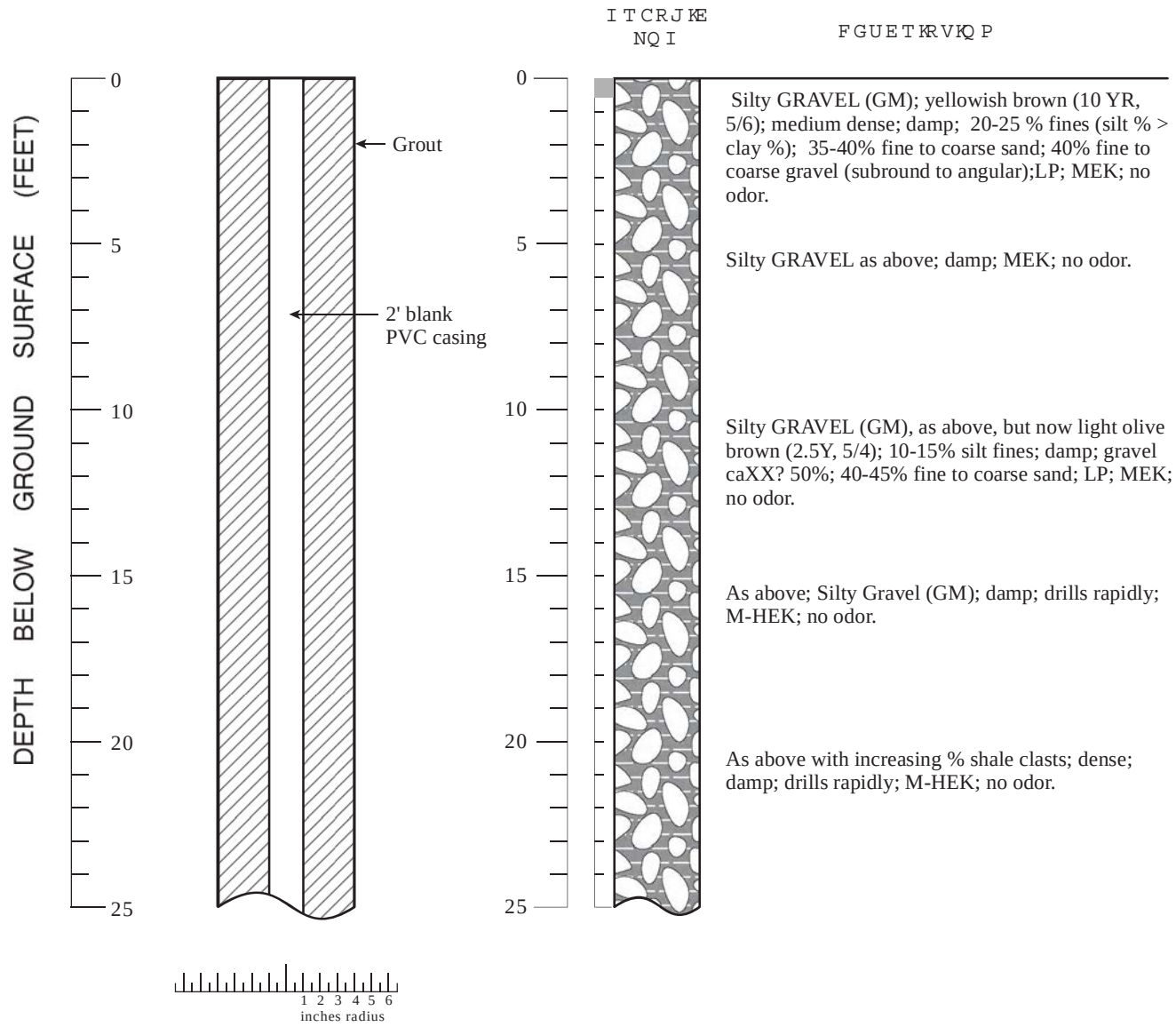
Boring Log - B-06 - Amonos Site, Cloverdale, California

# F s v m r k $ F 1 4 : $ , g s r x 2 -




Boring Log - B-06 - Amonos Site, Cloverdale, California

# Dqtkpi"D/291Y GNN"O Y/25




## EXPLANATION

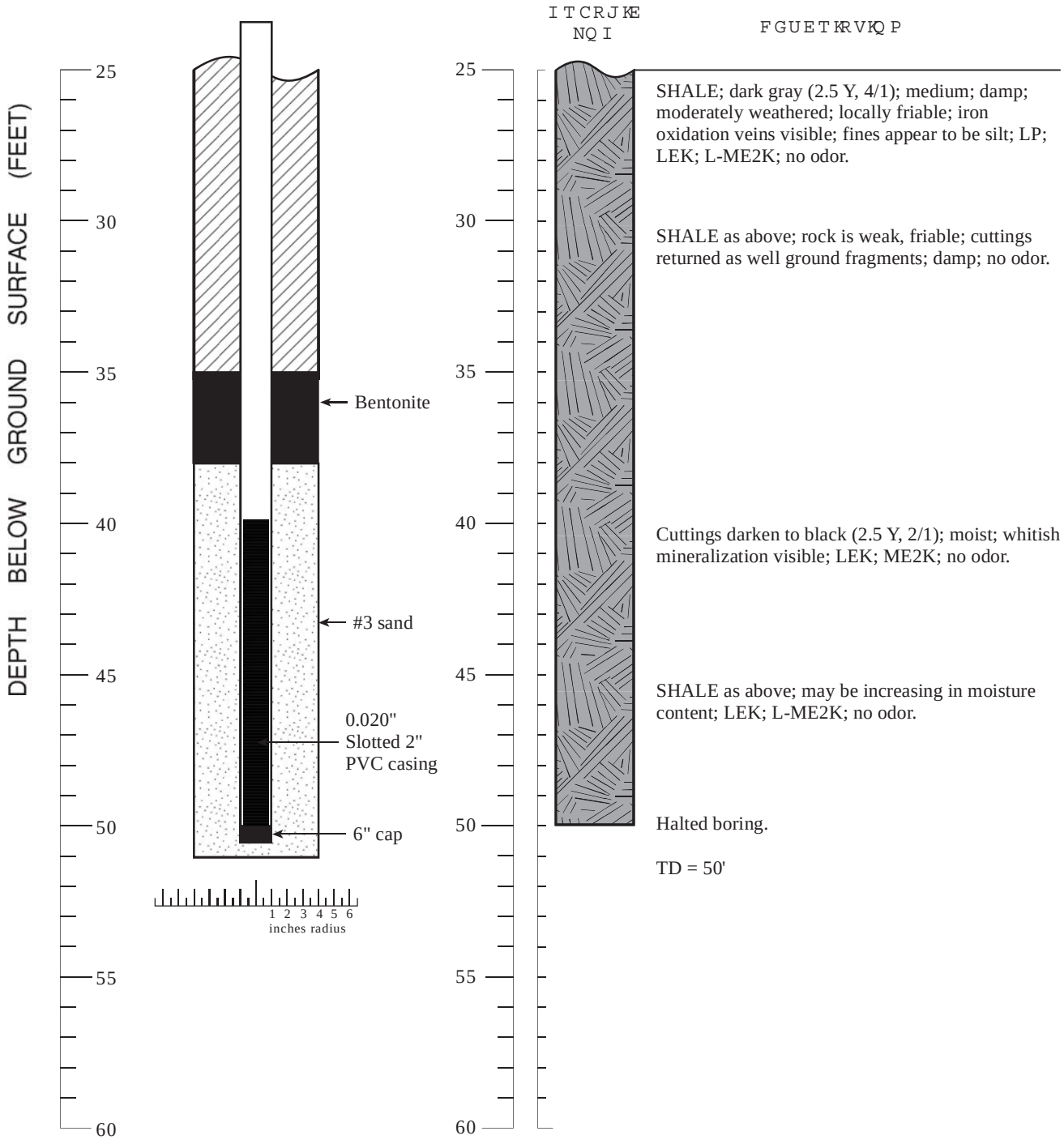
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Mick Letsch |
| Drilling Method: | Air Rotary 8" |
| Date Drilled: | 01/15/08 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing Elevation: | 316.88 |

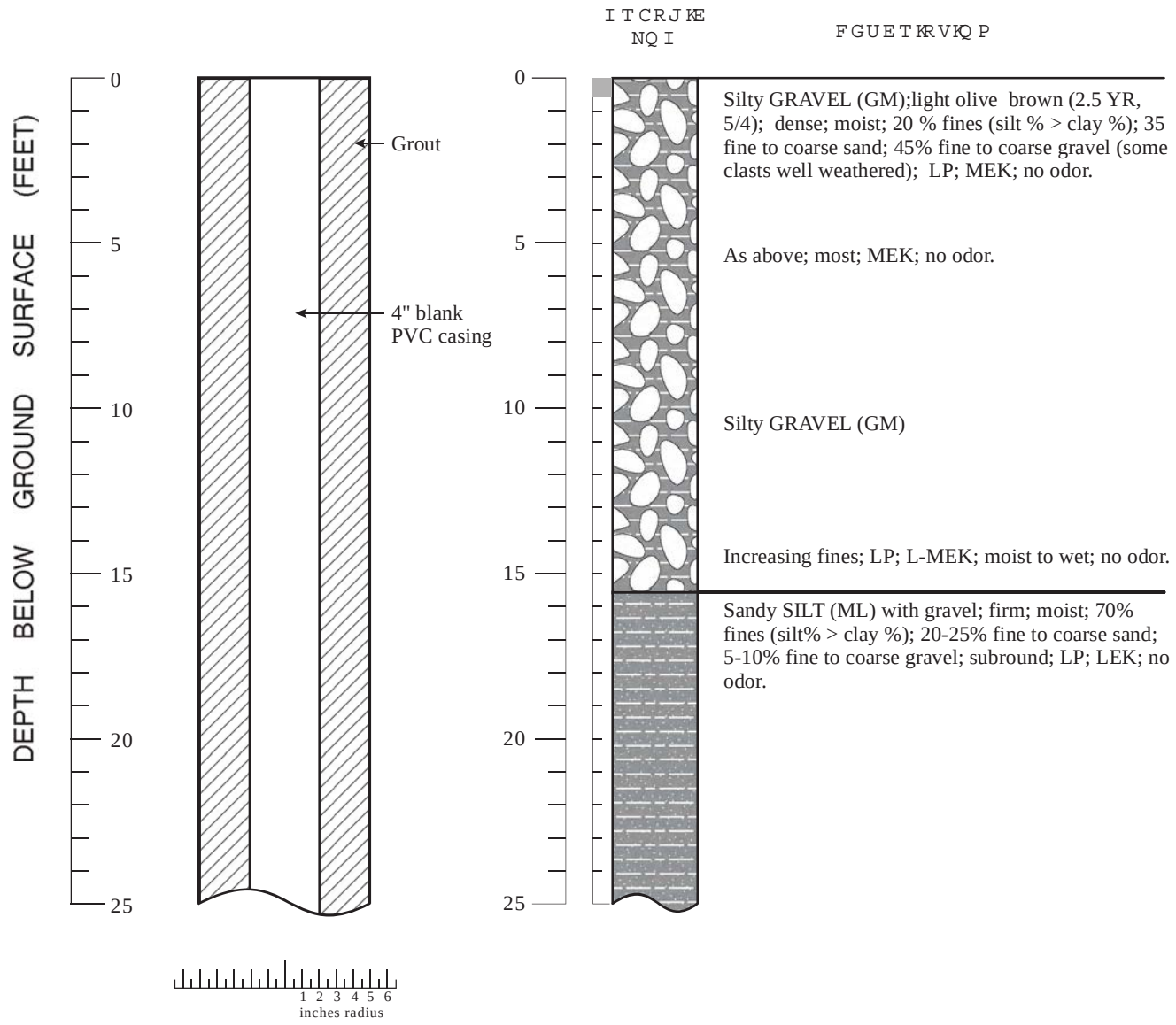
Boring Log/Well Construction Details - B-07/MW-03 - Amonos Site, Cloverdale, California

# Dqtkpi"D/291Y GNN"O Y /25"*eqpv0+




Boring Log/Well Construction Details - B-07/MW-03 - Amonos Site, Cloverdale, California

# Dqtkpi"D/2:1Y GNN"O Y/26



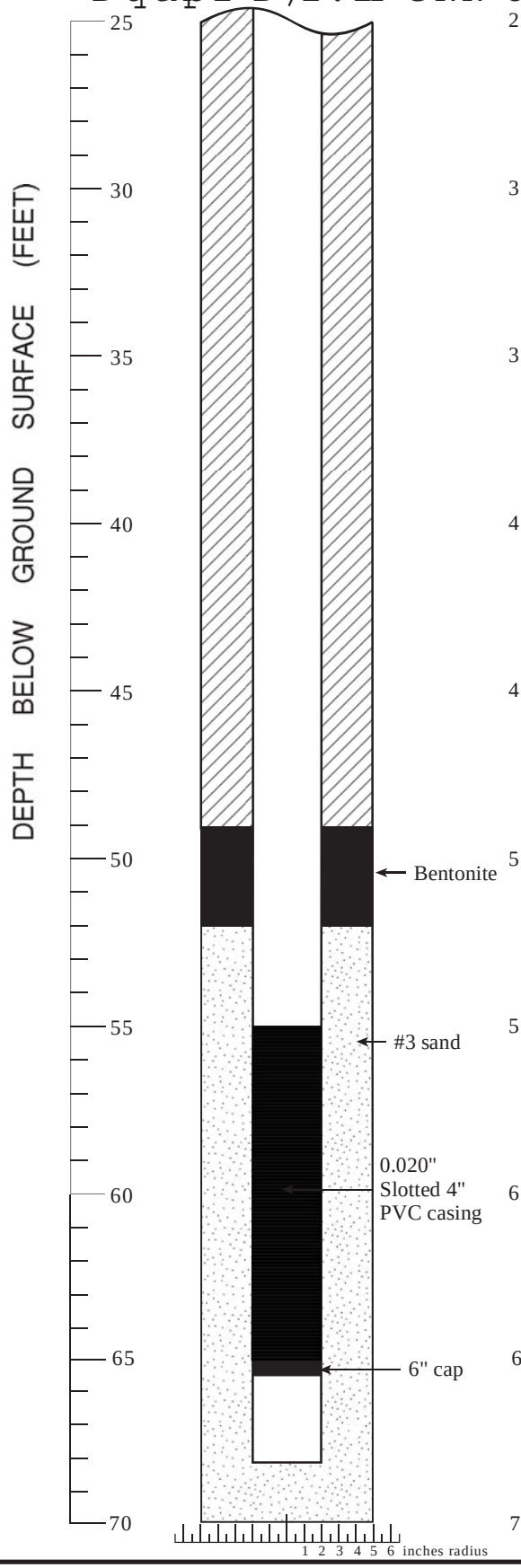

## EXPLANATION

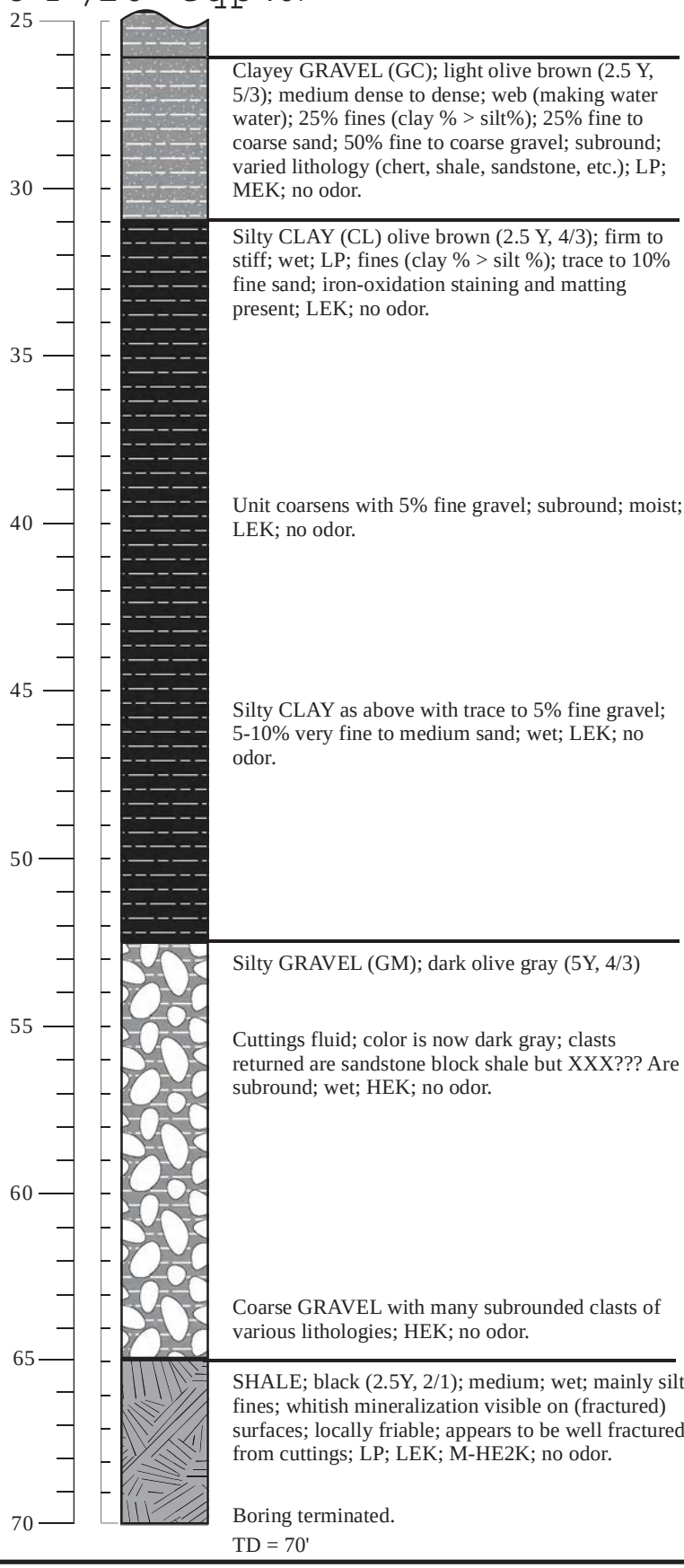
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 10 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Luis Torres |
| Drilling Method: | Hollow Stem Auger |
| Date Drilled: | 02/19/08 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing Elevation: | 310.50 |

Boring Log/Well Construction Details - B-08/MW-04 - Amonos Site, Cloverdale, California




Clayey GRAVEL (GC); light olive brown (2.5 Y, 5/3); medium dense to dense; web (making water water); 25% fines (clay % > silt%); 25% fine to coarse sand; 50% fine to coarse gravel; subround; varied lithology (chert, shale, sandstone, etc.); LP; MEK; no odor.

Silty CLAY (CL) olive brown (2.5 Y, 4/3); firm to stiff; wet; LP; fines (clay % > silt %); trace to 10% fine sand; iron-oxidation staining and matting present; LEK; no odor.

Unit coarsens with 5% fine gravel; subround; moist; LEK; no odor.

Silty CLAY as above with trace to 5% fine gravel; 5-10% very fine to medium sand; wet; LEK; no odor.

Silty GRAVEL (GM); dark olive gray (5Y, 4/3)

Cuttings fluid; color is now dark gray; clasts returned are sandstone block shale but XXX??? Are subround; wet; HEK; no odor.

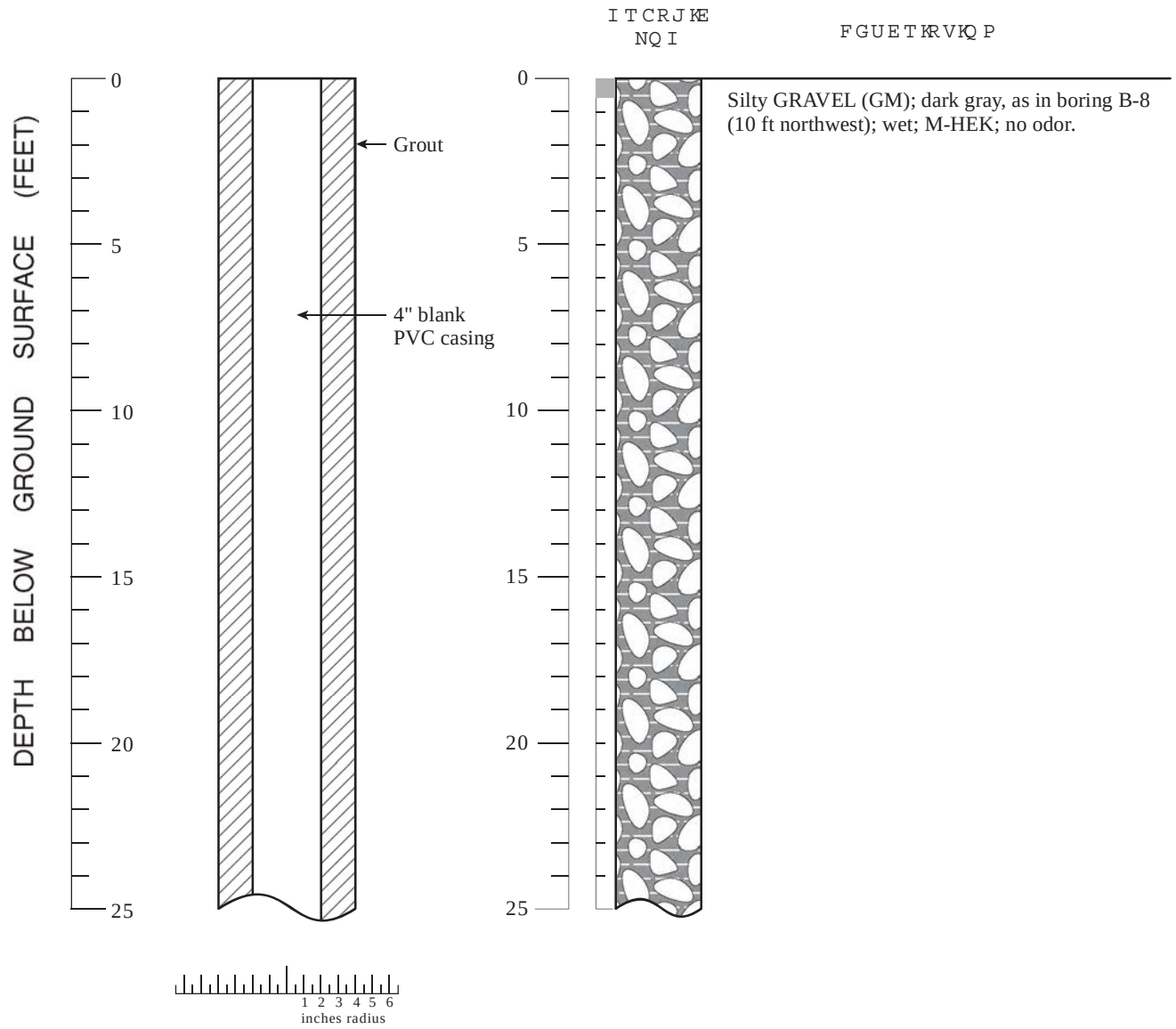
Coarse GRAVEL with many subrounded clasts of various lithologies; HEK; no odor.

SHALE; black (2.5Y, 2/1); medium; wet; mainly silt fines; whitish mineralization visible on (fractured) surfaces; locally friable; appears to be well fractured from cuttings; LP; LEK; M-HE2K; no odor.

Boring terminated.
TD = 70'

Boring Log/Well Construction Details - B-08/MW-04 - Amonos Site, Cloverdale, California

# Dqtkpi"D/2:c1Y GNN"O Y /27




## EXPLANATION

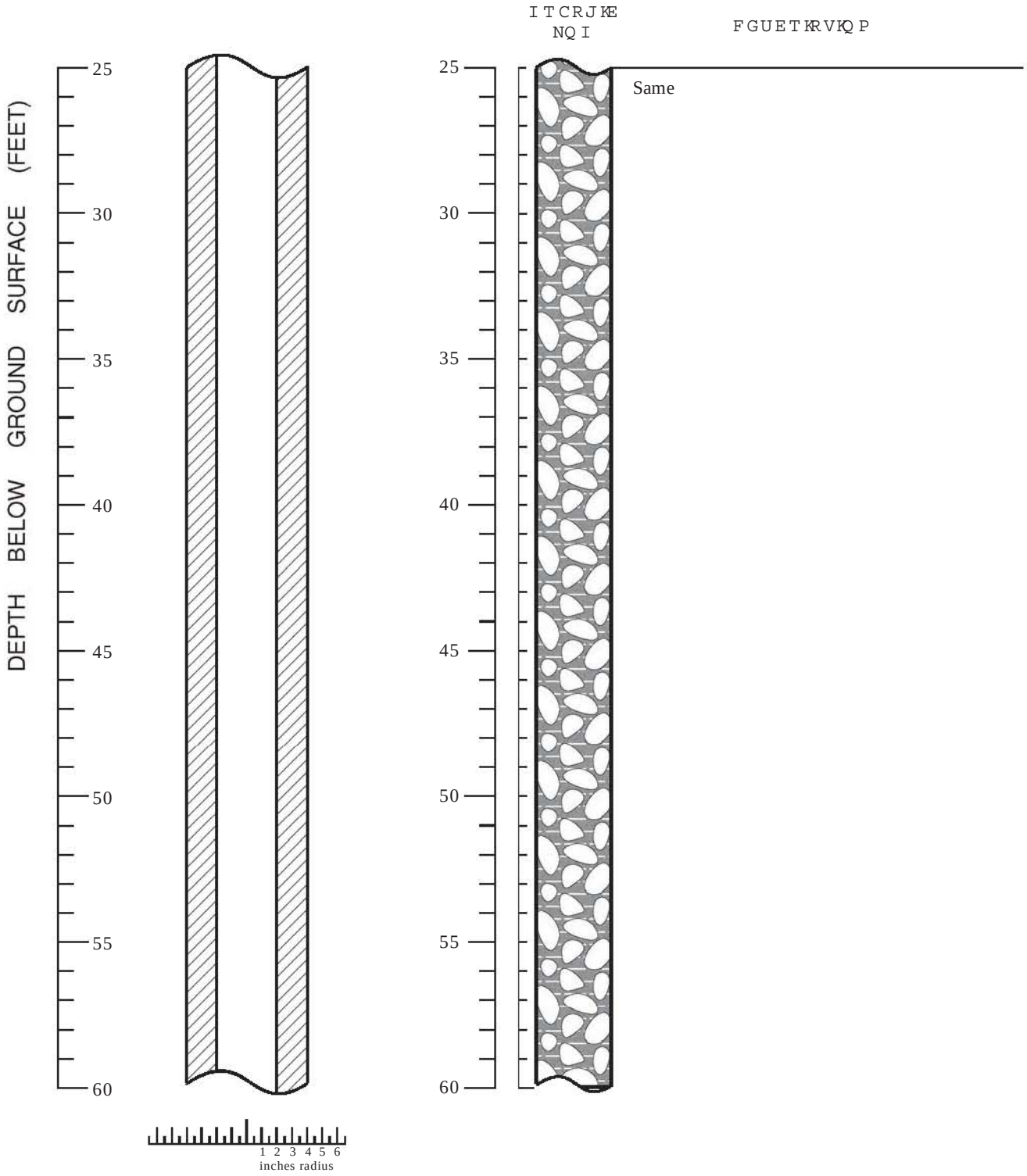
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Nick Letsch |
| Drilling Method: | Hollow Stem Auger |
| Date Drilled: | 02/19/08 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing Elevation: | 309.27 |

Boring Log/Well Construction Details - B-08a/MW-05 - Amonos Site, Cloverdale, California

# Dqtkpi"D/2:c1Y GNN"O Y /27"*eqpv0+




Boring Log/Well Construction Details - B-08a/MW-05 - Amonos Site, Cloverdale, California

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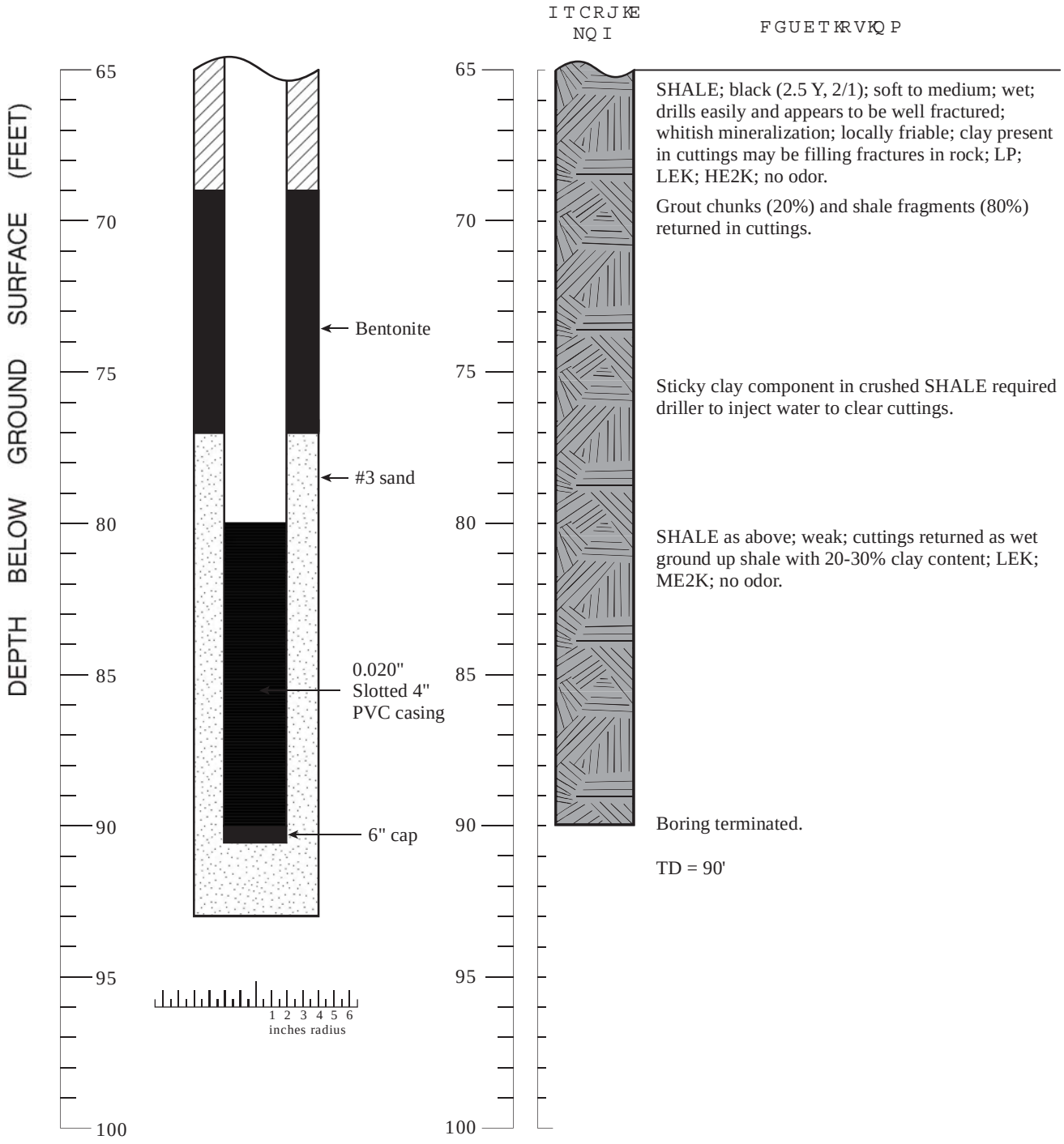
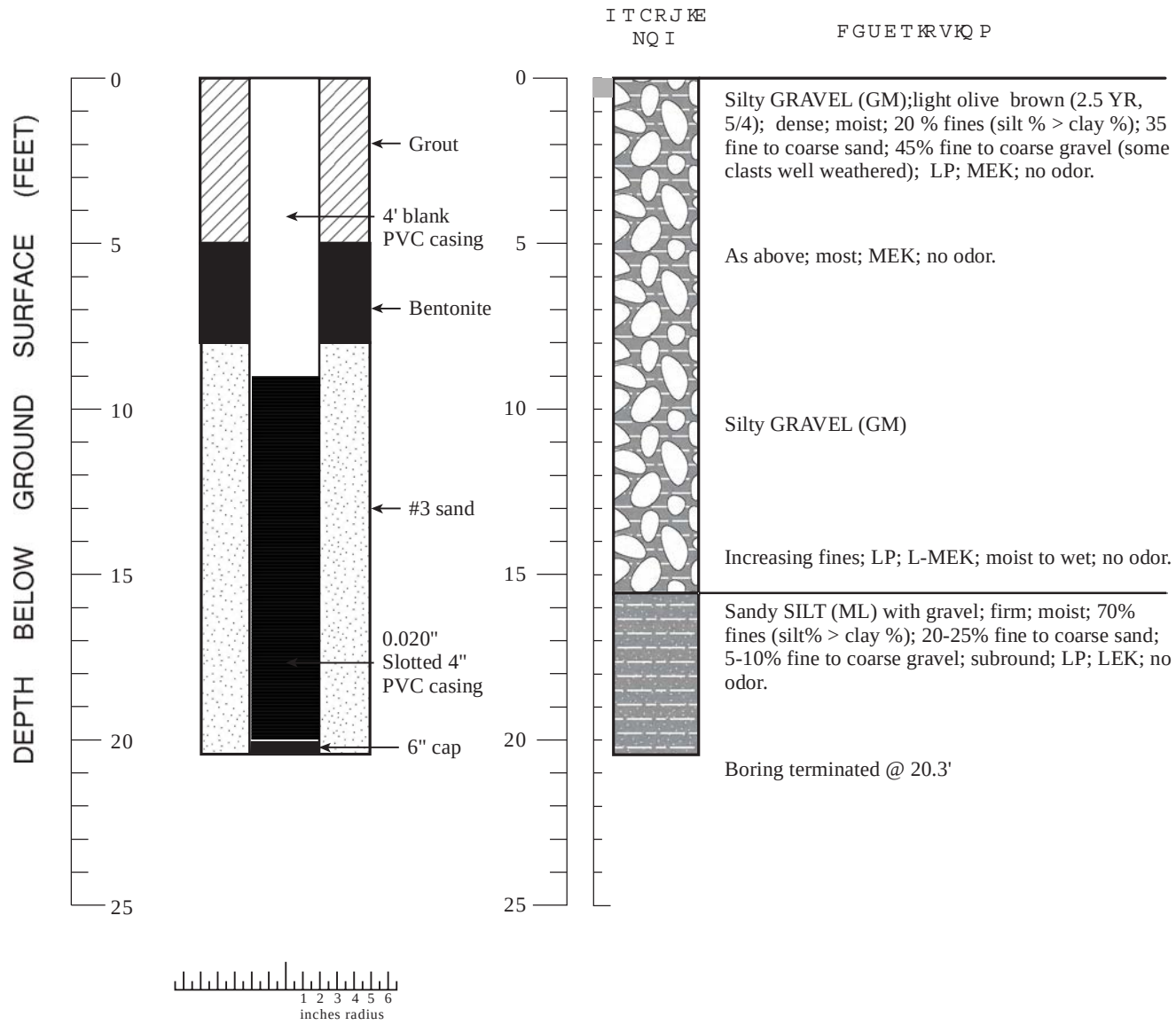



Boring Log/Well Construction Details - B-08a/MW-05 - Amonos Site, Cloverdale, California

# Dqtkpi "D/2:d1Y GNN"O Y/28




## EXPLANATION

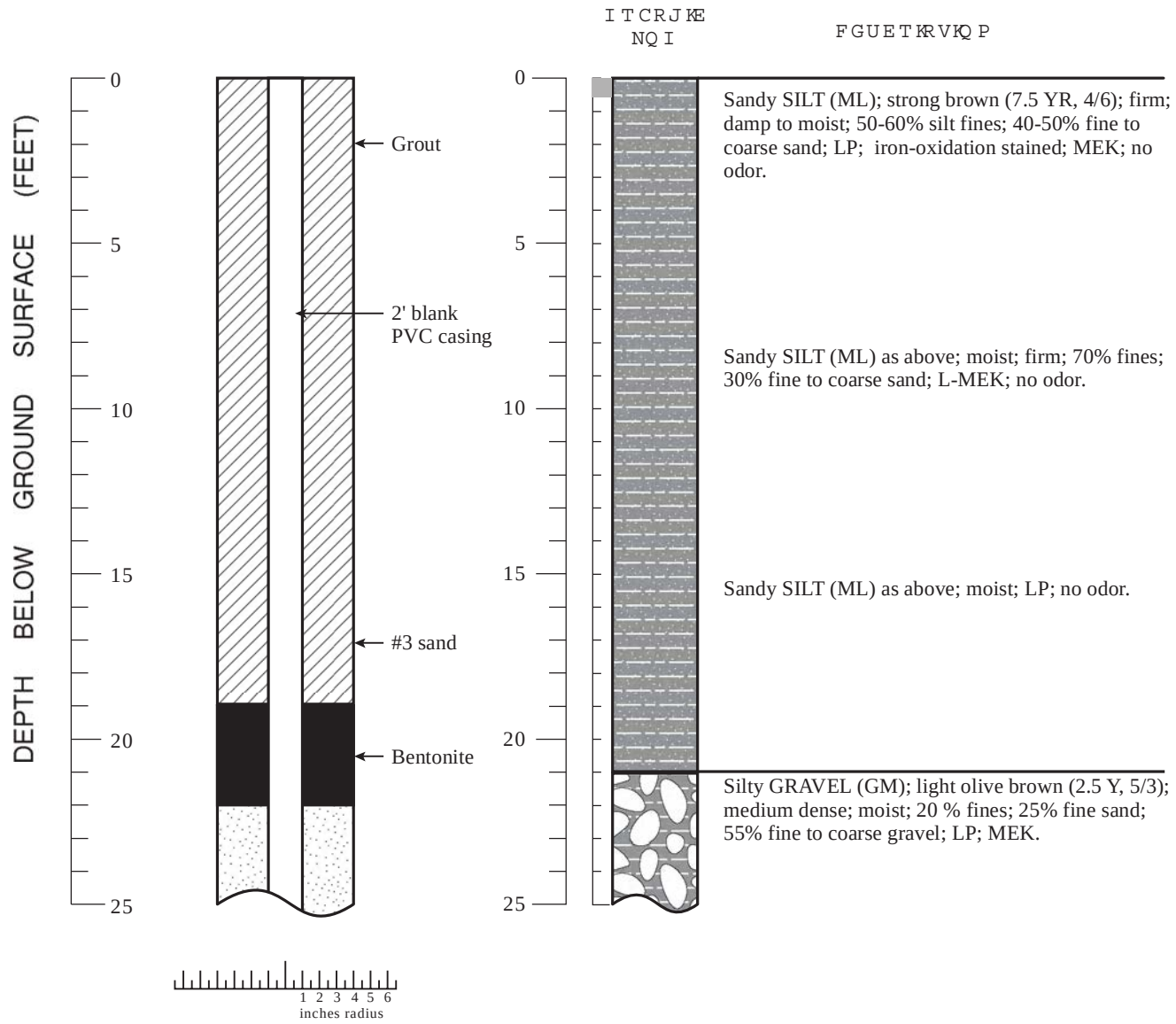
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 10 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Luis, Bobby |
| Drilling Method: | Hollow Stem Auger |
| Date Drilled: | 02/19/08 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing Elevation: | 311.15 |

Boring Log/Well Construction Details - B-08b/MW-06 - Amonos Site, Cloverdale, California

# Dqtkpi"D/321Y GNN"OY/29




## EXPLANATION

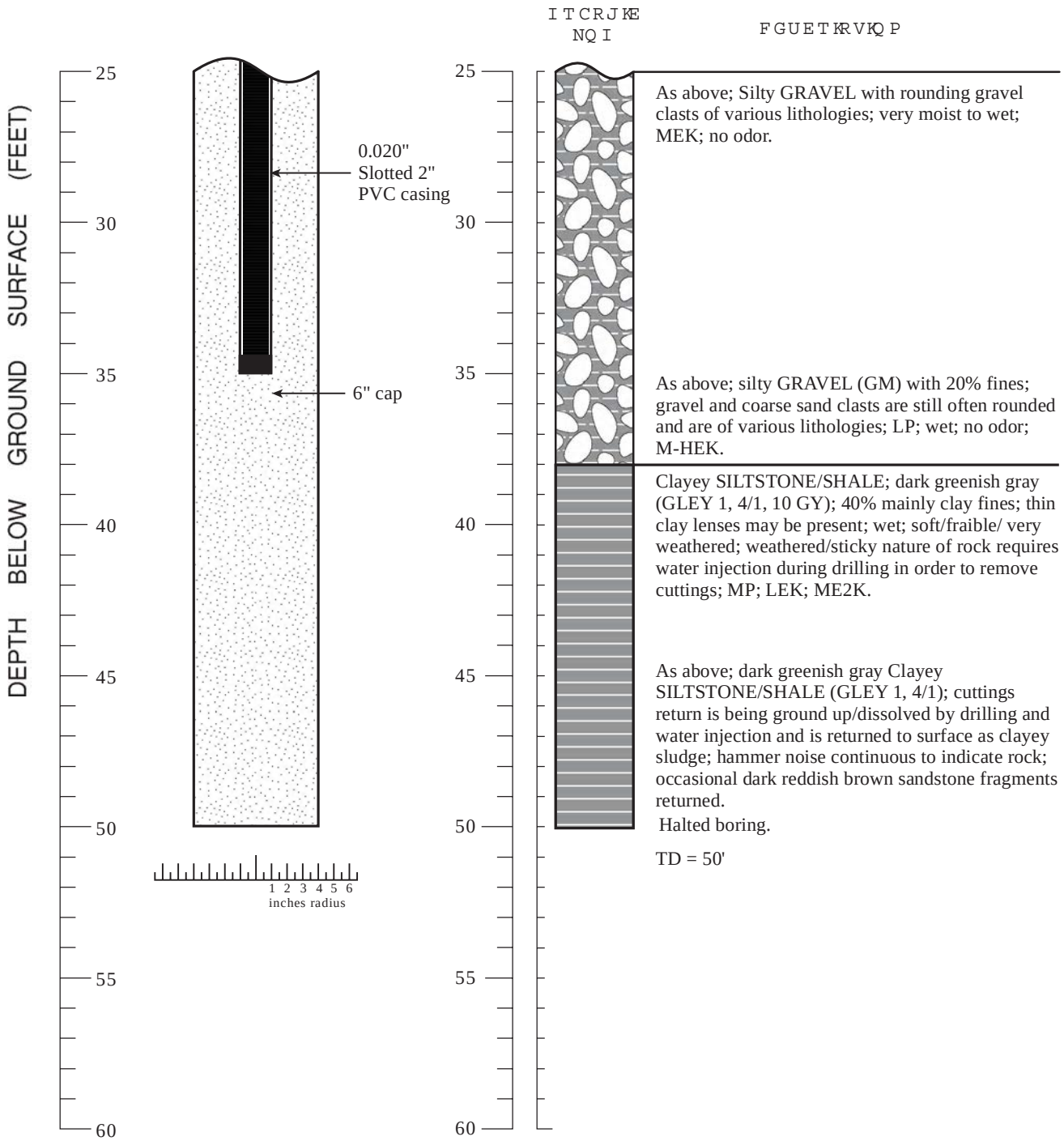
- ▼ Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

| | |
|---|---|
| Logged By: | Rob Davis, G. Gandhok |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Victor |
| Drilling Method: | Hollow Stem Auger |
| Date Drilled: | 02/20/08 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing Elevation: | 324.10 |

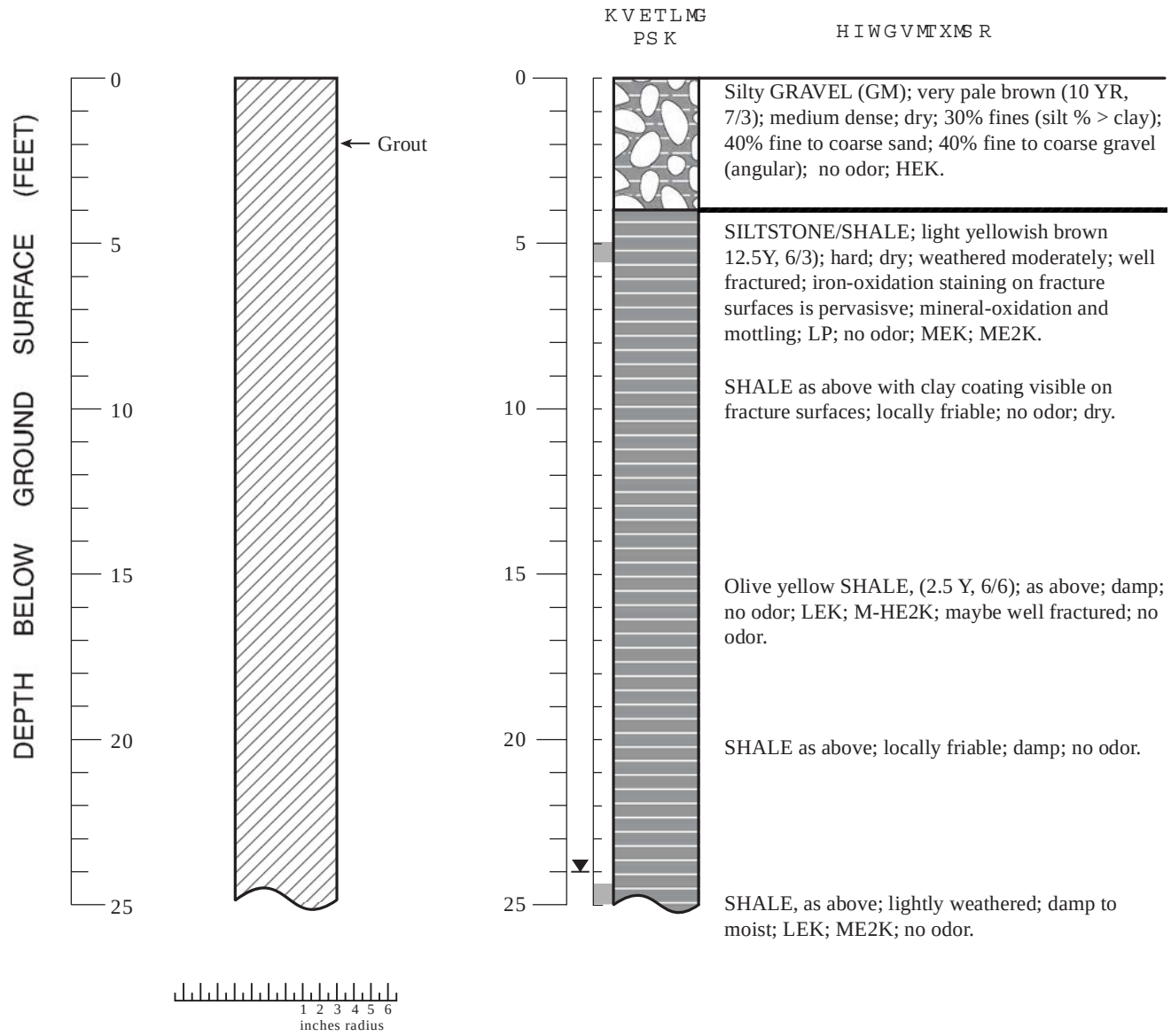
Boring Log/Well Construction Details - B-10/MW-07 - Amonos Site, Cloverdale, California

# Dqtkpi"D/321Y GNN"O Y /29"*eqpv0+




Boring Log/Well Construction Details - B-10/MW-07 - Amonos Site, Cloverdale, California

F svmrk $F 155




## EXPLANATION

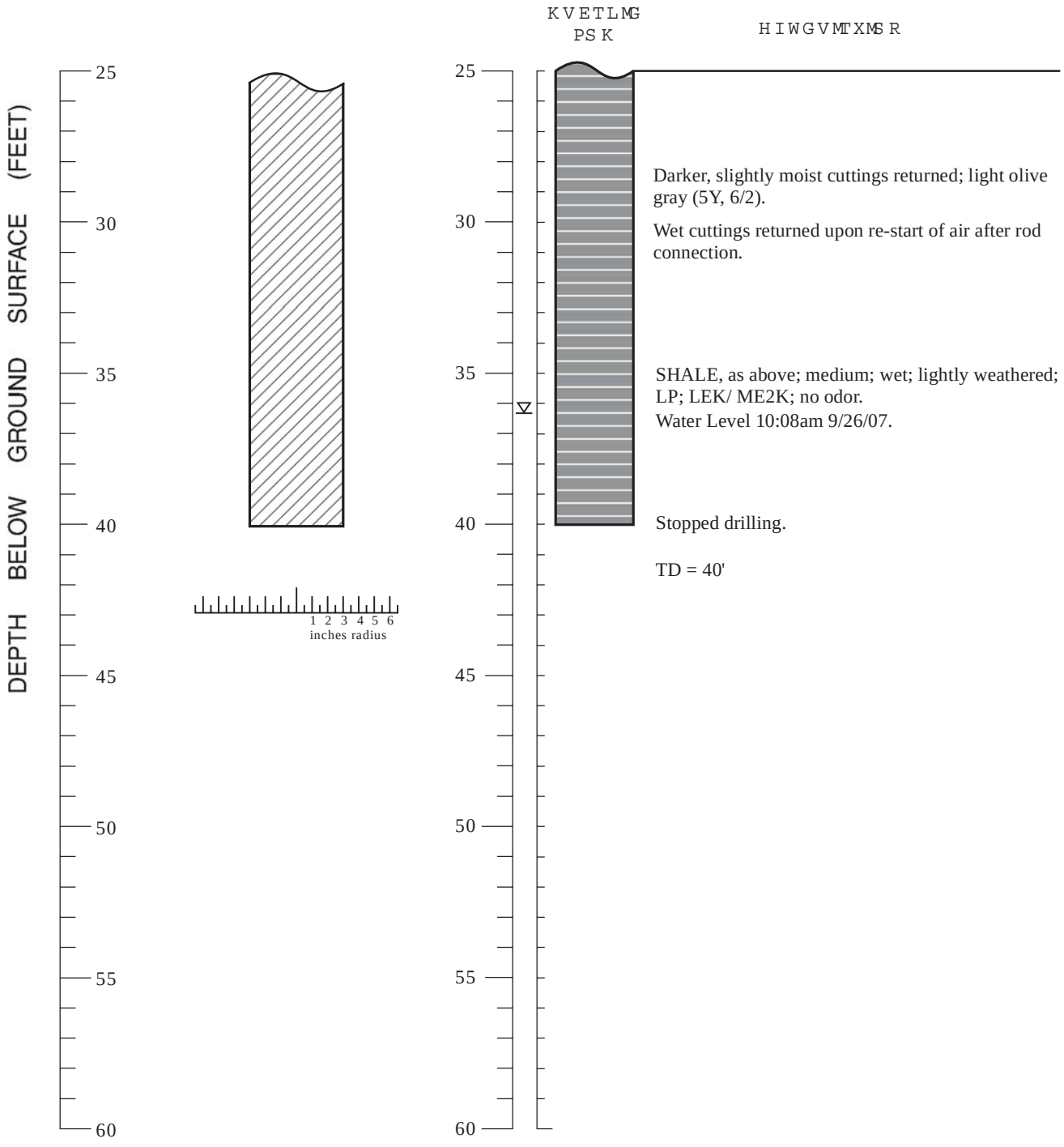
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, G. Gandhok |
| Supervisor: | Joyce Adams |
| Drilling Company: | Westex |
| License Number: | C57-552198 |
| Driller: | Mark Dockrey |
| Drilling Method: | Air Rotery |
| Date Drilled: | 09/26/07 |
| Well Head Completion: | N/A |
| Type of Sampler: | Split Spoon |
| Ground Surface Elevation: | 316.8' |

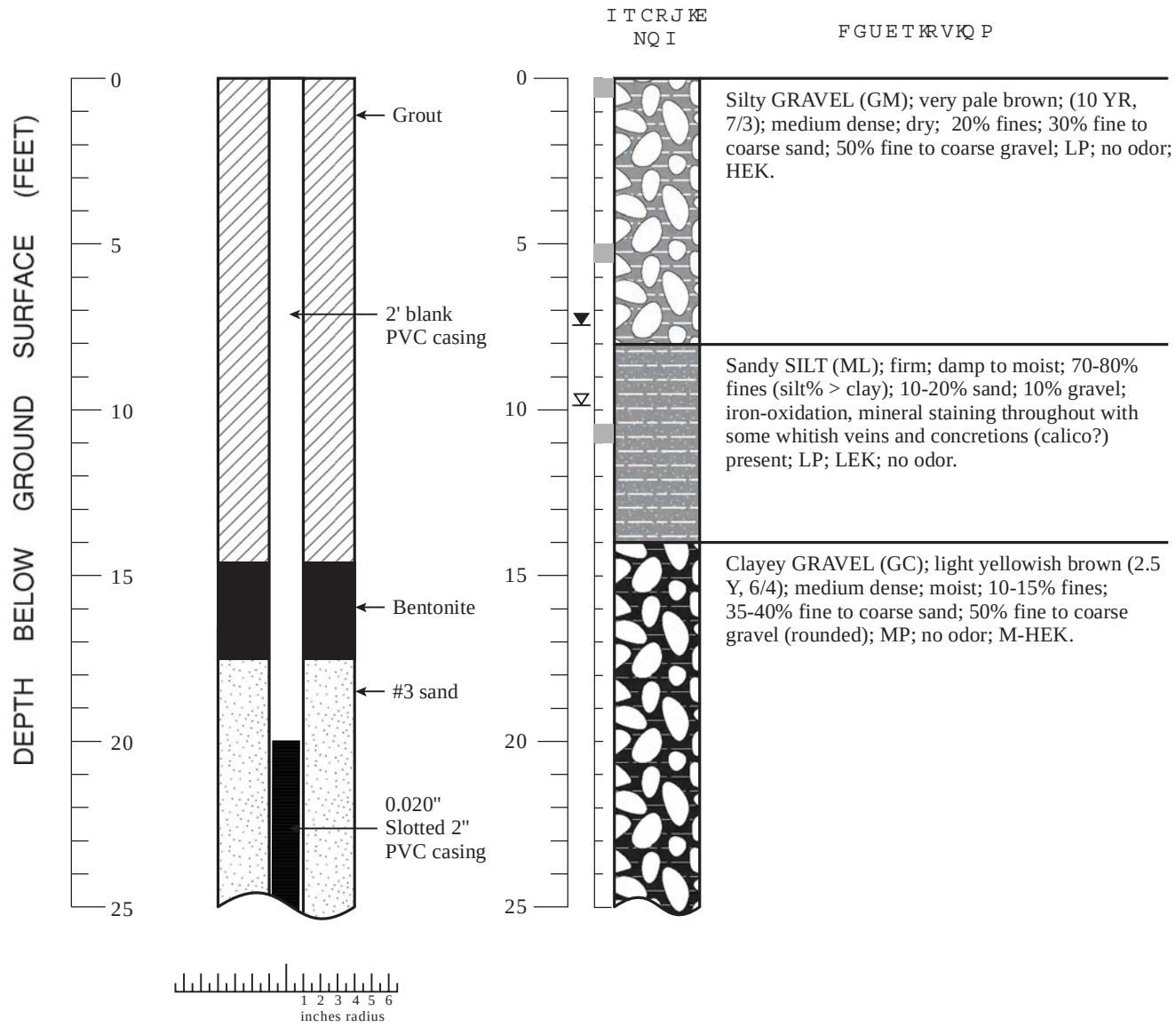
Boring Log - B-11 - Amonos Site, Cloverdale, California

F s v m r k $ F 1 5 5 $ , g s r x 2 -




Boring Log - B-11 - Amonos Site, Cloverdale, California

# Y GNN'D3410Y /2:




## EXPLANATION

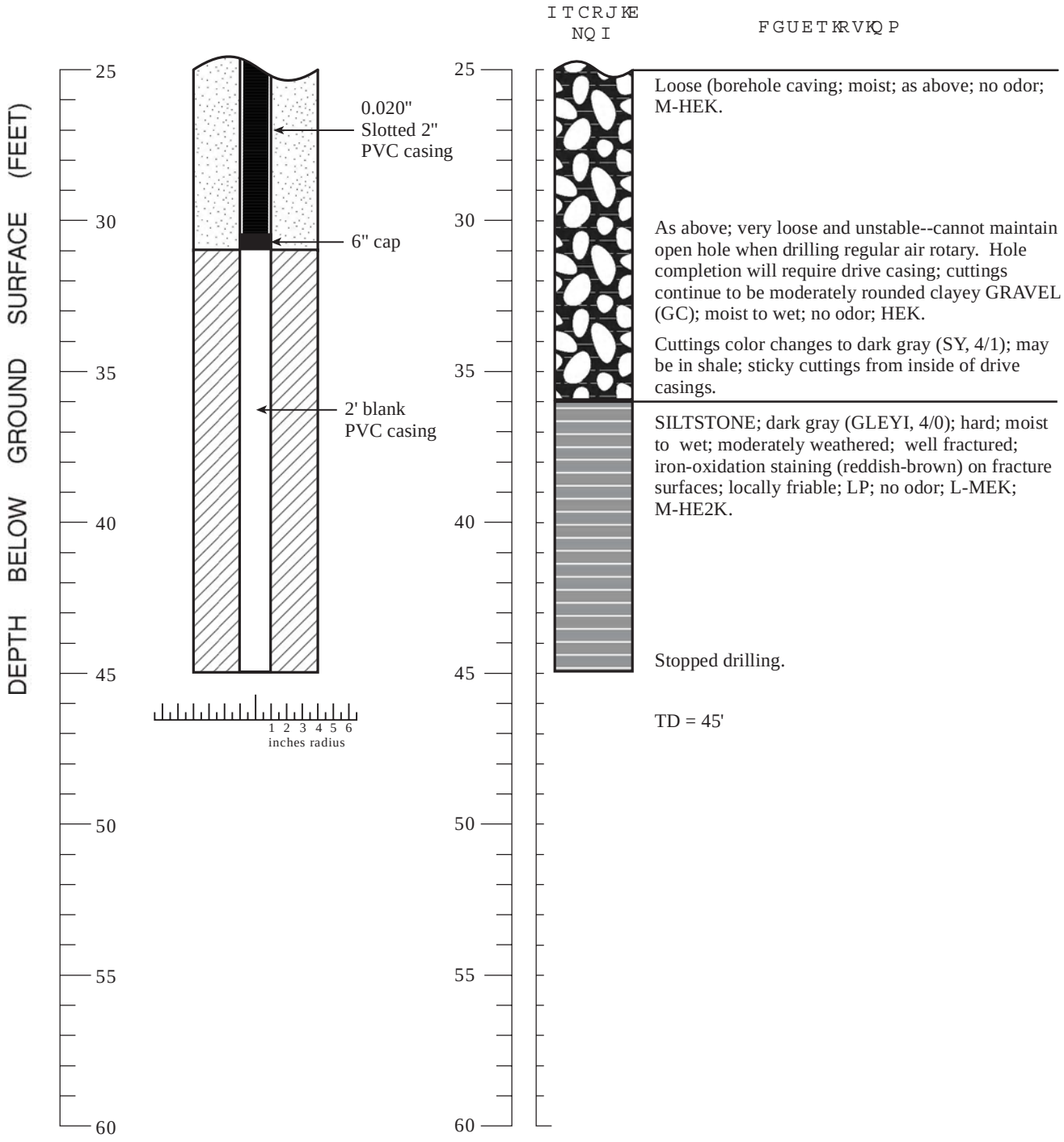
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 8 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Luis Torres |
| Drilling Method: | Hollow Stem Auger |
| Date Drilled: | 12/17/07 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing: | 328.79 |

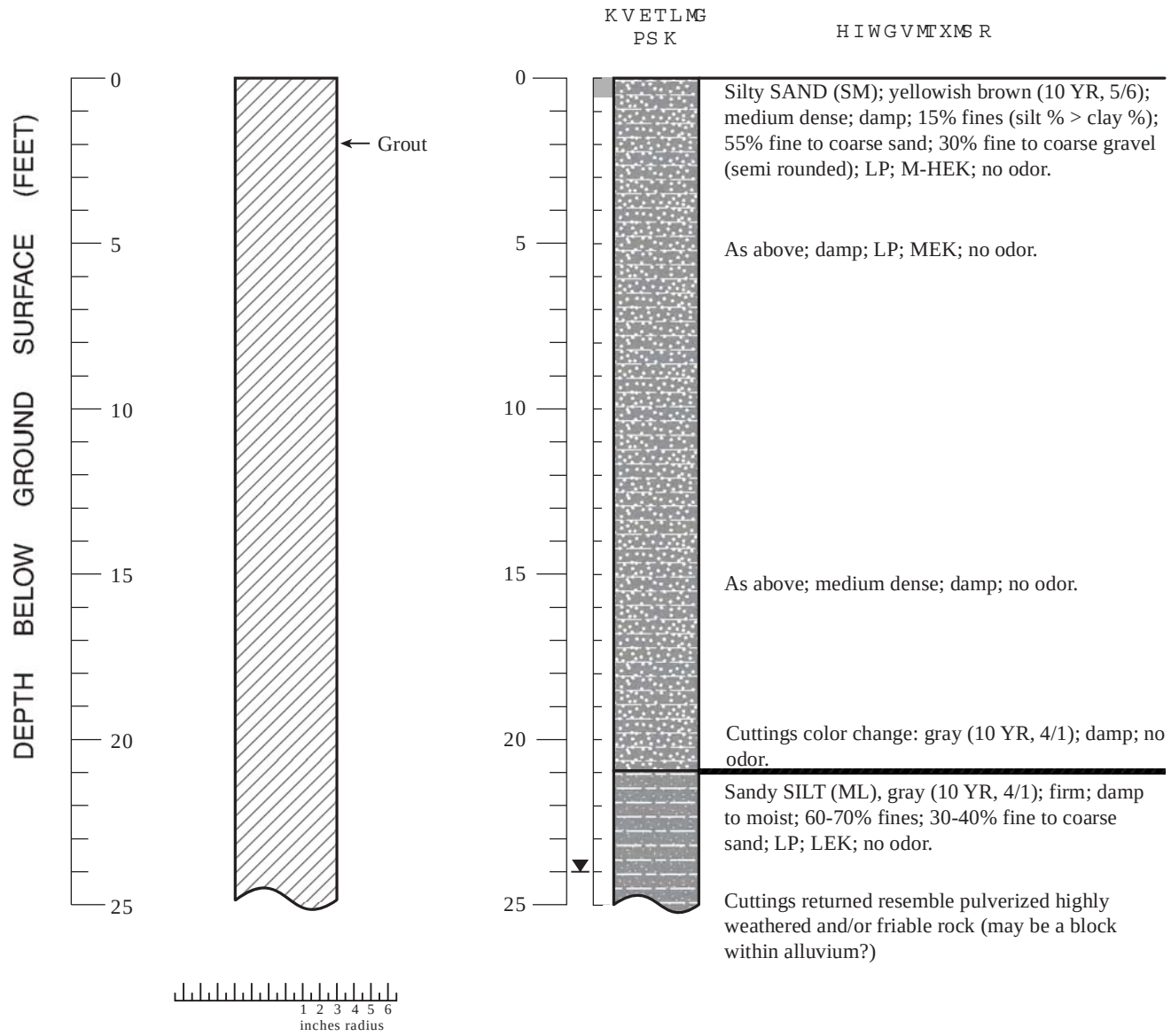
Boring Log/Well Construction Details - B-12/MW-08 - Amonos Site, Cloverdale, California

Y GNN"D3410Y /2:"""*eqpv0+




Boring Log/Well Construction Details - B-12/MW-08 - Amonos Site, Cloverdale, California

# F svmrk $F 157




## EXPLANATION

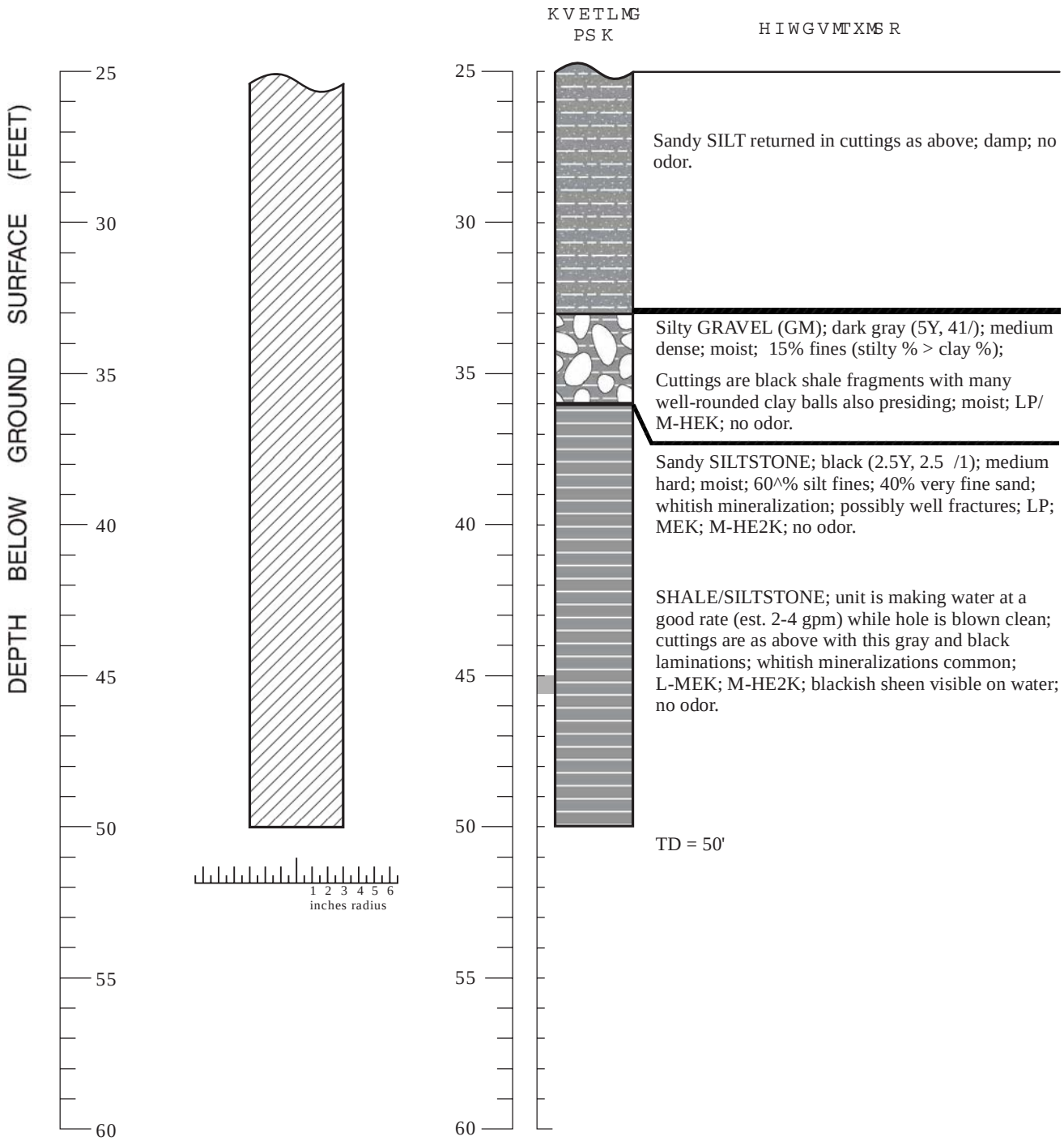
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, G. Gandhok |
| Supervisor: | Joyce Adams |
| Drilling Company: | Westex |
| License Number: | C57-552198 |
| Driller: | Mark Dockrey |
| Drilling Method: | Air Rotery |
| Date Drilled: | 10/04/07 |
| Well Head Completion: | N/A |
| Type of Sampler: | Split Spoon |
| Ground Surface Elevation: | 323.4' |

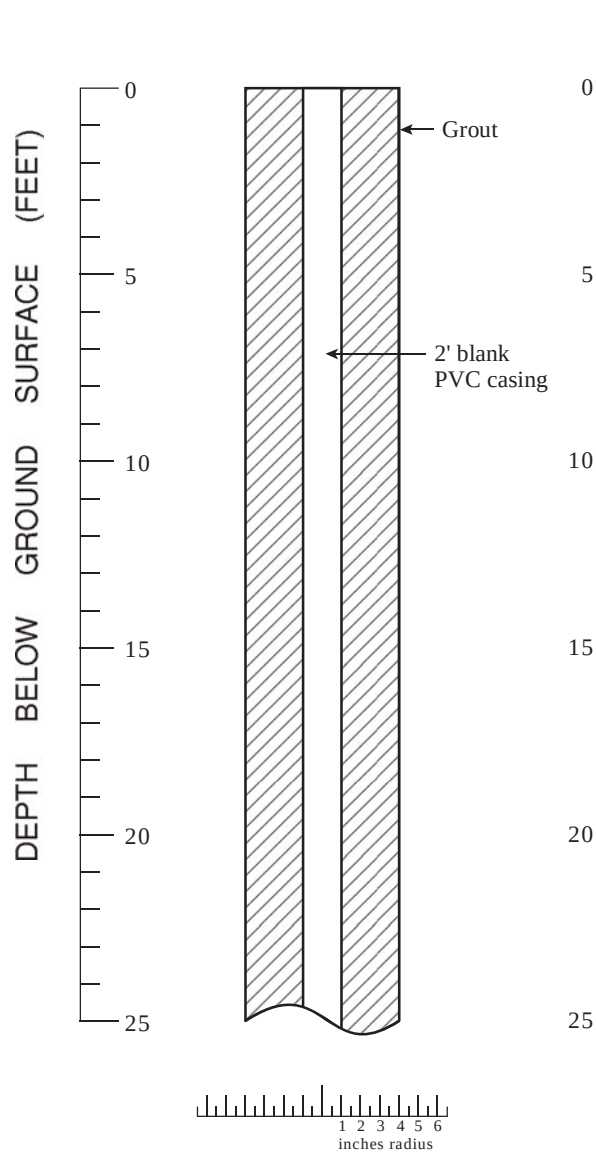
Boring Log - B-13 - Amonos Site, Cloverdale, California

# F s v m r k $ F 1 5 7 $ , g s r x 2 -



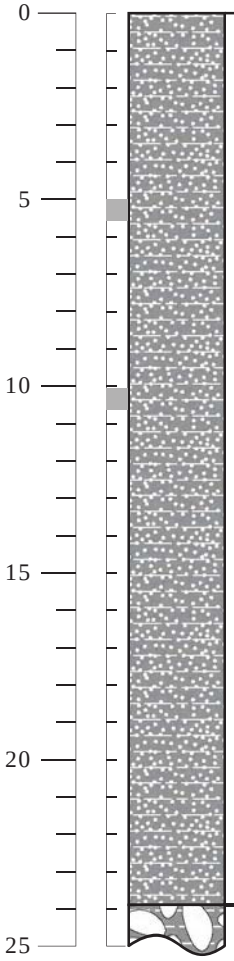

Boring Log - B-13 - Amonos Site, Cloverdale, California

# Y GNN'D 36 10 Y /2;




I T C R J K E
N Q I

F G U E T K R V K Q P




Silty SAND (SM); dark yellowish brown (10 YR, 5/6); medium dense to dense; dry; 20-30% fines (silt % > clay %); 40-50% fine to coarse sand; 30% fine to coarse gravel; iron-oxidation and mineral-oxidation stains and mottling common; LP; MEK; no odor.

Damp; MEK; no odor

As above with lower gravel content; 40-45 % silt; 50% fine to coarse sand; 5-10% fine to coarse gravel; firm; mineral-oxidation and iron-oxidation stains; LP; L-MEK; no odor.

Brown (7.5 YR, 4/4/); medium dense; moist; LEK; no odor.

40% fine to coarse SAND; 40% fines; 20% fine to coarse gravel (rounded); increasing moisture forming balled up silt in cuttings; LP; LEK; no odor.

Silty GRAVEL (GM); yellowish brown (10 YR, 5/4); medium dense; moist; 25% fines; 35% fine to coarse sand; 40% fine to coarse gravel; larger clasts are rounded; LP; MEK; no odor.

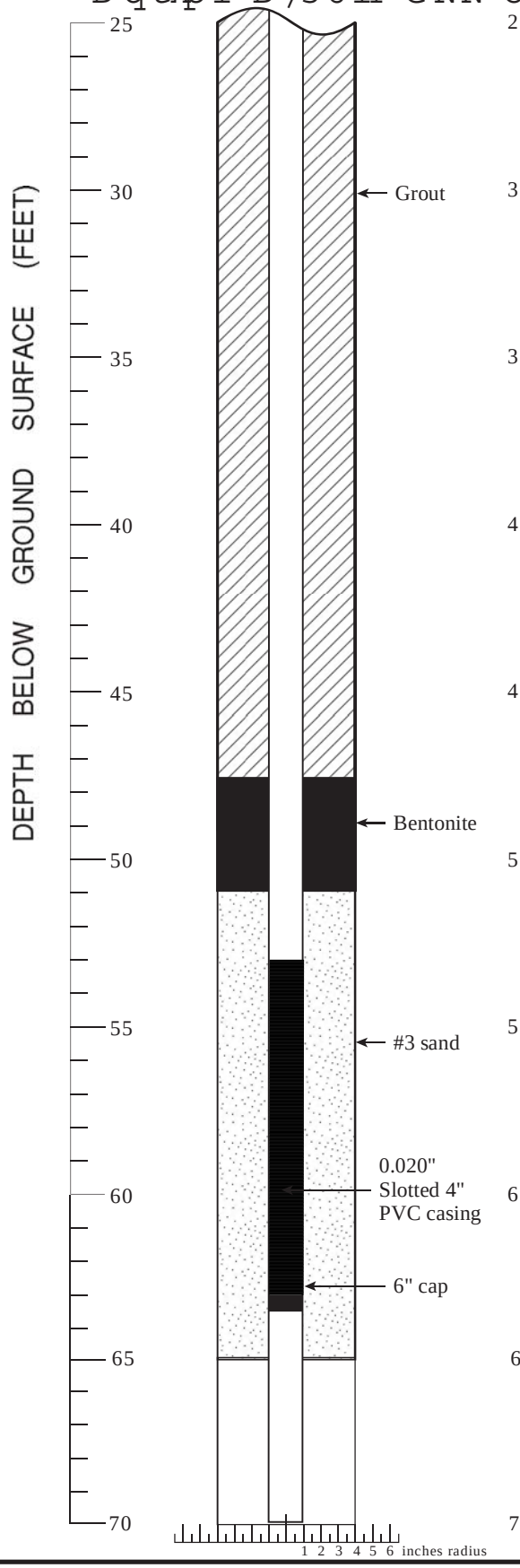
## EXPLANATION

- ▼ Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Test America |
| License Number: | C57-819548 |
| Driller: | Nick Letsch |
| Drilling Method: | Air Rotary |
| Date Drilled: | 03/11/08 |
| Well Head Completion: | 5' Steel Monument / 3- Barriers |
| Type of Sampler: | N/A |
| Top of Casing: | 320.57' |

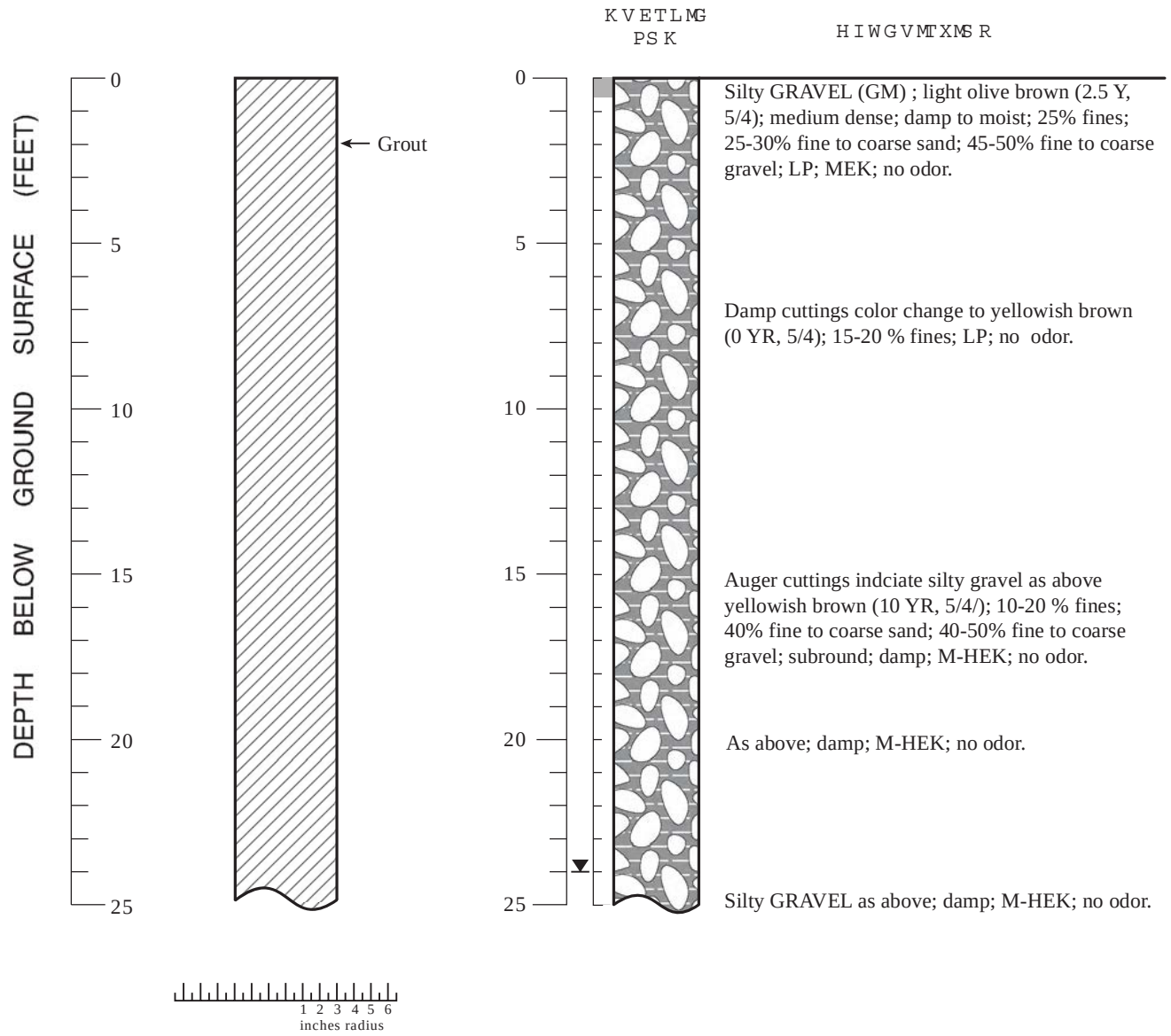
Boring Log/Well Construction Details - B-14/MW-09 - Amonos Site, Cloverdale, California




| | |
|---|---|
| Same | |
| Moist to wet gravel seam observed in cuttings during advancement of drive casing. | |
| As above; damp to moist; no odor. | |
| Silty GRAVEL (GM) as above; damp to moist; MEK; no odor. | |
| Cuttings color changes to dark grayish brown (2.5Y, 4/2); increasing gravel content; unit coarsening downward; clasts are rounded; LP; M-HEK; no odor. | |
| BEDROCK at 45 feet; fractured dark gray SHALE; Silty GRAVEL as above with lower percentage of sub-rounded gravel clasts; clast litholigy is mostly shale; unit appears to be coursening downward; moist to wet; M-HEK; no odor. | |
| SHALE; dark gray (2.5Y, 4/XX?); medium; wet; well weathered; locally friable; iron-oxidation staining on fracture surfaces; pervasive LP; LEK; HE2K; no odor. | |
| As above with increasing clay content in cuttings; wet; no odor. | |
| SHALE is black (2.5Y, 2/1); friable cuttings returned as 1/8" fragments with clay balls likely from filled fractures. | |
| As above; black SHALE; wet; may be highly fractured; rock is very brittle; iron-oxidation stainig is not as common as above at 50-60 ft; clay content is as above; LEK; HE2K; no odor. | |
| TD = 70' | |

Boring Log/Well Construction Details - B-14/MW-09 - Amonos Site Cloverdale, California

# F s v m r k $ F 15 :




## EXPLANATION

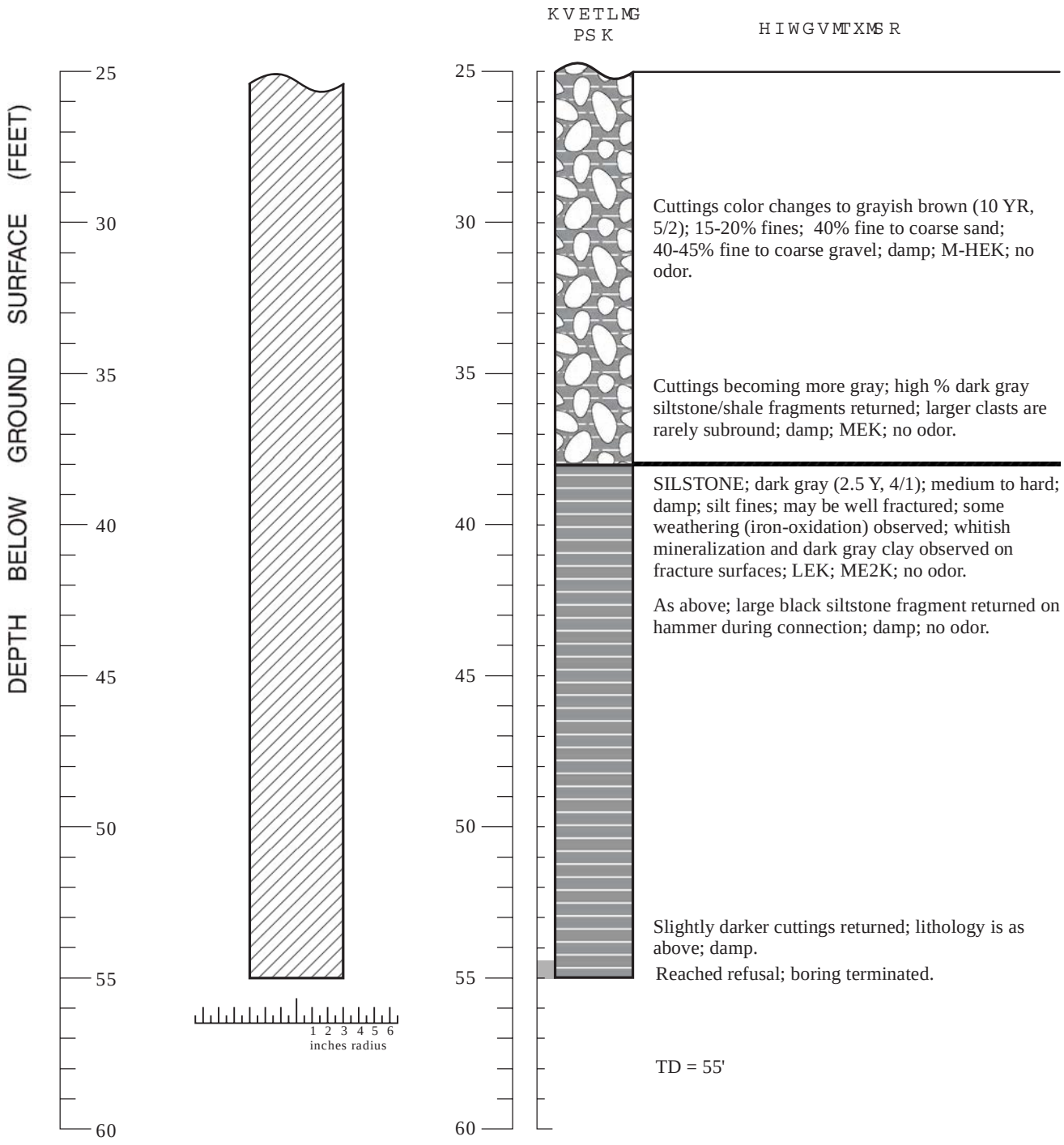
- Water level during drilling (date)
- Contact (dotted where approximate)
- Gradational contact
- Location of recovered core
- KEL,MEK,HEK = Low, Moderate, High Estimated hydraulic conductivity

Borehole diameter: 6 inches

| | |
|---|---|
| Logged By: | Rob Davis, Randy Kirby |
| Supervisor: | Joyce Adams |
| Drilling Company: | Westex |
| License Number: | C57-552198 |
| Driller: | Mark Dockrey |
| Drilling Method: | Air Rotery |
| Date Drilled: | 10/16/07 |
| Well Head Completion: | N/A |
| Type of Sampler: | Split Spoon |
| Ground Surface Elevation: | N/A |

Boring Log - B-16 - Amonos Site, Cloverdale, California

# F s v m r k $ F 1 5 : $ , g s r x 2 -




Boring Log - B-16 Amonos Site, Cloverdale, California

# SURVEY RESULTS

*This EXHIBIT is for graphic purposes only. Any errors or omissions on this exhibit shall not affect the deed description.*

**Note:**
*Unable to determine the location of test borings #1 and #14 by field observation. Coordinates shown for borings #1 and #14 were obtained from a field survey and are approximate to the location based upon information provided by Weiss Associates.*

## Borings

**#1**
N 411382.1
E 1712377.9
EL 323.9'

**#2**
N 410857.8
E 1712354.6
EL 328.8'

**#4**
N 410109.0
E 1712506.5
EL 314.3'

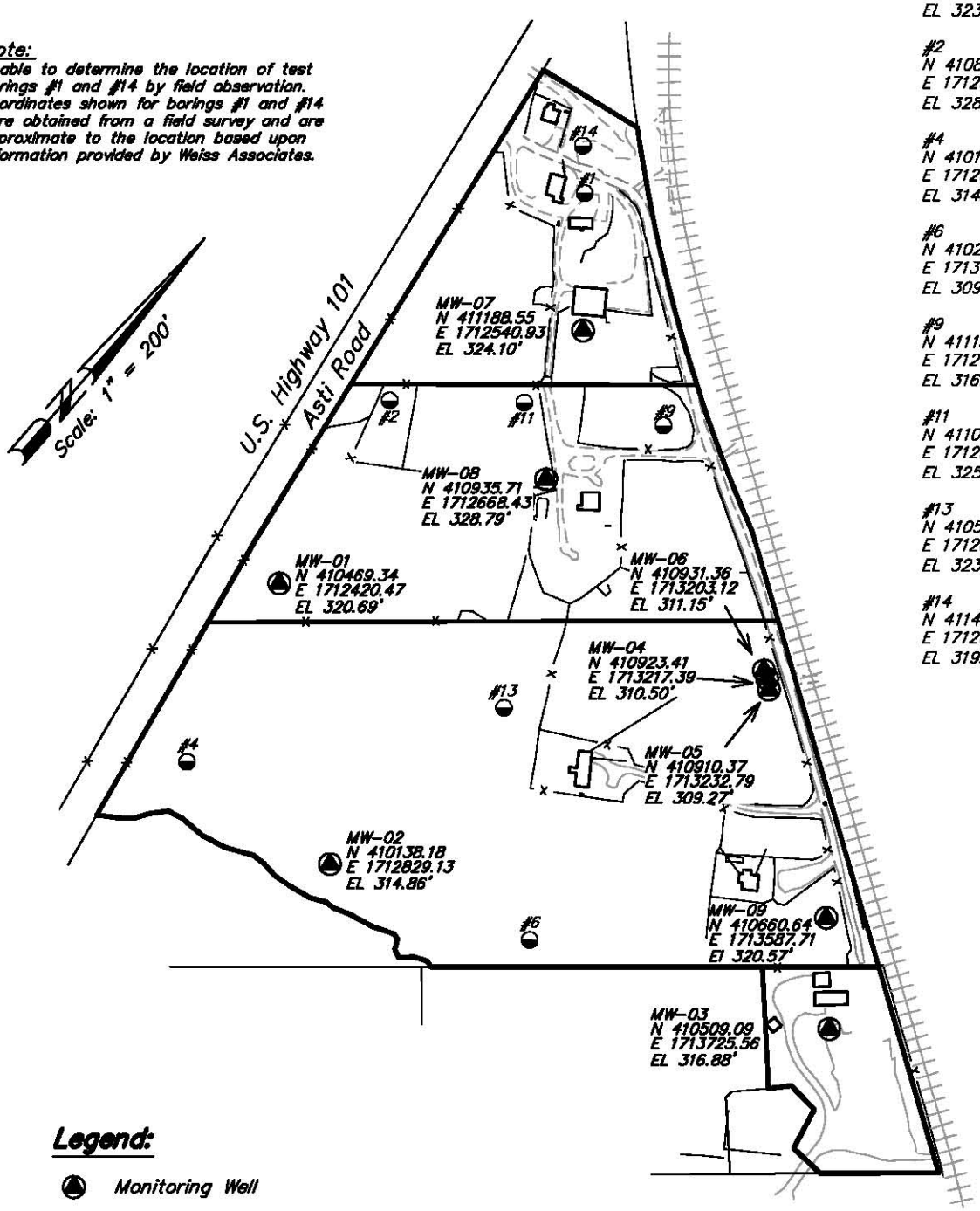
**#6**
N 410272.9
E 1713199.7
EL 309.5'

**#9**
N 411152.6
E 1712768.0
EL 316.8'

**#11**
N 411017.0
E 1712545.6
EL 325.5'

**#13**
N 410566.0
E 1712884.3
EL 323.4'

**#14**
N 411446.4
E 1712318.3
EL 319.9'




## Legend:

- Monitoring Well
- #13 Boring
- N Northing Coordinate
- E Easting Coordinate
- EL Elevation

# Monitoring Well Exhibit

PROFESSIONAL LAND SURVEYOR * AARON R SMITH No. L 7901 EXP. 12/31/09 * STATE OF CALIFORNIA *

*Aaron R. Smith, PLS 7901*
*my license expires 12/31/09*


Adobe Associates, Inc.
Civil Engineering, Land Surveying & Land Development Services
1220 N. Dutton Ave
Santa Rosa, CA 95401
707 541 2300
Fax: 707 541 2301


*Job No. 07159.03* | *APN 116-310-020, 035, 039 & 040* | *June 11, 2008*

# APPENDIX B

# Quality Assurance and Quality Control Summary

# APPENDIX B

The quality assurance (QA) objectives for this Phase II Investigation report focused on assessing the appropriateness of data generated during the Phase II activities (precision, accuracy, completeness, comparability, and representative application and use), and evaluating the quality of data collected before the data was used as a basis for analysis. Quality control (QC) procedures included data reduction and validation for field and laboratory activities, and data acceptance criteria were defined and achieved.

## Data Validation

As part of the data quality review process, ESA performed a data validation evaluation of the analytical data collected during the Phase II investigation. The following is a summary of the evaluation of analytical data for groundwater and soil samples collected at the Site.

The data were evaluated based on the following parameters:

- data completeness
- sample containers
- sample preservation
- holding times
- blanks

Following review of the data, some of the results were flagged with qualifiers because of exceedances in the QC criteria for the parameters listed in the preceding paragraph.

The following flags denote the following datum qualifiers:

- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- b Sample processed and analyzed outside of hold time.
- * Soil sample collected in a polyethylene container.
- ~ Sample submitted to the laboratory was not cold.

## Data Completeness

All analytical reports from the analytical laboratory of Curtis and Tompkins LTD were reviewed for completeness. The review indicates that samples were received under COC protocol and analyzed in accordance with the instructions on the chain-of-custody form or subsequent email communication between Weiss Associates and Curtis and Tompkins, LTD. Thirteen of the fourteen analytical reports reviewed included a laboratory narrative. The narrative and a portion of analytical report 203418 were missing from the analytical reports transmitted to ESA for review.

## Sample Containers

The majority of project soil samples were collected using a polyethylene container. Soil samples are typically collected in glass jars or brass sleeves rather than polyethylene due to the potential for polyethylene to introduce organic carbon to the sample and lead to cross contamination. This type of cross contamination could possibly result in elevated concentrations of volatile organic compounds (VOCs) or petroleum hydrocarbons in the submitted soil sample. Soil samples collected in polyethylene containers are qualified with a ”*”. Because these containers were likely not supplied by the laboratory there is a potential for cross contamination of other contaminants such as elevated metals. Data are reviewed in light of these potential issues that would normally result in false positives.

## Sample Preservation

Sample preservation includes maintaining samples cold following sample collection, as well as laboratory preservatives for collected groundwater samples such as nitric acid for metals analysis. Samples submitted for laboratory analysis were periodically not received cold. This type of sample handling would have the potential to increase cross contamination from soil samples collected in polyethylene containers, or potentially cause VOCs or total petroleum hydrocarbons in the gasoline range organics (TPH-gro) to volatize and reduce in concentrations. Soil and groundwater samples that were not received cold are qualified with a “~”. Data are reviewed in light of these potential issues, recognizing that samples received cold were found to have non-detect to low concentrations of TPH and generally non-detect concentrations of VOCs, indicating that these volatile substances are likely not a concern at the Amonos site.

## Holding Time

All samples were prepared and analyzed within the recommended holding times outlined in the U.S. EPA Guidance except for the following two cases. Data reported for total petroleum hydrocarbons-diesel range organics (TPH-dro) and motor oil-range organics (TPH-moro) with silica gel cleanup for groundwater sample B-08-GW-$^{+}$1.25, and pesticides and polychlorinated biphenyls for groundwater sample for B-12-GW-28 were qualified with a “b” accordingly.

## Blanks

No target compounds were detected above the laboratory reporting limits in the laboratory method blanks except for a detection of chromium above the laboratory limit in sample QC408129; samples associated with that laboratory method blank had chromium detections at a level at least 10 times that of the blank and do not require a data qualifier.

No target compounds were detected above the laboratory reporting limits in field trip blanks except for a low detection of acetone in a trip blank collected on October 4, 2007; acetone is a common laboratory contaminant and likely does not represent actual conditions. Neither field nor equipment blanks were collected as part of the Phase II investigation. Methylene chloride was reported by the laboratory in soil sampleB-8-SS-0.0. As noted by the laboratory, methylene chloride is a common laboratory contaminant and likely does not represent actual conditions.

## Relative Percent Difference

Both precision and accuracy are evaluated using duplicate pairs. Duplicate results are assessed using the relative percent difference between duplicate measurements. Duplicate and co-located samples and field equipment blanks were not collected as part of the investigation field work. Therefore, these field QC parameters were not evaluated as part of the data validation process.

# APPENDIX C

## Analytical Laboratory Reports

# ANALYTICAL LABORATORY DATA SHEETS AND CHAIN-OF-CUSTODY FORMS

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-02-SS-0.0' | 197909-001 |
| B-02-SS-35' | 197909-002 |
| B-02-GW-30' | 197909-003 |
| TRIP BLANK | 197909-004 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/29/2007
Project Manager

Signature: _____ Date: 10/29/2007
Operations Manager

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **197909** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **09/27/07** |
| Samples Received: | **09/27/07** |

This hardcopy data package contains sample and QC results for two soil samples and one water sample, requested for the above referenced project on 09/27/07. The samples were received with some broken VOA vials which included the Trip Blank. A Trip Blank was not analyzed.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
High surrogate recoveries were observed for trifluorotoluene (FID) in the LCS for batch 130089 and the MS/MSD of B-02-SS-35' (lab # 197909-002); the corresponding bromofluorobenzene (FID) surrogate recoveries were within limits. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
High surrogate recoveries were observed for dibromofluoromethane in B-02-SS-0.0' (lab # 197909-001) and B-02-SS-35' (lab # 197909-002); no target analytes were detected in these samples. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
Chromium was detected above the RL in the method blank for batch 129961; this analyte was detected in samples at a level at least 10 times that of the blank. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **197909** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **09/27/07** |
| Samples Received: | **09/27/07** |

**Ion Chromatography (EPA 300.0) Soil:**
No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-02-GW-30' | Batch#: | 130057 |
| Matrix: | Water | Sampled: | 09/25/07 |
| Units: | ug/L | Received: | 09/27/07 |
| Diln Fac: | 1.000 | | |

Type: SAMPLE Analyzed: 10/02/07
Lab ID: 197909-003

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 91 | 73-134 |
| Bromofluorobenzene (FID) | 98 | 77-140 |

Type: BLANK Analyzed: 10/01/07
Lab ID: QC408514

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 95 | 73-134 |
| Bromofluorobenzene (FID) | 87 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC408516 | Batch#: | 130057 |
| Matrix: | Water | Analyzed: | 10/01/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,895 | 95 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 102 | 73-134 |
| Bromofluorobenzene (FID) | 98 | 77-140 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-02-GW-30' | Batch#: | 130057 |
| MSS Lab ID: | 197909-003 | Sampled: | 09/25/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 10/02/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC408517

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 28.91 | 2,000 | 1,881 | 93 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 99 | 73-134 |
| Bromofluorobenzene (FID) | 96 | 77-140 |

Type: MSD Lab ID: QC408518

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,866 | 92 | 72-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 104 | 73-134 |
| Bromofluorobenzene (FID) | 103 | 77-140 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130089 |
| Units: | mg/Kg | Sampled: | 09/25/07 |
| Basis: | as received | Received: | 09/27/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/02/07 |

Field ID: B-02-SS-0.0' Lab ID: 197909-001
Type: SAMPLE

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.98 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 111 | 71-132 |
| Bromofluorobenzene (FID) | 108 | 69-145 |

Field ID: B-02-SS-35' Lab ID: 197909-002
Type: SAMPLE

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.95 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 110 | 71-132 |
| Bromofluorobenzene (FID) | 97 | 69-145 |

Type: BLANK Lab ID: QC408650

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 108 | 71-132 |
| Bromofluorobenzene (FID) | 101 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC408651 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130089 |
| Units: | mg/Kg | Analyzed: | 10/02/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 10.00 | 8.767 | 88 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 143 * | 71-132 |
| Bromofluorobenzene (FID) | 134 | 69-145 |

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-02-SS-35' | Diln Fac: | 1.000 |
| MSS Lab ID: | 197909-002 | Batch#: | 130089 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | mg/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 10/02/07 |

Type: MS Lab ID: QC408685

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 0.1061 | 10.00 | 6.553 | 64 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 139 * | 71-132 |
| Bromofluorobenzene (FID) | 124 | 69-145 |

Type: MSD Lab ID: QC408686

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 9.804 | 6.662 | 67 | 43-120 | 4 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 147 * | 71-132 |
| Bromofluorobenzene (FID) | 132 | 69-145 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-02-GW-30' | Sampled: | 09/25/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Prepared: | 09/29/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/01/07 |
| Batch#: | 130023 | | |

Type: SAMPLE Lab ID: 197909-003

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 97 | 61-133 |

Type: BLANK Lab ID: QC408376

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 101 | 61-133 |

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130023 |
| Units: | ug/L | Prepared: | 09/29/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/01/07 |

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC408377

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,170 | 87 | 58-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 92 | 61-133 |

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC408378

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,195 | 88 | 58-128 | 1 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 94 | 61-133 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130125 |
| Units: | mg/Kg | Sampled: | 09/25/07 |
| Basis: | as received | Received: | 09/27/07 |
| Diln Fac: | 1.000 | Prepared: | 10/03/07 |

Field ID: B-02-SS-0.0' Lab ID: 197909-001
Type: SAMPLE Cleanup Method: EPA 3630C

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 30 Y | 1.0 | 10/04/07 |
| Diesel C10-C24 (SGCU) | 11 Y | 1.0 | 11/01/07 |
| Motor Oil C24-C36 | 150 | 5.0 | 10/04/07 |
| Motor Oil C24-C36 (SGCU) | 73 | 5.0 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 77 | 46-128 | 10/04/07 |
| Hexacosane (SGCU) | 77 | 46-128 | 11/01/07 |

Field ID: B-02-SS-35' Lab ID: 197909-002
Type: SAMPLE Analyzed: 10/04/07

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 30 Y | 1.0 |
| Motor Oil C24-C36 | 42 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 103 | 46-128 |

Type: BLANK Analyzed: 10/03/07
Lab ID: QC408801 Cleanup Method: EPA 3630C

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Diesel C10-C24 (SGCU) | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |
| Motor Oil C24-C36 (SGCU) | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 106 | 46-128 |
| Hexacosane (SGCU) | 104 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC408802 | Batch#: | 130125 |
| Matrix: | Soil | Prepared: | 10/03/07 |
| Units: | mg/Kg | Analyzed: | 10/03/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.85 | 43.20 | 87 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 87 | 46-128 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130125 |
| MSS Lab ID: | 197913-009 | Sampled: | 09/26/07 |
| Matrix: | Soil | Received: | 09/26/07 |
| Units: | mg/Kg | Prepared: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC408803

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 0.2691 | 49.88 | 46.86 | 93 | 31-150 |

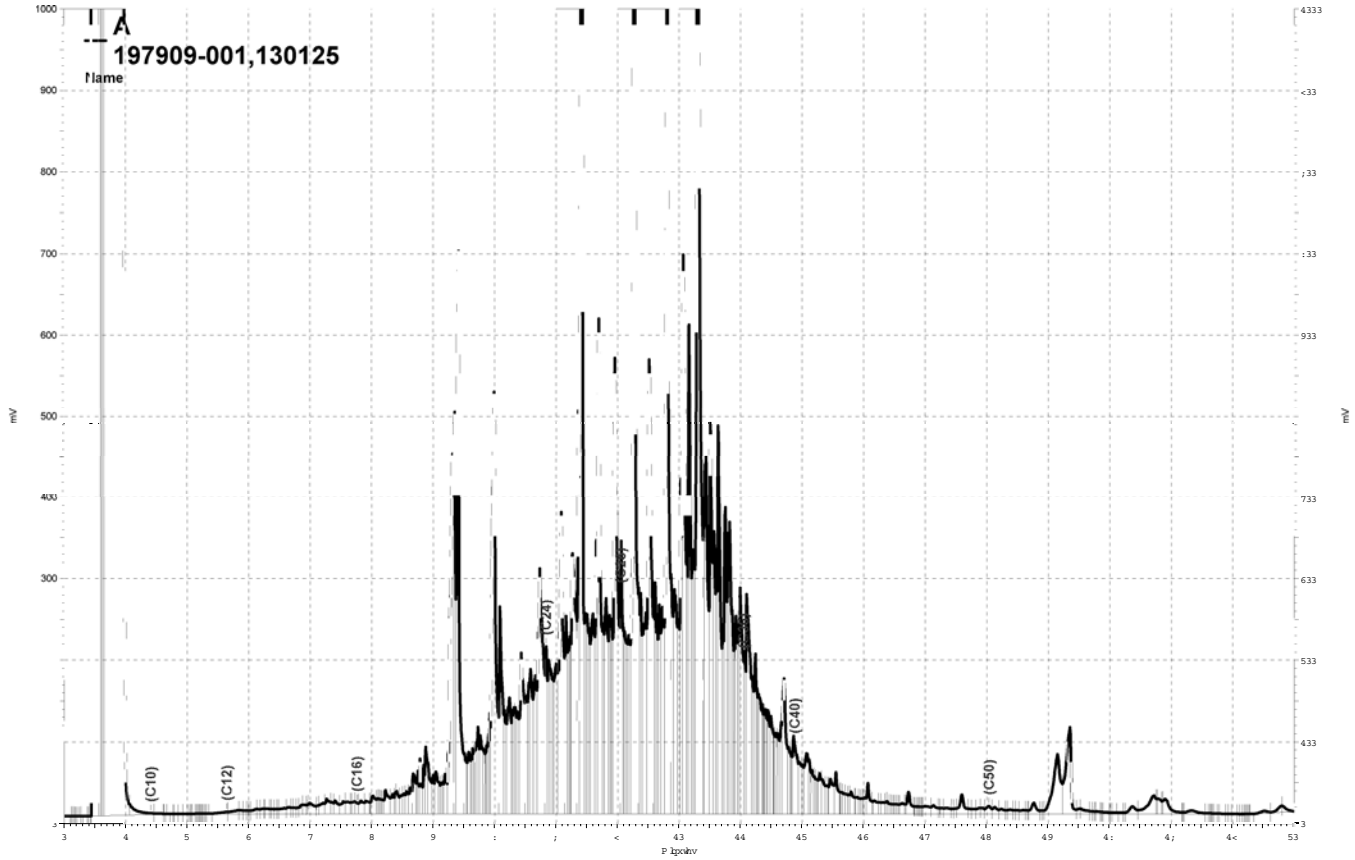
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 96 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC408804

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.60 | 40.43 | 81 | 31-150 | 14 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 85 | 46-128 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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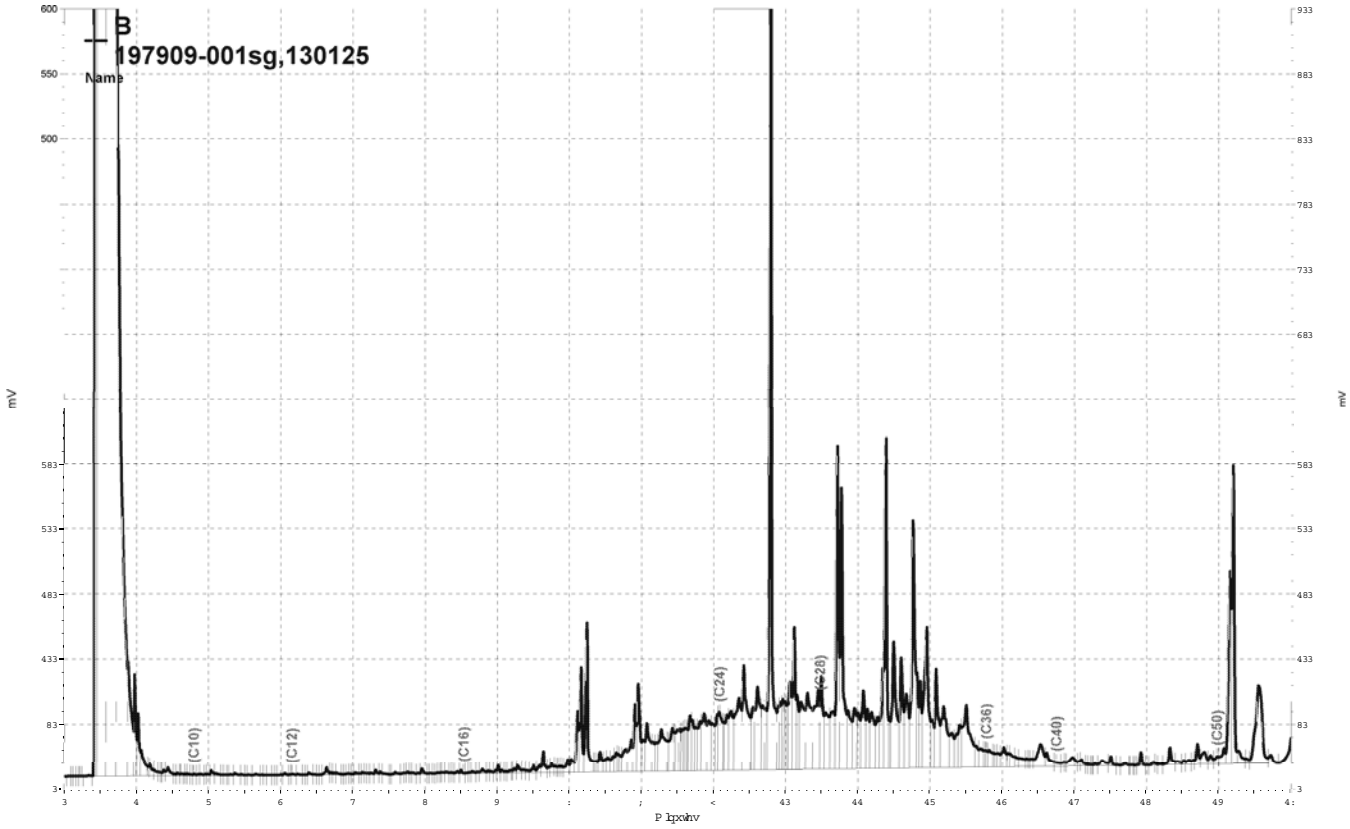


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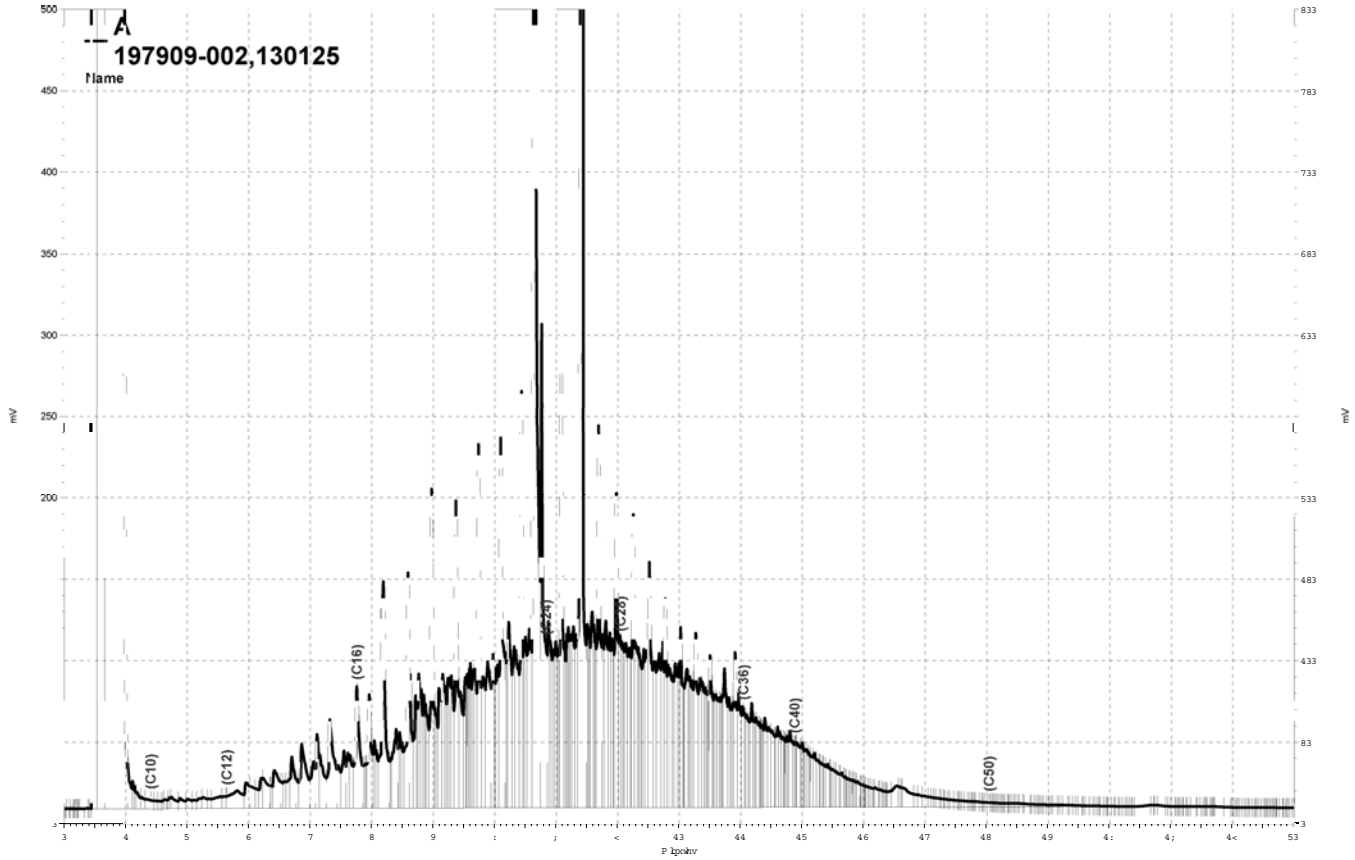


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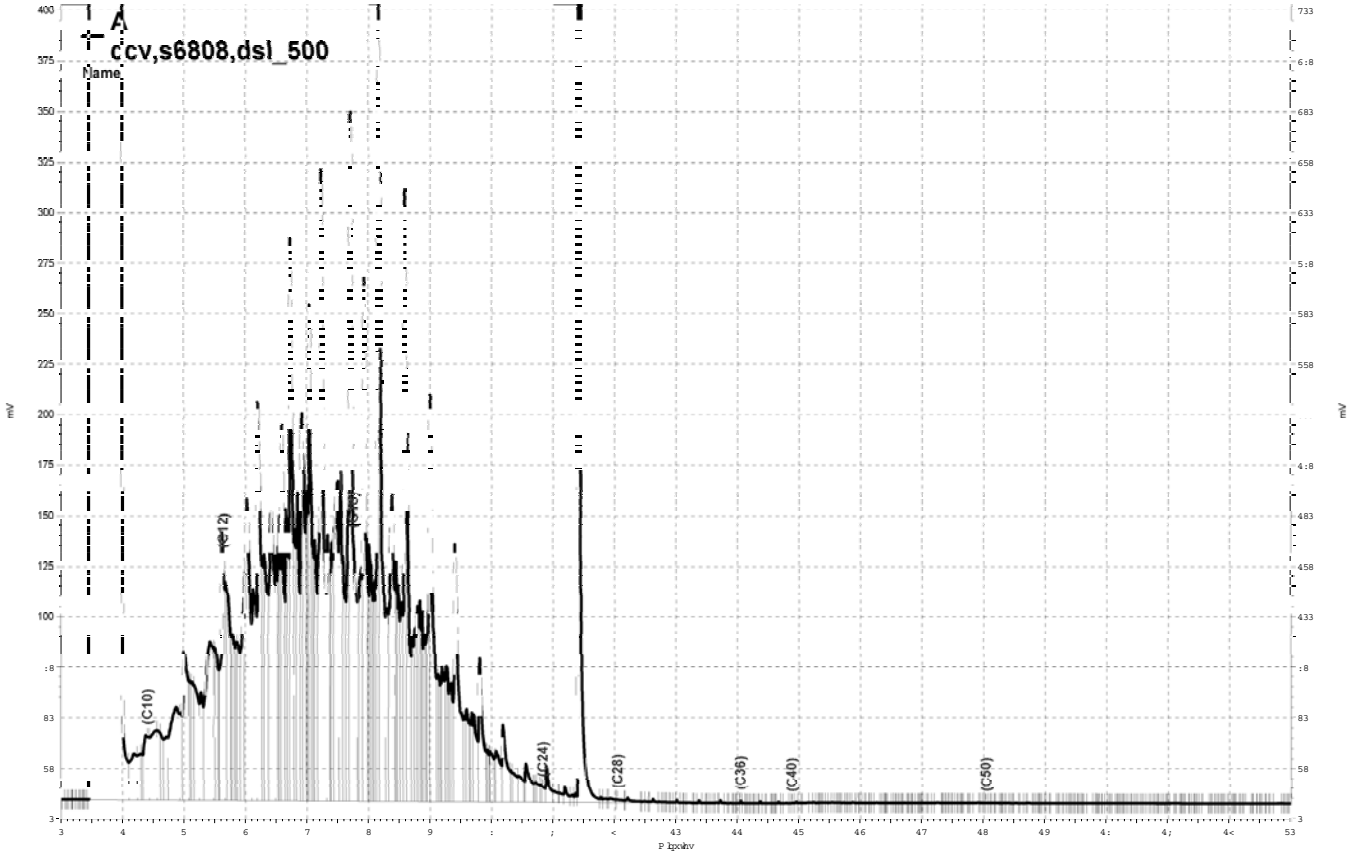


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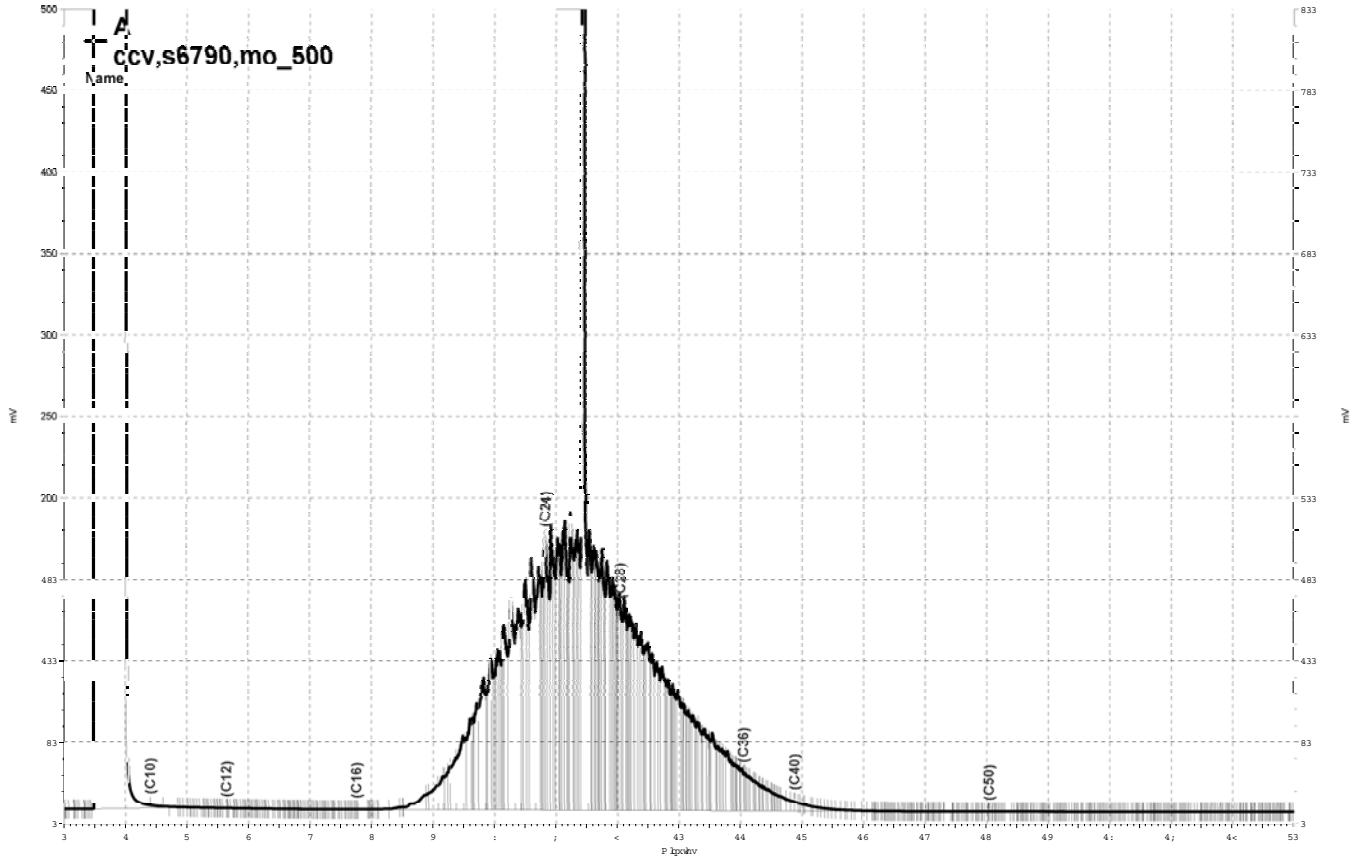


_Olp v jgulyh_h}fkurp_SurmfwJF44D_Gdwd_5:9d338/D

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-02-GW-30' | Batch#: | 129968 |
| Lab ID: | 197909-003 | Sampled: | 09/25/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-02-GW-30' | Batch#: | 129968 |
| Lab ID: | 197909-003 | Sampled: | 09/25/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 104 | 80-122 |
| 1,2-Dichloroethane-d4 | 124 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 104 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408165 | Batch#: | 129968 |
| Matrix: | Water | Analyzed: | 09/28/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408165 | Batch#: | 129968 |
| Matrix: | Water | Analyzed: | 09/28/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 116 | 74-137 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 129968 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408166

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 27.49 | 110 | 80-133 |
| Benzene | 25.00 | 26.11 | 104 | 80-120 |
| Trichloroethene | 25.00 | 29.22 | 117 | 80-120 |
| Toluene | 25.00 | 26.98 | 108 | 80-122 |
| Chlorobenzene | 25.00 | 25.13 | 101 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-122 |
| 1,2-Dichloroethane-d4 | 136 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 107 | 80-120 |

Type: BSD Lab ID: QC408167

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 25.94 | 104 | 80-133 | 6 | 20 |
| Benzene | 25.00 | 24.43 | 98 | 80-120 | 7 | 20 |
| Trichloroethene | 25.00 | 27.41 | 110 | 80-120 | 6 | 20 |
| Toluene | 25.00 | 25.35 | 101 | 80-122 | 6 | 20 |
| Chlorobenzene | 25.00 | 24.17 | 97 | 80-120 | 4 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-122 |
| 1,2-Dichloroethane-d4 | 132 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 106 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-02-SS-0.0' | Dil'n Fac: | 0.8929 |
| Lab ID: | 197909-001 | Batch#: | 129984 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 8.9 |
| Chloromethane | ND | 8.9 |
| Vinyl Chloride | ND | 8.9 |
| Bromomethane | ND | 8.9 |
| Chloroethane | ND | 8.9 |
| Trichlorofluoromethane | ND | 4.5 |
| Acetone | ND | 22 |
| Freon 113 | ND | 4.5 |
| 1,1-Dichloroethene | ND | 4.5 |
| Methylene Chloride | ND | 18 |
| Carbon Disulfide | ND | 4.5 |
| MTBE | ND | 4.5 |
| trans-1,2-Dichloroethene | ND | 4.5 |
| Vinyl Acetate | ND | 45 |
| 1,1-Dichloroethane | ND | 4.5 |
| 2-Butanone | ND | 8.9 |
| cis-1,2-Dichloroethene | ND | 4.5 |
| 2,2-Dichloropropane | ND | 4.5 |
| Chloroform | ND | 4.5 |
| Bromochloromethane | ND | 4.5 |
| 1,1,1-Trichloroethane | ND | 4.5 |
| 1,1-Dichloropropene | ND | 4.5 |
| Carbon Tetrachloride | ND | 4.5 |
| 1,2-Dichloroethane | ND | 4.5 |
| Benzene | ND | 4.5 |
| Trichloroethene | ND | 4.5 |
| 1,2-Dichloropropane | ND | 4.5 |
| Bromodichloromethane | ND | 4.5 |
| Dibromomethane | ND | 4.5 |
| 4-Methyl-2-Pentanone | ND | 8.9 |
| cis-1,3-Dichloropropene | ND | 4.5 |
| Toluene | ND | 4.5 |
| trans-1,3-Dichloropropene | ND | 4.5 |
| 1,1,2-Trichloroethane | ND | 4.5 |
| 2-Hexanone | ND | 8.9 |
| 1,3-Dichloropropane | ND | 4.5 |
| Tetrachloroethene | ND | 4.5 |
| Dibromochloromethane | ND | 4.5 |
| 1,2-Dibromoethane | ND | 4.5 |
| Chlorobenzene | ND | 4.5 |
| 1,1,1,2-Tetrachloroethane | ND | 4.5 |
| Ethylbenzene | ND | 4.5 |
| m,p-Xylenes | ND | 4.5 |
| o-Xylene | ND | 4.5 |
| Styrene | ND | 4.5 |
| Bromoform | ND | 4.5 |
| Isopropylbenzene | ND | 4.5 |
| 1,1,2,2-Tetrachloroethane | ND | 4.5 |
| 1,2,3-Trichloropropane | ND | 4.5 |
| Propylbenzene | ND | 4.5 |
| Bromobenzene | ND | 4.5 |
| 1,3,5-Trimethylbenzene | ND | 4.5 |
| 2-Chlorotoluene | ND | 4.5 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-02-SS-0.0' | Dil'n Fac: | 0.8929 |
| Lab ID: | 197909-001 | Batch#: | 129984 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.5 |
| tert-Butylbenzene | ND | 4.5 |
| 1,2,4-Trimethylbenzene | ND | 4.5 |
| sec-Butylbenzene | ND | 4.5 |
| para-Isopropyl Toluene | ND | 4.5 |
| 1,3-Dichlorobenzene | ND | 4.5 |
| 1,4-Dichlorobenzene | ND | 4.5 |
| n-Butylbenzene | ND | 4.5 |
| 1,2-Dichlorobenzene | ND | 4.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.5 |
| 1,2,4-Trichlorobenzene | ND | 4.5 |
| Hexachlorobutadiene | ND | 4.5 |
| Naphthalene | ND | 4.5 |
| 1,2,3-Trichlorobenzene | ND | 4.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 128 * | 80-124 |
| 1,2-Dichloroethane-d4 | 114 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 95 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-02-SS-35' | Dil'n Fac: | 0.9615 |
| Lab ID: | 197909-002 | Batch#: | 129984 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.6 |
| Chloromethane | ND | 9.6 |
| Vinyl Chloride | ND | 9.6 |
| Bromomethane | ND | 9.6 |
| Chloroethane | ND | 9.6 |
| Trichlorofluoromethane | ND | 4.8 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.8 |
| 1,1-Dichloroethene | ND | 4.8 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.8 |
| MTBE | ND | 4.8 |
| trans-1,2-Dichloroethene | ND | 4.8 |
| Vinyl Acetate | ND | 48 |
| 1,1-Dichloroethane | ND | 4.8 |
| 2-Butanone | ND | 9.6 |
| cis-1,2-Dichloroethene | ND | 4.8 |
| 2,2-Dichloropropane | ND | 4.8 |
| Chloroform | ND | 4.8 |
| Bromochloromethane | ND | 4.8 |
| 1,1,1-Trichloroethane | ND | 4.8 |
| 1,1-Dichloropropene | ND | 4.8 |
| Carbon Tetrachloride | ND | 4.8 |
| 1,2-Dichloroethane | ND | 4.8 |
| Benzene | ND | 4.8 |
| Trichloroethene | ND | 4.8 |
| 1,2-Dichloropropane | ND | 4.8 |
| Bromodichloromethane | ND | 4.8 |
| Dibromomethane | ND | 4.8 |
| 4-Methyl-2-Pentanone | ND | 9.6 |
| cis-1,3-Dichloropropene | ND | 4.8 |
| Toluene | ND | 4.8 |
| trans-1,3-Dichloropropene | ND | 4.8 |
| 1,1,2-Trichloroethane | ND | 4.8 |
| 2-Hexanone | ND | 9.6 |
| 1,3-Dichloropropane | ND | 4.8 |
| Tetrachloroethene | ND | 4.8 |
| Dibromochloromethane | ND | 4.8 |
| 1,2-Dibromoethane | ND | 4.8 |
| Chlorobenzene | ND | 4.8 |
| 1,1,1,2-Tetrachloroethane | ND | 4.8 |
| Ethylbenzene | ND | 4.8 |
| m,p-Xylenes | ND | 4.8 |
| o-Xylene | ND | 4.8 |
| Styrene | ND | 4.8 |
| Bromoform | ND | 4.8 |
| Isopropylbenzene | ND | 4.8 |
| 1,1,2,2-Tetrachloroethane | ND | 4.8 |
| 1,2,3-Trichloropropane | ND | 4.8 |
| Propylbenzene | ND | 4.8 |
| Bromobenzene | ND | 4.8 |
| 1,3,5-Trimethylbenzene | ND | 4.8 |
| 2-Chlorotoluene | ND | 4.8 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-02-SS-35' | Dil'n Fac: | 0.9615 |
| Lab ID: | 197909-002 | Batch#: | 129984 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.8 |
| tert-Butylbenzene | ND | 4.8 |
| 1,2,4-Trimethylbenzene | ND | 4.8 |
| sec-Butylbenzene | ND | 4.8 |
| para-Isopropyl Toluene | ND | 4.8 |
| 1,3-Dichlorobenzene | ND | 4.8 |
| 1,4-Dichlorobenzene | ND | 4.8 |
| n-Butylbenzene | ND | 4.8 |
| 1,2-Dichlorobenzene | ND | 4.8 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.8 |
| 1,2,4-Trichlorobenzene | ND | 4.8 |
| Hexachlorobutadiene | ND | 4.8 |
| Naphthalene | ND | 4.8 |
| 1,2,3-Trichlorobenzene | ND | 4.8 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 128 * | 80-124 |
| 1,2-Dichloroethane-d4 | 109 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 101 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC408226 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129984 |
| Units: | ug/Kg | Analyzed: | 09/28/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 28.63 | 115 | 74-131 |
| Benzene | 25.00 | 29.84 | 119 | 77-121 |
| Trichloroethene | 25.00 | 28.50 | 114 | 77-121 |
| Toluene | 25.00 | 28.16 | 113 | 79-122 |
| Chlorobenzene | 25.00 | 27.63 | 111 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 103 | 80-124 |
| 1,2-Dichloroethane-d4 | 106 | 79-136 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 96 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408227 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129984 |
| Units: | ug/Kg | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408227 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129984 |
| Units: | ug/Kg | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 114 | 80-124 |
| 1,2-Dichloroethane-d4 | 102 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 97 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 129984 |
| MSS Lab ID: | 197913-002 | Sampled: | 09/26/07 |
| Matrix: | Soil | Received: | 09/26/07 |
| Units: | ug/Kg | Analyzed: | 09/28/07 |
| Basis: | as received | | |

Type: MS Diln Fac: 0.8197
Lab ID: QC408271

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.3835 | 40.98 | 35.33 | 86 | 61-145 |
| Benzene | <0.2673 | 40.98 | 31.54 | 77 | 57-123 |
| Trichloroethene | <0.3775 | 40.98 | 31.62 | 77 | 52-141 |
| Toluene | <0.3623 | 40.98 | 31.39 | 77 | 53-126 |
| Chlorobenzene | <0.2449 | 40.98 | 26.46 | 65 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 98 | 80-124 |
| 1,2-Dichloroethane-d4 | 91 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 104 | 80-122 |

Type: MSD Diln Fac: 0.8929
Lab ID: QC408272

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 44.64 | 45.38 | 102 | 61-145 | 16 | 26 |
| Benzene | 44.64 | 39.92 | 89 | 57-123 | 15 | 25 |
| Trichloroethene | 44.64 | 40.11 | 90 | 52-141 | 15 | 26 |
| Toluene | 44.64 | 39.42 | 88 | 53-126 | 14 | 27 |
| Chlorobenzene | 44.64 | 34.55 | 77 | 49-121 | 18 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 98 | 80-124 |
| 1,2-Dichloroethane-d4 | 94 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 102 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-02-SS-0.0' | Basis: | as received |
| Lab ID: | 197909-001 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | mg/Kg | Received: | 09/27/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 129961 | 09/27/07 | 10/01/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.3 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Barium | 160 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.53 | 0.10 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Chromium | 100 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cobalt | 23 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Copper | 31 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Lead | 5.6 | 0.21 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.23 | 0.020 | 130031 | 10/01/07 | 10/01/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Nickel | 230 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.2 | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Vanadium | 56 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Zinc | 42 | 1.0 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-02-SS-35' | Basis: | as received |
| Lab ID: | 197909-002 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | mg/Kg | Received: | 09/27/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 129961 | 09/27/07 | 10/01/07 | EPA 3050B | EPA 6010B |
| Arsenic | 7.6 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Barium | 170 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.47 | 0.10 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Chromium | 29 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cobalt | 12 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Copper | 60 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Lead | 9.6 | 0.22 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.15 | 0.020 | 130031 | 10/01/07 | 10/01/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Nickel | 44 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Selenium | 0.70 | 0.50 | 129961 | 09/27/07 | 10/01/07 | EPA 3050B | EPA 6010B |
| Silver | 0.33 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Vanadium | 44 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Zinc | 120 | 1.0 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408129 | Batch#: | 129961 |
| Matrix: | Soil | Prepared: | 09/27/07 |
| Units: | mg/Kg | Analyzed: | 09/29/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | 0.48 b | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.23 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 129961 |
| Units: | mg/Kg | Prepared: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/29/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408130

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 88.63 | 89 | 80-120 |
| Arsenic | 50.00 | 45.04 | 90 | 80-120 |
| Barium | 100.0 | 87.21 | 87 | 80-120 |
| Beryllium | 2.500 | 2.434 | 97 | 80-120 |
| Cadmium | 10.00 | 8.934 | 89 | 80-120 |
| Chromium | 100.0 | 86.41 | 86 | 80-120 |
| Cobalt | 25.00 | 21.07 | 84 | 80-120 |
| Copper | 12.50 | 10.60 | 85 | 80-120 |
| Lead | 100.0 | 84.89 | 85 | 80-120 |
| Molybdenum | 20.00 | 18.12 | 91 | 80-120 |
| Nickel | 25.00 | 21.36 | 85 | 80-120 |
| Selenium | 50.00 | 43.66 | 87 | 80-120 |
| Silver | 10.00 | 8.567 | 86 | 80-120 |
| Thallium | 50.00 | 43.21 | 86 | 80-120 |
| Vanadium | 25.00 | 21.59 | 86 | 80-120 |
| Zinc | 25.00 | 21.98 | 88 | 80-120 |

Type: BSD Lab ID: QC408131

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 87.37 | 87 | 80-120 | 1 | 20 |
| Arsenic | 50.00 | 44.38 | 89 | 80-120 | 1 | 20 |
| Barium | 100.0 | 86.47 | 86 | 80-120 | 1 | 20 |
| Beryllium | 2.500 | 2.410 | 96 | 80-120 | 1 | 20 |
| Cadmium | 10.00 | 8.855 | 89 | 80-120 | 1 | 20 |
| Chromium | 100.0 | 84.87 | 85 | 80-120 | 2 | 20 |
| Cobalt | 25.00 | 20.86 | 83 | 80-120 | 1 | 20 |
| Copper | 12.50 | 10.50 | 84 | 80-120 | 1 | 20 |
| Lead | 100.0 | 83.99 | 84 | 80-120 | 1 | 20 |
| Molybdenum | 20.00 | 17.83 | 89 | 80-120 | 2 | 20 |
| Nickel | 25.00 | 21.19 | 85 | 80-120 | 1 | 20 |
| Selenium | 50.00 | 43.21 | 86 | 80-120 | 1 | 20 |
| Silver | 10.00 | 8.465 | 85 | 80-120 | 1 | 20 |
| Thallium | 50.00 | 42.76 | 86 | 80-120 | 1 | 20 |
| Vanadium | 25.00 | 21.36 | 85 | 80-120 | 1 | 20 |
| Zinc | 25.00 | 21.77 | 87 | 80-120 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 129961 |
| MSS Lab ID: | 197894-011 | Sampled: | 09/25/07 |
| Matrix: | Soil | Received: | 09/25/07 |
| Units: | mg/Kg | Prepared: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/29/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC408132

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 1.104 | 93.46 | 30.72 | 32 | 1-122 |
| Arsenic | 6.773 | 46.73 | 46.53 | 85 | 72-120 |
| Barium | 168.5 | 93.46 | 245.3 | 82 | 49-139 |
| Beryllium | 0.4134 | 2.336 | 2.567 | 92 | 80-120 |
| Cadmium | 0.06297 | 9.346 | 7.885 | 84 | 74-120 |
| Chromium | 60.67 | 93.46 | 135.2 | 80 | 65-120 |
| Cobalt | 12.99 | 23.36 | 31.63 | 80 | 60-120 |
| Copper | 26.48 | 11.68 | 36.94 | 89 | 47-146 |
| Lead | 11.41 | 93.46 | 85.65 | 79 | 53-123 |
| Molybdenum | 0.1521 | 18.69 | 14.37 | 76 | 66-120 |
| Nickel | 78.68 | 23.36 | 96.87 | 78 | 43-142 |
| Selenium | <0.07415 | 46.73 | 39.52 | 85 | 71-120 |
| Silver | 0.08443 | 9.346 | 8.128 | 86 | 66-120 |
| Thallium | 0.1285 | 46.73 | 36.95 | 79 | 62-120 |
| Vanadium | 34.45 | 23.36 | 53.57 | 82 | 52-139 |
| Zinc | 63.89 | 23.36 | 81.71 | 76 | 42-147 |

Type: MSD Lab ID: QC408133

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 97.09 | 32.83 | 33 | 1-122 | 3 | 30 |
| Arsenic | 48.54 | 47.36 | 84 | 72-120 | 2 | 20 |
| Barium | 97.09 | 246.1 | 80 | 49-139 | 1 | 23 |
| Beryllium | 2.427 | 2.626 | 91 | 80-120 | 1 | 20 |
| Cadmium | 9.709 | 8.051 | 82 | 74-120 | 2 | 20 |
| Chromium | 97.09 | 136.8 | 78 | 65-120 | 1 | 20 |
| Cobalt | 24.27 | 32.18 | 79 | 60-120 | 1 | 24 |
| Copper | 12.14 | 36.74 | 85 | 47-146 | 2 | 21 |
| Lead | 97.09 | 87.29 | 78 | 53-123 | 2 | 28 |
| Molybdenum | 19.42 | 14.89 | 76 | 66-120 | 0 | 20 |
| Nickel | 24.27 | 96.29 | 73 | 43-142 | 1 | 26 |
| Selenium | 48.54 | 41.46 | 85 | 71-120 | 1 | 20 |
| Silver | 9.709 | 8.296 | 85 | 66-120 | 2 | 20 |
| Thallium | 48.54 | 38.16 | 78 | 62-120 | 1 | 20 |
| Vanadium | 24.27 | 54.33 | 82 | 52-139 | 0 | 20 |
| Zinc | 24.27 | 81.06 | 71 | 42-147 | 2 | 27 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408403 | Batch#: | 130031 |
| Matrix: | Soil | Prepared: | 10/01/07 |
| Units: | mg/Kg | Analyzed: | 10/01/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130031 |
| Units: | mg/Kg | Prepared: | 10/01/07 |
| Basis: | as received | Analyzed: | 10/01/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC408404 | 0.5000 | 0.5180 | 104 | 80-120 | | |
| BSD | QC408405 | 0.5000 | 0.4930 | 99 | 80-120 | 5 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130031 |
| MSS Lab ID: | 197895-055 | Sampled: | 09/25/07 |
| Matrix: | Soil | Received: | 09/25/07 |
| Units: | mg/Kg | Prepared: | 10/01/07 |
| Basis: | as received | Analyzed: | 10/01/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC408407 | 0.03185 | 0.5208 | 0.5823 | 106 | 70-143 | | |
| MSD | QC408408 | | 0.4545 | 0.5100 | 105 | 70-143 | 0 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-02-GW-30' | Sampled: | 09/25/07 |
| Lab ID: | 197909-003 | Received: | 09/27/07 |
| Matrix: | Filtrate | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL | Batch# | Prep | Analysis |
|---|---|---|---|---|---|
| Antimony | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 129973 | EPA 3010A | EPA 6010B |
| Barium | 200 | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 129973 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 129973 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 129985 | METHOD | EPA 7470A |
| Molybdenum | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 129973 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408190 | Batch#: | 129973 |
| Matrix: | Filtrate | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 6.1 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.0 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Filtrate | Batch#: | 129973 |
| Units: | ug/L | Prepared: | 09/28/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408191

| Analyte | Spiked | Result | %REC | Limits | Analyzed |
|---|---|---|---|---|---|
| Antimony | 500.0 | 540.7 | 108 | 80-120 | 09/28/07 |
| Arsenic | 100.0 | 99.83 | 100 | 80-120 | 10/03/07 |
| Barium | 2,000 | 2,066 | 103 | 80-120 | 09/28/07 |
| Beryllium | 50.00 | 57.71 | 115 | 80-120 | 09/28/07 |
| Cadmium | 50.00 | 59.20 | 118 | 80-120 | 09/28/07 |
| Chromium | 200.0 | 207.5 | 104 | 80-120 | 09/28/07 |
| Cobalt | 500.0 | 517.5 | 104 | 80-120 | 09/28/07 |
| Copper | 250.0 | 237.0 | 95 | 80-120 | 09/28/07 |
| Lead | 100.0 | 103.4 | 103 | 80-120 | 09/28/07 |
| Molybdenum | 400.0 | 421.1 | 105 | 80-120 | 09/28/07 |
| Nickel | 500.0 | 535.9 | 107 | 80-120 | 09/28/07 |
| Selenium | 100.0 | 115.9 | 116 | 80-120 | 09/28/07 |
| Silver | 50.00 | 47.29 | 95 | 80-120 | 09/28/07 |
| Thallium | 100.0 | 102.3 | 102 | 80-120 | 09/28/07 |
| Vanadium | 500.0 | 504.3 | 101 | 80-120 | 09/28/07 |
| Zinc | 500.0 | 584.0 | 117 | 80-120 | 09/28/07 |

Type: BSD Lab ID: QC408192

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | 500.0 | 514.8 | 103 | 80-120 | 5 | 20 | 09/28/07 |
| Arsenic | 100.0 | 99.46 | 99 | 80-120 | 0 | 20 | 10/03/07 |
| Barium | 2,000 | 2,021 | 101 | 80-120 | 2 | 20 | 09/28/07 |
| Beryllium | 50.00 | 56.37 | 113 | 80-120 | 2 | 20 | 09/28/07 |
| Cadmium | 50.00 | 54.21 | 108 | 80-120 | 9 | 20 | 09/28/07 |
| Chromium | 200.0 | 202.7 | 101 | 80-120 | 2 | 20 | 09/28/07 |
| Cobalt | 500.0 | 501.8 | 100 | 80-120 | 3 | 20 | 09/28/07 |
| Copper | 250.0 | 240.9 | 96 | 80-120 | 2 | 20 | 09/28/07 |
| Lead | 100.0 | 97.94 | 98 | 80-120 | 5 | 20 | 09/28/07 |
| Molybdenum | 400.0 | 404.3 | 101 | 80-120 | 4 | 20 | 09/28/07 |
| Nickel | 500.0 | 513.7 | 103 | 80-120 | 4 | 20 | 09/28/07 |
| Selenium | 100.0 | 103.6 | 104 | 80-120 | 11 | 20 | 09/28/07 |
| Silver | 50.00 | 48.06 | 96 | 80-120 | 2 | 20 | 09/28/07 |
| Thallium | 100.0 | 106.2 | 106 | 80-120 | 4 | 20 | 09/28/07 |
| Vanadium | 500.0 | 501.7 | 100 | 80-120 | 1 | 20 | 09/28/07 |
| Zinc | 500.0 | 540.1 | 108 | 80-120 | 8 | 20 | 09/28/07 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | B-02-GW-30' | Batch#: | 129973 |
| MSS Lab ID: | 197909-003 | Sampled: | 09/25/07 |
| Matrix: | Filtrate | Received: | 09/27/07 |
| Units: | ug/L | Prepared: | 09/28/07 |
| Diln Fac: | 1.000 | Analyzed: | 09/28/07 |

Type: MS Lab ID: QC408193

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 4.140 | 500.0 | 502.5 | 100 | 80-120 |
| Arsenic | <2.042 | 100.0 | 113.3 | 113 | 80-127 |
| Barium | 198.9 | 2,000 | 2,103 | 95 | 80-120 |
| Beryllium | 0.2294 | 50.00 | 54.09 | 108 | 80-120 |
| Cadmium | <0.1091 | 50.00 | 50.17 | 100 | 80-120 |
| Chromium | <0.2448 | 200.0 | 193.2 | 97 | 80-120 |
| Cobalt | <0.3034 | 500.0 | 464.0 | 93 | 80-120 |
| Copper | 2.701 | 250.0 | 242.9 | 96 | 80-120 |
| Lead | <0.6892 | 100.0 | 93.43 | 93 | 76-120 |
| Molybdenum | 1.197 | 400.0 | 392.8 | 98 | 80-120 |
| Nickel | 1.392 | 500.0 | 462.1 | 92 | 80-120 |
| Selenium | 2.513 | 100.0 | 97.80 | 95 | 80-128 |
| Silver | <0.7459 | 50.00 | 47.92 | 96 | 73-122 |
| Thallium | 3.418 | 100.0 | 101.5 | 98 | 78-120 |
| Vanadium | <1.034 | 500.0 | 485.6 | 97 | 80-120 |
| Zinc | 8.891 | 500.0 | 495.4 | 97 | 80-123 |

Type: MSD Lab ID: QC408194

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 517.4 | 103 | 80-120 | 3 | 20 |
| Arsenic | 100.0 | 114.8 | 115 | 80-127 | 1 | 20 |
| Barium | 2,000 | 2,179 | 99 | 80-120 | 4 | 20 |
| Beryllium | 50.00 | 55.59 | 111 | 80-120 | 3 | 20 |
| Cadmium | 50.00 | 51.46 | 103 | 80-120 | 3 | 20 |
| Chromium | 200.0 | 198.8 | 99 | 80-120 | 3 | 20 |
| Cobalt | 500.0 | 477.5 | 95 | 80-120 | 3 | 20 |
| Copper | 250.0 | 250.9 | 99 | 80-120 | 3 | 20 |
| Lead | 100.0 | 96.31 | 96 | 76-120 | 3 | 20 |
| Molybdenum | 400.0 | 405.0 | 101 | 80-120 | 3 | 20 |
| Nickel | 500.0 | 476.6 | 95 | 80-120 | 3 | 20 |
| Selenium | 100.0 | 102.0 | 99 | 80-128 | 4 | 20 |
| Silver | 50.00 | 49.19 | 98 | 73-122 | 3 | 20 |
| Thallium | 100.0 | 106.1 | 103 | 78-120 | 4 | 20 |
| Vanadium | 500.0 | 498.1 | 100 | 80-120 | 3 | 20 |
| Zinc | 500.0 | 513.0 | 101 | 80-123 | 3 | 20 |

RPD= Relative Percent Difference

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 129985 |
| Lab ID: | QC408228 | Prepared: | 09/28/07 |
| Matrix: | Filtrate | Analyzed: | 09/28/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 129985 |
| Matrix: | Filtrate | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC408229 | 5.000 | 5.240 | 105 | 80-120 | | |
| BSD | QC408230 | 5.000 | 5.230 | 105 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 129985 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 09/25/07 |
| MSS Lab ID: | 197861-002 | Received: | 09/25/07 |
| Matrix: | Water | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC408232 | 0.1290 | 5.000 | 5.800 | 113 | 79-125 | | |
| MSD | QC408233 | | 5.000 | 5.750 | 112 | 79-125 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-02-GW-30' | Batch#: | 129933 |
| Matrix: | Water | Sampled: | 09/25/07 11:00 |
| Units: | mg/L | Received: | 09/27/07 |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 197909-003 | 0.17 | 0.05 | 09/27/07 10:38 |
| BLANK | QC408021 | ND | 0.05 | 09/27/07 10:20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | B-03-GW-10' | Batch#: | 129933 |
| MSS Lab ID: | 197910-003 | Sampled: | 09/25/07 16:30 |
| Matrix: | Water | Received: | 09/27/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC408022 | | 1.000 | 0.9680 | 97 | 80-120 | | | 1.000 | 09/27/07 12:27 |
| BSD | QC408023 | | 1.000 | 0.9534 | 95 | 80-120 | 2 | 20 | 1.000 | 09/27/07 12:45 |
| MS | QC408060 | 0.8191 | 2.500 | 3.186 | 95 | 80-120 | | | 5.000 | 09/27/07 13:22 |
| MSD | QC408061 | | 2.500 | 3.028 | 88 | 80-120 | 5 | 20 | 5.000 | 09/27/07 13:40 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-02-SS-35' | Batch#: | 130091 |
| Matrix: | Soil | Sampled: | 09/25/07 10:00 |
| Units: | mg/Kg | Received: | 09/27/07 |
| Basis: | as received | | |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 197909-002 | ND | 0.5 | 10/02/07 15:04 |
| BLANK | QC408656 | ND | 0.5 | 10/02/07 13:28 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197909 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | mg/Kg | Batch#: | 130091 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|---|
| BS | QC408657 | 10.00 | 9.704 | 97 | 80-120 | | | 10/02/07 13:45 |
| BSD | QC408658 | 10.00 | 9.781 | 98 | 80-120 | 1 | 20 | 10/02/07 14:02 |

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

197909

# Chain of Custody Record

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 9/25/07 |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | |
| Project Name: Cloverdale Project | ☐ 1 week | | |
| Site: Cloverdale, Ca | ☐ 2 days | | |
| C&T-WO-07-002 | ☐ 1 day | | |

1827-15 - A
__1__ of __1__ COCs
Job No. 379-1827-15-02
SDG No.

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filtered Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B-02-55-0.0' | 9/25/07 | 8:00 | 250ml poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| 2 | B-02-55-35' | | 10:00 | 250ml poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| *3 | B-02-GW-30' | | 11:00 | VOA | GW | 3 | | ✓ | | | | | | | |
| | | | | VOA | | 3 | | | | | ✓ | | | | |
| | | | | 1L amber | | 2 | | | | | | | | hold | Hold |
| | | | | 1L amber | | 1 | | | | ✓ | | | | | |
| | | | | 1L amber | | 1 | | | | | | | hold | | Hold |
| | | | | 250 ml poly | | 1 | | | | | | ✓ | | | |
| | ↓ | ↓ | ↓ | 750ml poly | ↓ | 1 | ✓ | | ✓ | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | Trip Blank | | | VOA | AQ | 1 | | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:
one voa broke during shipping
the trip blank also broke during shipping

* Metals container labelled "B-02-GW

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Weiss Associates | 9/26/07 14:00 | [signature] | C&T | 9/27/07 10:30AM |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-03-SS-0.0 | 197910-001 |
| B-03-SS-25.0 | 197910-002 |
| B-03-GW-10' | 197910-003 |
| B-11-SS-0.0' | 197910-004 |
| B-11-SS-35' | 197910-005 |
| B-11-GW-24' | 197910-006 |
| TRIP BLANK | 197910-007 |
| B-12-SS-0.0' | 197910-008 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/24/2007
Project Manager

Signature: _____ Date: 10/25/2007
Operations Manager

NELAP # 01107CA

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# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **197910** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **09/27/07** |
| Samples Received: | **09/27/07** |

This hardcopy data package contains sample and QC results for five soil samples and three water samples, requested for the above referenced project on 09/27/07. The samples were received intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
High surrogate recoveries were observed for trifluorotoluene (FID) in the LCS/MS/MSD for batch 130030; the corresponding bromofluorobenzene (FID) surrogate recoveries were within limits. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
High surrogate recoveries were observed for dibromofluoromethane in a number of samples; no target analytes were detected in these samples. No other analytical problems were encountered.

**Pesticides (EPA 8081A):**
No analytical problems were encountered.

**Polychlorinated Biphenyls (PCBs) (EPA 8082):**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
Chromium was detected above the RL in the method blank for batch 129961; this analyte was detected in samples at a level at least 10 times that of the blank. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
No analytical problems were encountered.

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# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **197910** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **09/27/07** |
| Samples Received: | **09/27/07** |

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Soil:**
No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130057 |
| Units: | ug/L | Received: | 09/27/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-03-GW-10' Sampled: 09/25/07
Type: SAMPLE Analyzed: 10/02/07
Lab ID: 197910-003

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 90 | 73-134 |
| Bromofluorobenzene (FID) | 90 | 77-140 |

Field ID: B-11-GW-24' Sampled: 09/26/07
Type: SAMPLE Analyzed: 10/02/07
Lab ID: 197910-006

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 101 | 73-134 |
| Bromofluorobenzene (FID) | 100 | 77-140 |

Type: BLANK Analyzed: 10/01/07
Lab ID: QC408514

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 95 | 73-134 |
| Bromofluorobenzene (FID) | 87 | 77-140 |

ND= Not Detected
RL= Reporting Limit

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC408516 | Batch#: | 130057 |
| Matrix: | Water | Analyzed: | 10/01/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,895 | 95 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 102 | 73-134 |
| Bromofluorobenzene (FID) | 98 | 77-140 |

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-02-GW-30' | Batch#: | 130057 |
| MSS Lab ID: | 197909-003 | Sampled: | 09/25/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 10/02/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC408517

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 28.91 | 2,000 | 1,881 | 93 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 99 | 73-134 |
| Bromofluorobenzene (FID) | 96 | 77-140 |

Type: MSD Lab ID: QC408518

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,866 | 92 | 72-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 104 | 73-134 |
| Bromofluorobenzene (FID) | 103 | 77-140 |

RPD= Relative Percent Difference

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130030 |
| Units: | mg/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 10/02/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-03-SS-0.0 Lab ID: 197910-001
Type: SAMPLE Sampled: 09/25/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.97 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 99 | 71-132 |
| Bromofluorobenzene (FID) | 92 | 69-145 |

Field ID: B-03-SS-25.0 Lab ID: 197910-002
Type: SAMPLE Sampled: 09/25/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.95 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 103 | 71-132 |
| Bromofluorobenzene (FID) | 96 | 69-145 |

Field ID: B-11-SS-0.0' Lab ID: 197910-004
Type: SAMPLE Sampled: 09/26/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 101 | 71-132 |
| Bromofluorobenzene (FID) | 92 | 69-145 |

ND= Not Detected
RL= Reporting Limit

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130030 |
| Units: | mg/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 10/02/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-11-SS-35' Lab ID: 197910-005
Type: SAMPLE Sampled: 09/26/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 101 | 71-132 |
| Bromofluorobenzene (FID) | 94 | 69-145 |

Field ID: B-12-SS-0.0' Lab ID: 197910-008
Type: SAMPLE Sampled: 09/26/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 101 | 71-132 |
| Bromofluorobenzene (FID) | 93 | 69-145 |

Type: BLANK Lab ID: QC408401

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 107 | 71-132 |
| Bromofluorobenzene (FID) | 105 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC408402 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130030 |
| Units: | mg/Kg | Analyzed: | 10/02/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 2.000 | 2.154 | 108 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 160 * | 71-132 |
| Bromofluorobenzene (FID) | 110 | 69-145 |

*= Value outside of QC limits; see narrative

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 197981-001 | Batch#: | 130030 |
| Matrix: | Soil | Sampled: | 09/28/07 |
| Units: | mg/Kg | Received: | 10/01/07 |
| Basis: | as received | Analyzed: | 10/02/07 |

Type: MS Lab ID: QC408505

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 0.1129 | 10.42 | 7.242 | 68 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 135 * | 71-132 |
| Bromofluorobenzene (FID) | 105 | 69-145 |

Type: MSD Lab ID: QC408506

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 10.20 | 7.759 | 75 | 43-120 | 9 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 134 * | 71-132 |
| Bromofluorobenzene (FID) | 100 | 69-145 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130023 |
| Units: | ug/L | Received: | 09/27/07 |
| Diln Fac: | 1.000 | Prepared: | 09/29/07 |

| | | | |
|---|---|---|---|
| Field ID: | B-03-GW-10' | Sampled: | 09/25/07 |
| Type: | SAMPLE | Cleanup Method: | EPA 3630C |
| Lab ID: | 197910-003 | | |

| Analyte | Result | RL | MDL | Analyzed |
|---|---|---|---|---|
| Diesel C10-C24 | 120 H Y | 50 | | 10/01/07 |
| Diesel C10-C24 (SGCU) | 91 Y | 50 | | 11/01/07 |
| Motor Oil C24-C36 | 180 J | 300 | 85 | 10/01/07 |
| Motor Oil C24-C36 (SGCU) | 140 J | 300 | 130 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 95 | 61-133 | 10/01/07 |
| Hexacosane (SGCU) | 105 | 61-133 | 11/01/07 |

| | | | |
|---|---|---|---|
| Field ID: | B-11-GW-24' | Sampled: | 09/26/07 |
| Type: | SAMPLE | Analyzed: | 10/01/07 |
| Lab ID: | 197910-006 | | |

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 110 | 61-133 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/01/07 |
| Lab ID: | QC408376 | Cleanup Method: | EPA 3630C |

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Diesel C10-C24 (SGCU) | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 56 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 101 | 61-133 |
| Hexacosane (SGCU) | 93 | 61-133 |

H= Heavier hydrocarbons contributed to the quantitation
J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

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Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130023 |
| Units: | ug/L | Prepared: | 09/29/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/01/07 |

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC408377

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,170 | 87 | 58-128 |

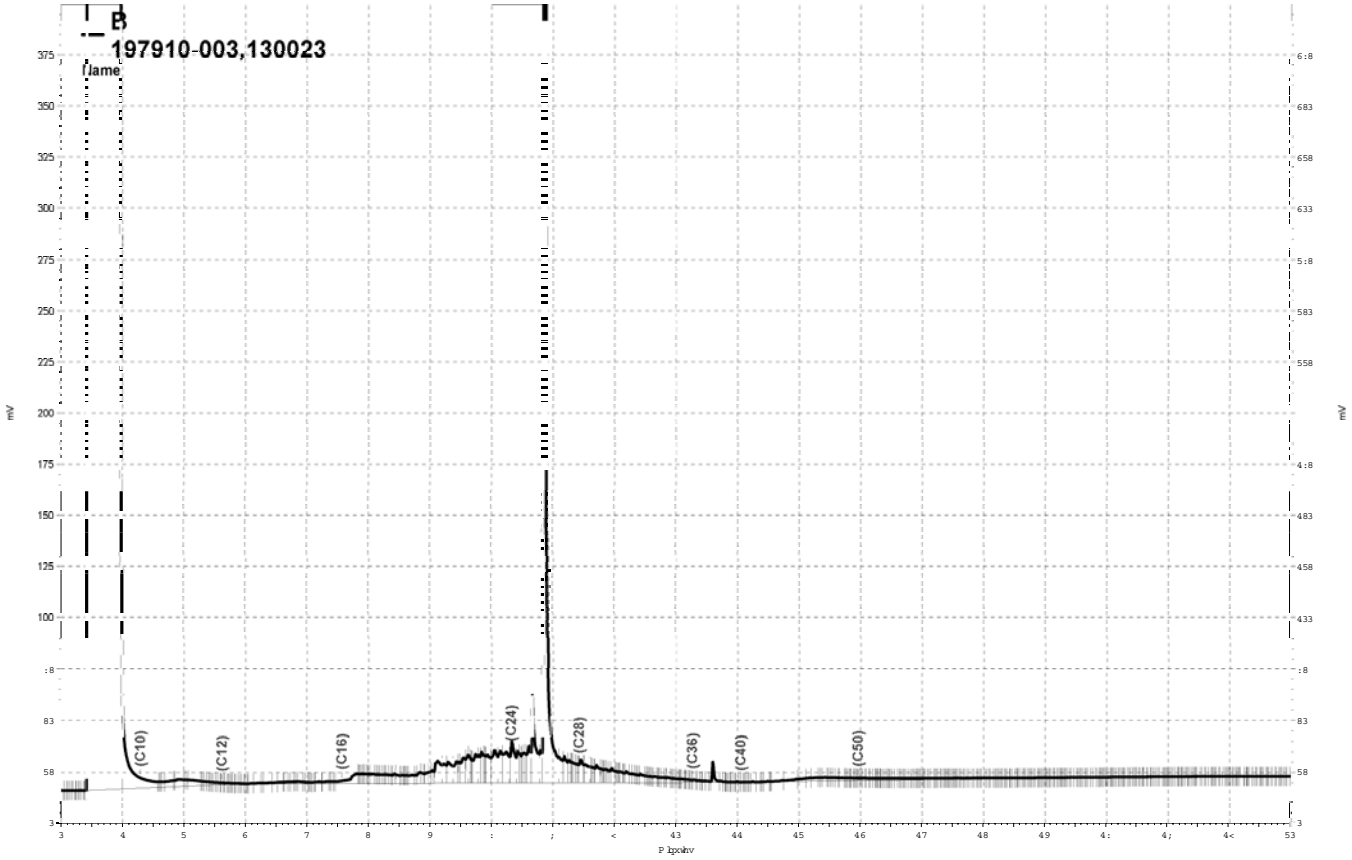
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 92 | 61-133 |

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC408378

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,195 | 88 | 58-128 | 1 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 94 | 61-133 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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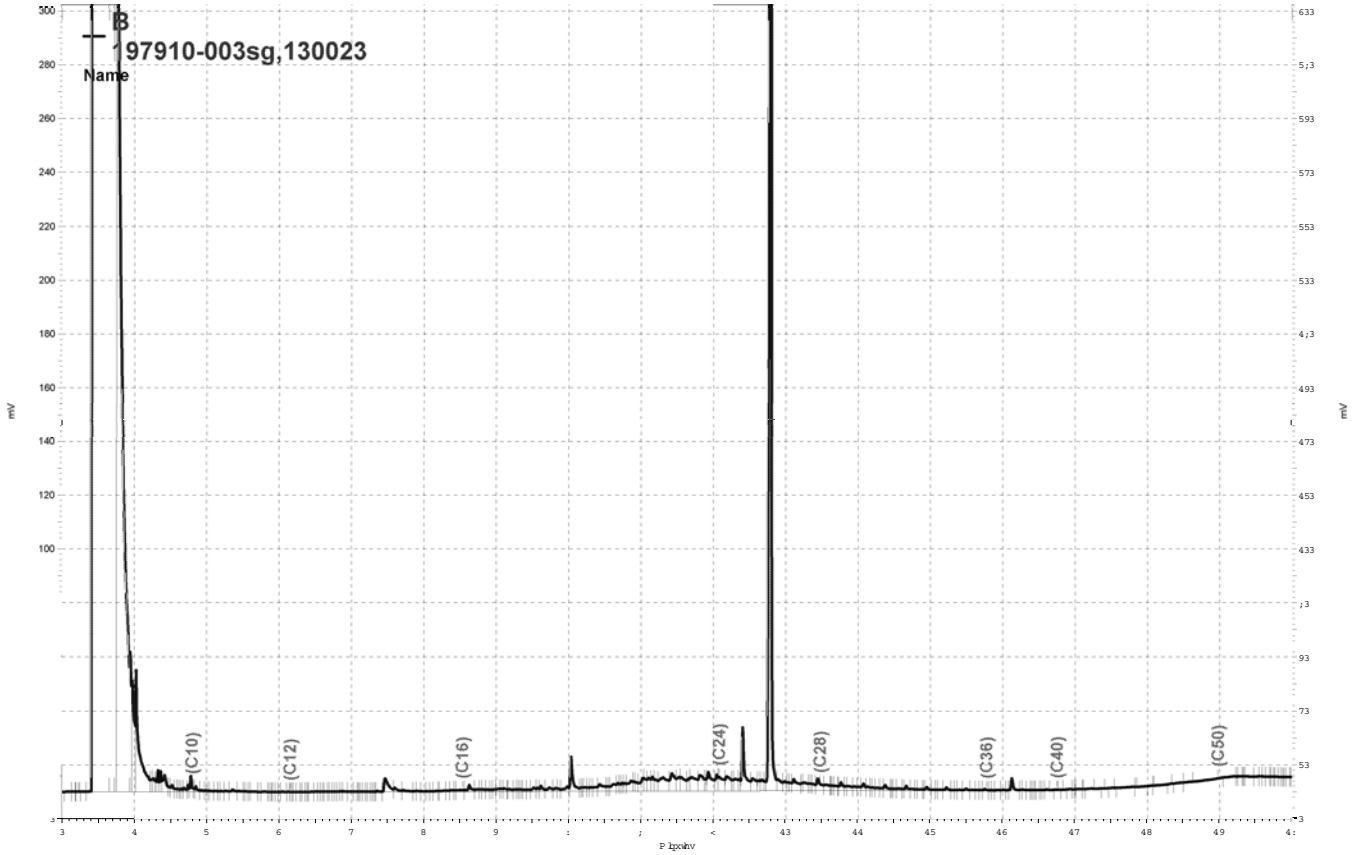


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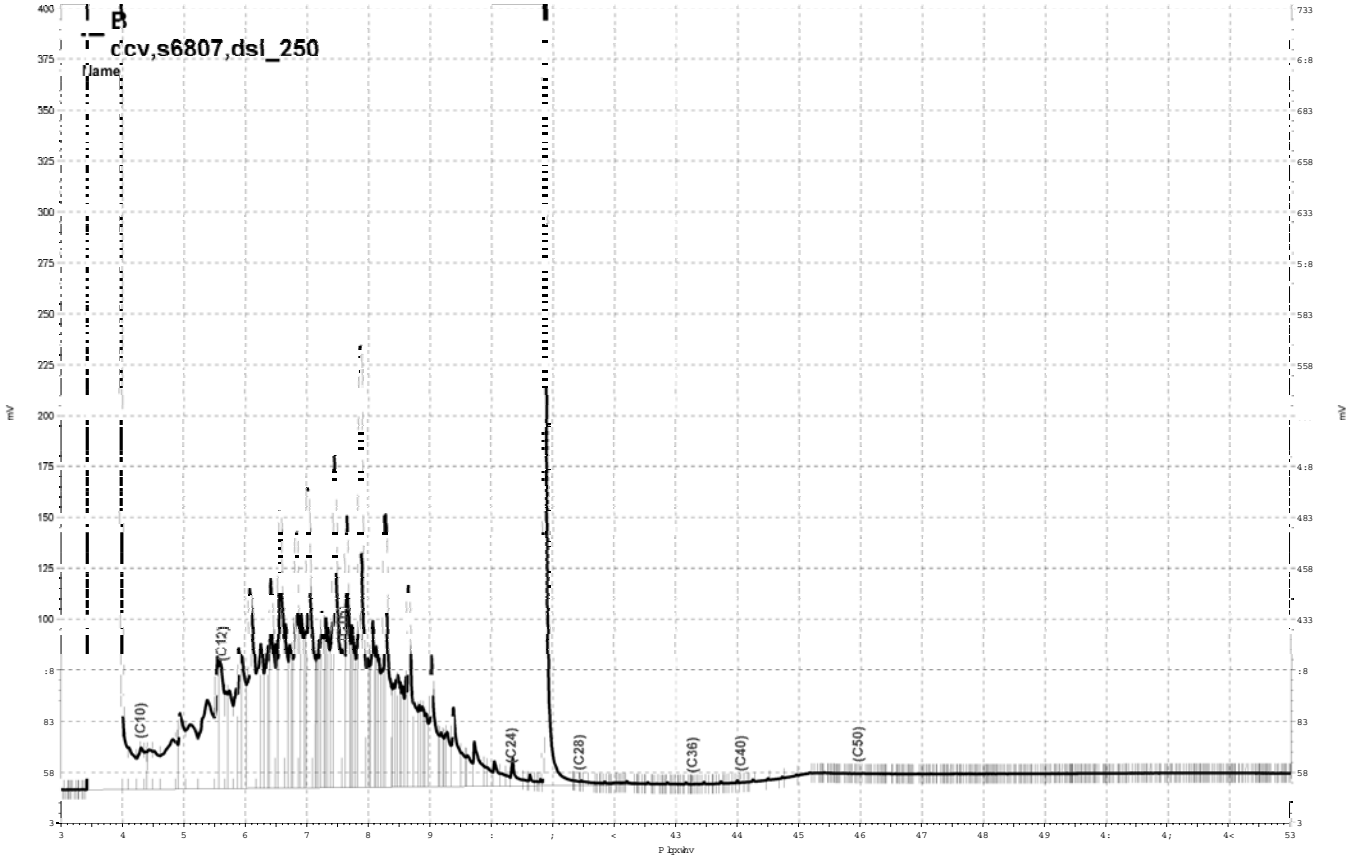


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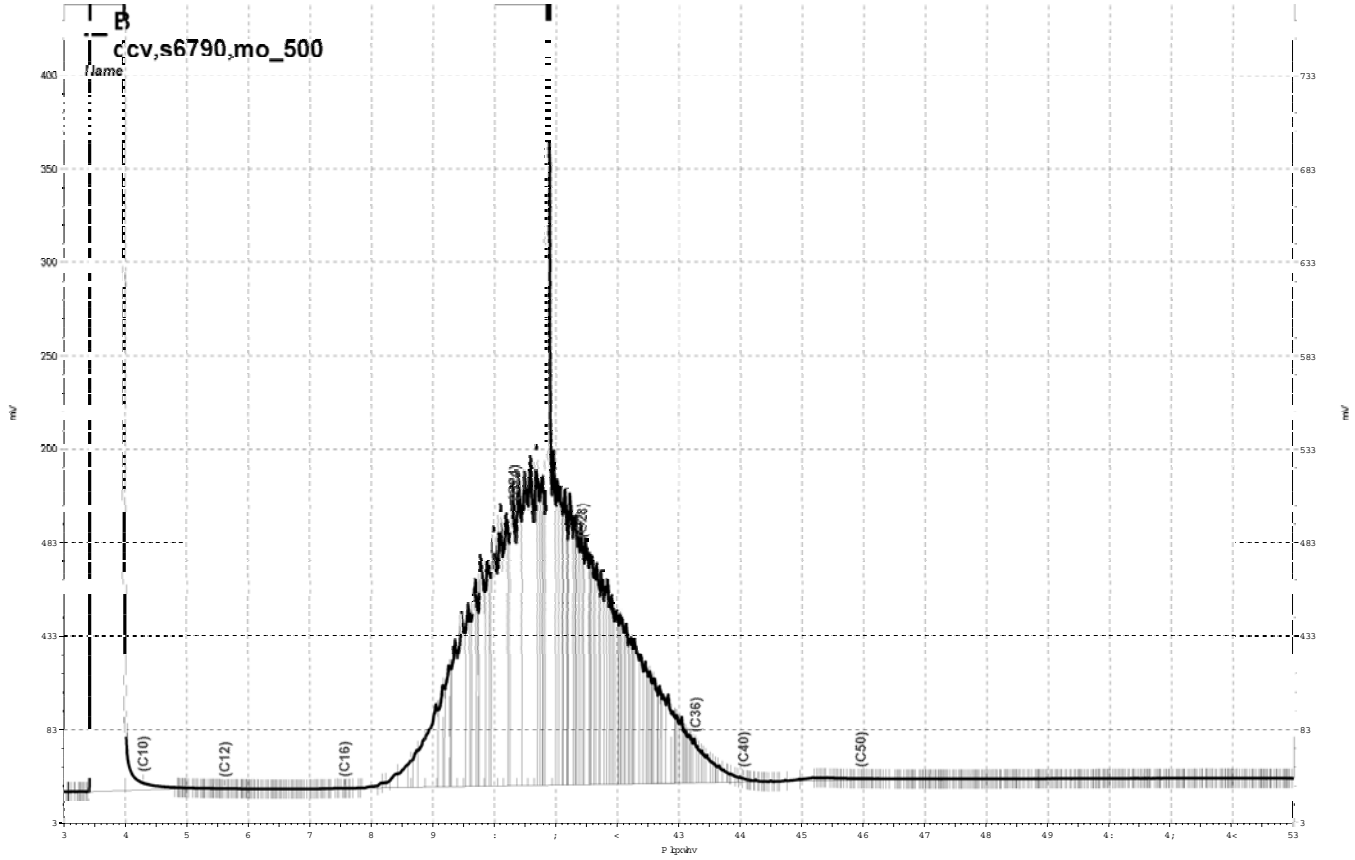


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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130026 |
| Units: | mg/Kg | Received: | 09/27/07 |
| Basis: | as received | Prepared: | 09/30/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-03-SS-0.0 Sampled: 09/25/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 197910-001

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 26 H Y | 1.0 | 10/01/07 |
| Diesel C10-C24 (SGCU) | 8.3 Y | 1.0 | 11/01/07 |
| Motor Oil C24-C36 | 150 H L | 5.0 | 10/01/07 |
| Motor Oil C24-C36 (SGCU) | 94 | 5.0 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 101 | 46-128 | 10/01/07 |
| Hexacosane (SGCU) | 95 | 46-128 | 11/01/07 |

Field ID: B-03-SS-25.0 Sampled: 09/25/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 197910-002

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 26 H Y | 1.0 | 10/01/07 |
| Diesel C10-C24 (SGCU) | 18 Y | 1.0 | 11/01/07 |
| Motor Oil C24-C36 | 110 H L | 5.0 | 10/01/07 |
| Motor Oil C24-C36 (SGCU) | 100 | 5.0 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 75 | 46-128 | 10/01/07 |
| Hexacosane (SGCU) | 76 | 46-128 | 11/01/07 |

Field ID: B-11-SS-0.0' Sampled: 09/26/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 197910-004

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 21 H Y | 1.0 | 10/01/07 |
| Diesel C10-C24 (SGCU) | 7.4 Y | 1.0 | 11/02/07 |
| Motor Oil C24-C36 | 100 H L | 5.0 | 10/01/07 |
| Motor Oil C24-C36 (SGCU) | 57 | 5.0 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 95 | 46-128 | 10/01/07 |
| Hexacosane (SGCU) | 86 | 46-128 | 11/02/07 |

H= Heavier hydrocarbons contributed to the quantitation
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130026 |
| Units: | mg/Kg | Received: | 09/27/07 |
| Basis: | as received | Prepared: | 09/30/07 |
| Diln Fac: | 1.000 | | |

| | | | |
|---|---|---|---|
| Field ID: | B-11-SS-35' | Sampled: | 09/26/07 |
| Type: | SAMPLE | Analyzed: | 10/01/07 |
| Lab ID: | 197910-005 | | |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 15 H Y | 1.0 |
| Motor Oil C24-C36 | 24 H L | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 92 | 46-128 |

| | | | |
|---|---|---|---|
| Field ID: | B-12-SS-0.0' | Sampled: | 09/26/07 |
| Type: | SAMPLE | Analyzed: | 10/01/07 |
| Lab ID: | 197910-008 | | |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 11 H Y | 0.99 |
| Motor Oil C24-C36 | 66 H L | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 96 | 46-128 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/01/07 |
| Lab ID: | QC408383 | Cleanup Method: | EPA 3630C |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Diesel C10-C24 (SGCU) | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |
| Motor Oil C24-C36 (SGCU) | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 110 | 46-128 |
| Hexacosane (SGCU) | 99 | 46-128 |

H= Heavier hydrocarbons contributed to the quantitation
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC408384 | Batch#: | 130026 |
| Matrix: | Soil | Prepared: | 09/30/07 |
| Units: | mg/Kg | Analyzed: | 10/01/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 50.14 | 44.01 | 88 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 88 | 46-128 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130026 |
| MSS Lab ID: | 197966-001 | Sampled: | 09/27/07 |
| Matrix: | Soil | Received: | 09/28/07 |
| Units: | mg/Kg | Prepared: | 09/30/07 |
| Basis: | as received | Analyzed: | 10/01/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC408385

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | 28.12 | 50.13 | 84.32 | 112 | 31-150 |

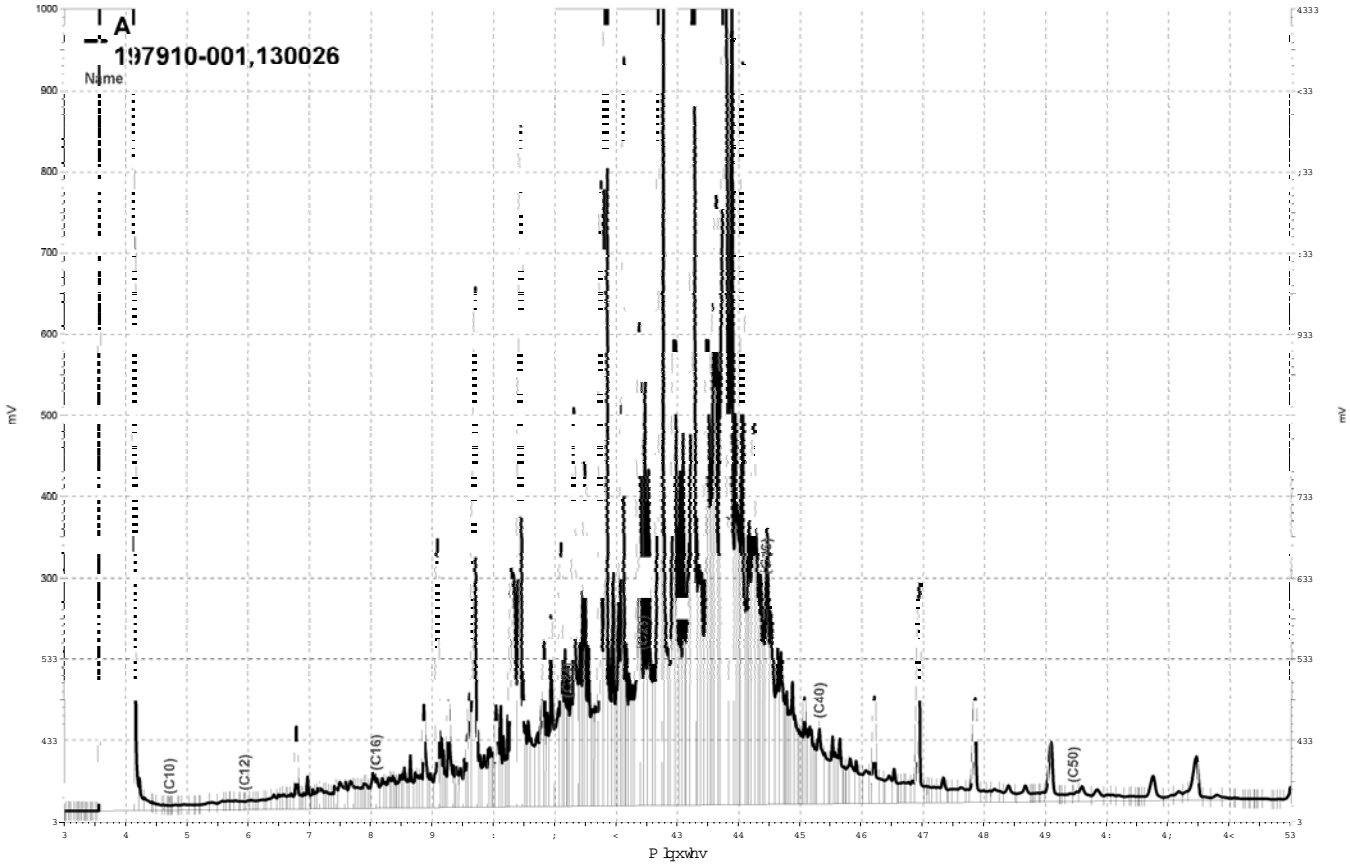
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 91 | 46-128 |

Type: MSD Lab ID: QC408386

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 49.73 | 79.94 | 104 | 31-150 | 5 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 99 | 46-128 |

RPD= Relative Percent Difference

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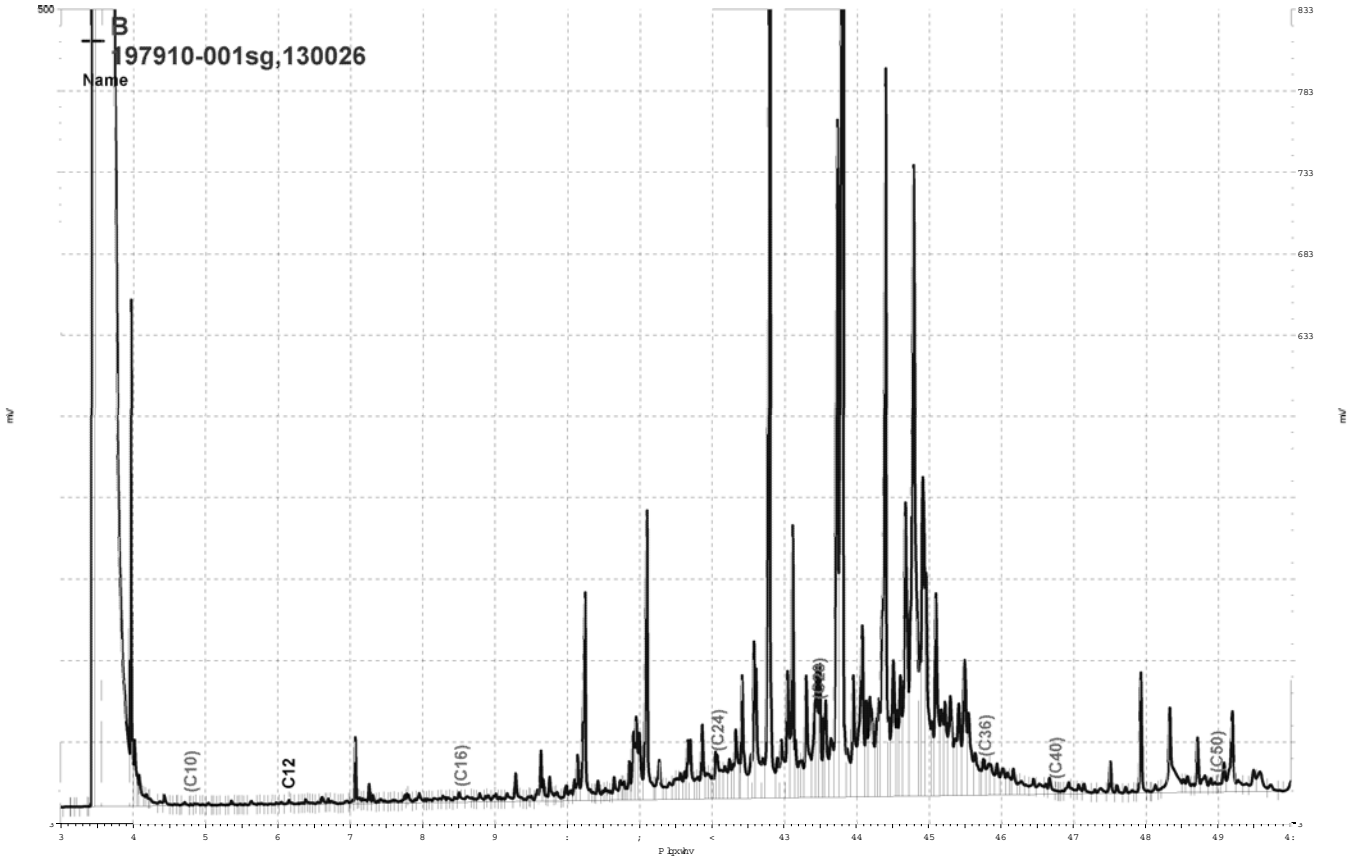


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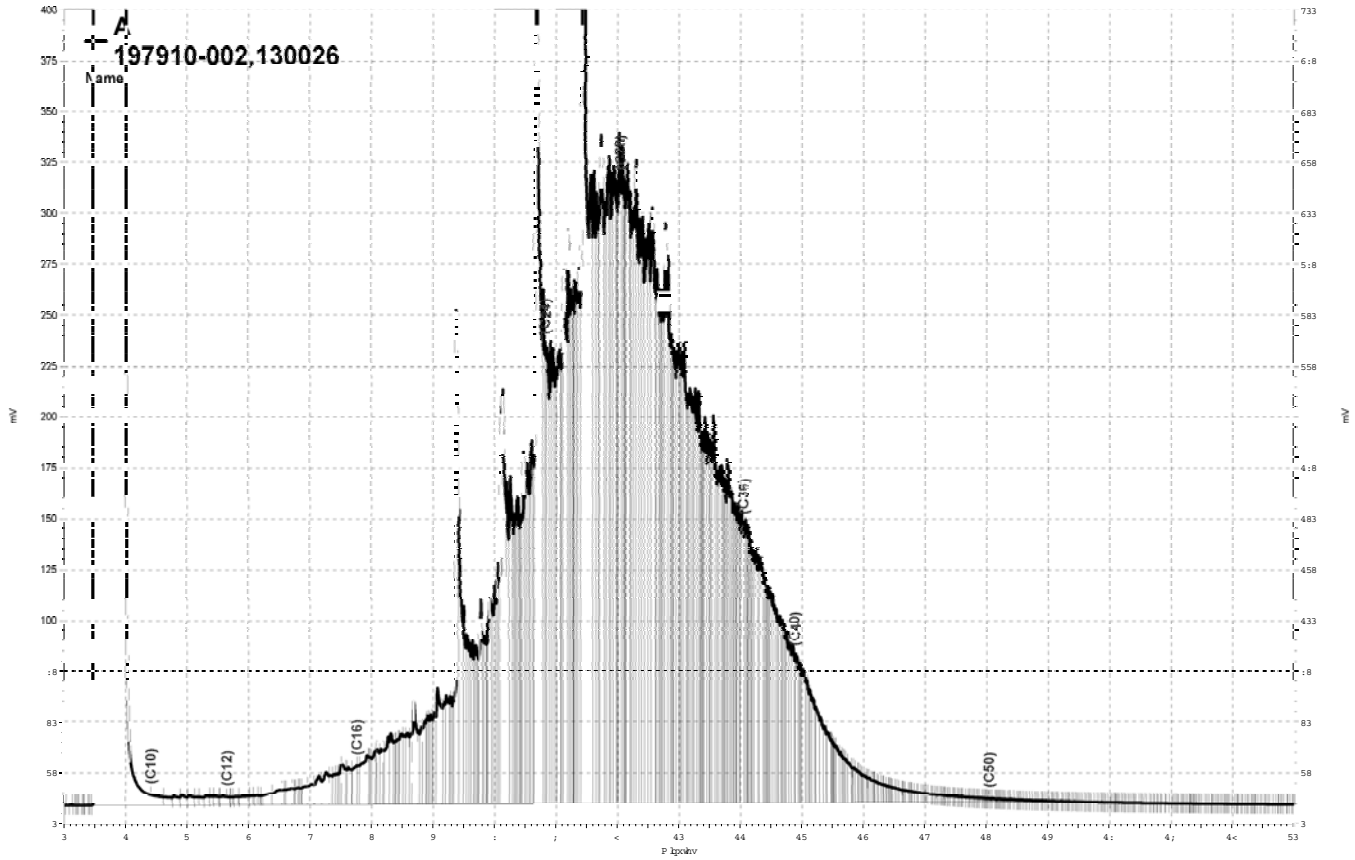


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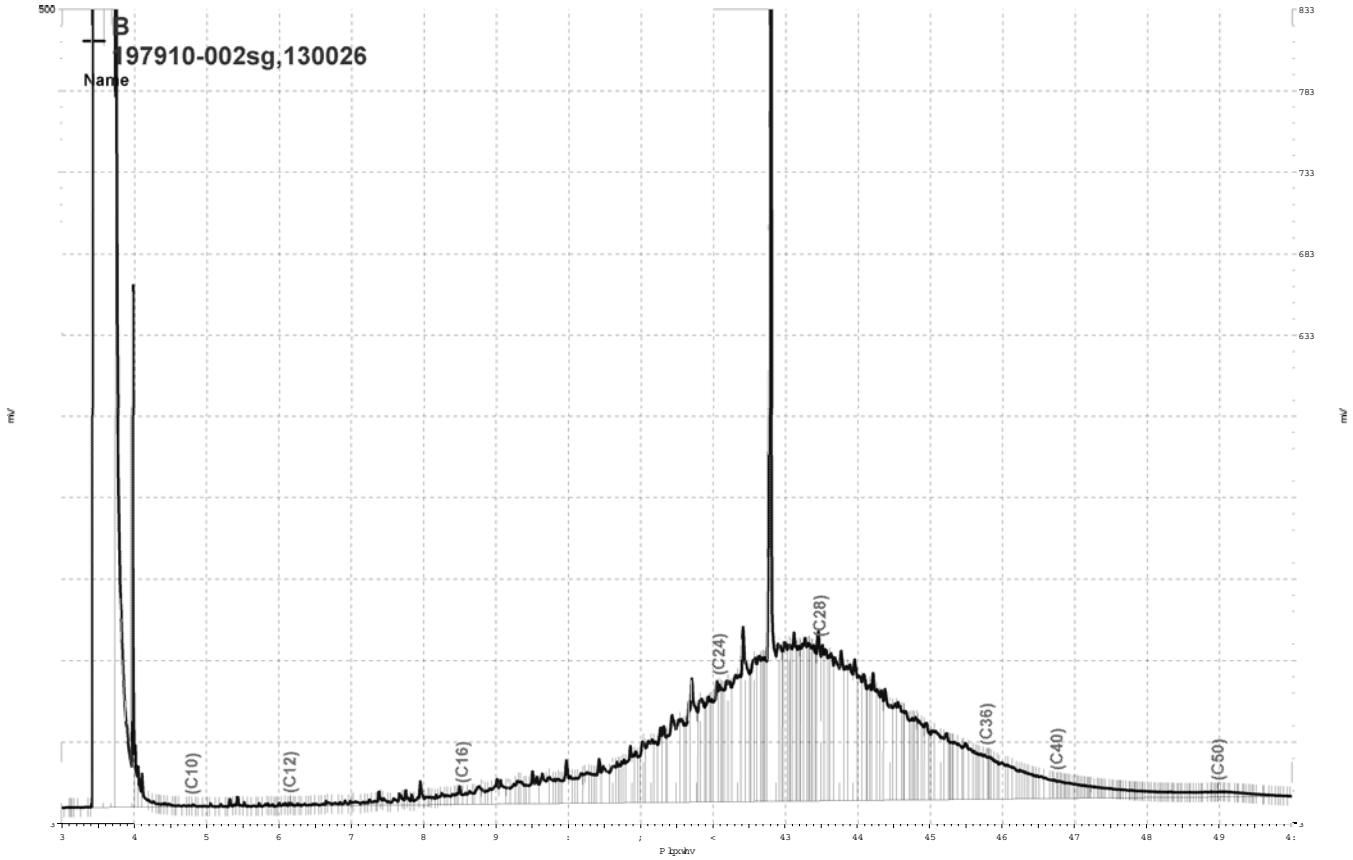


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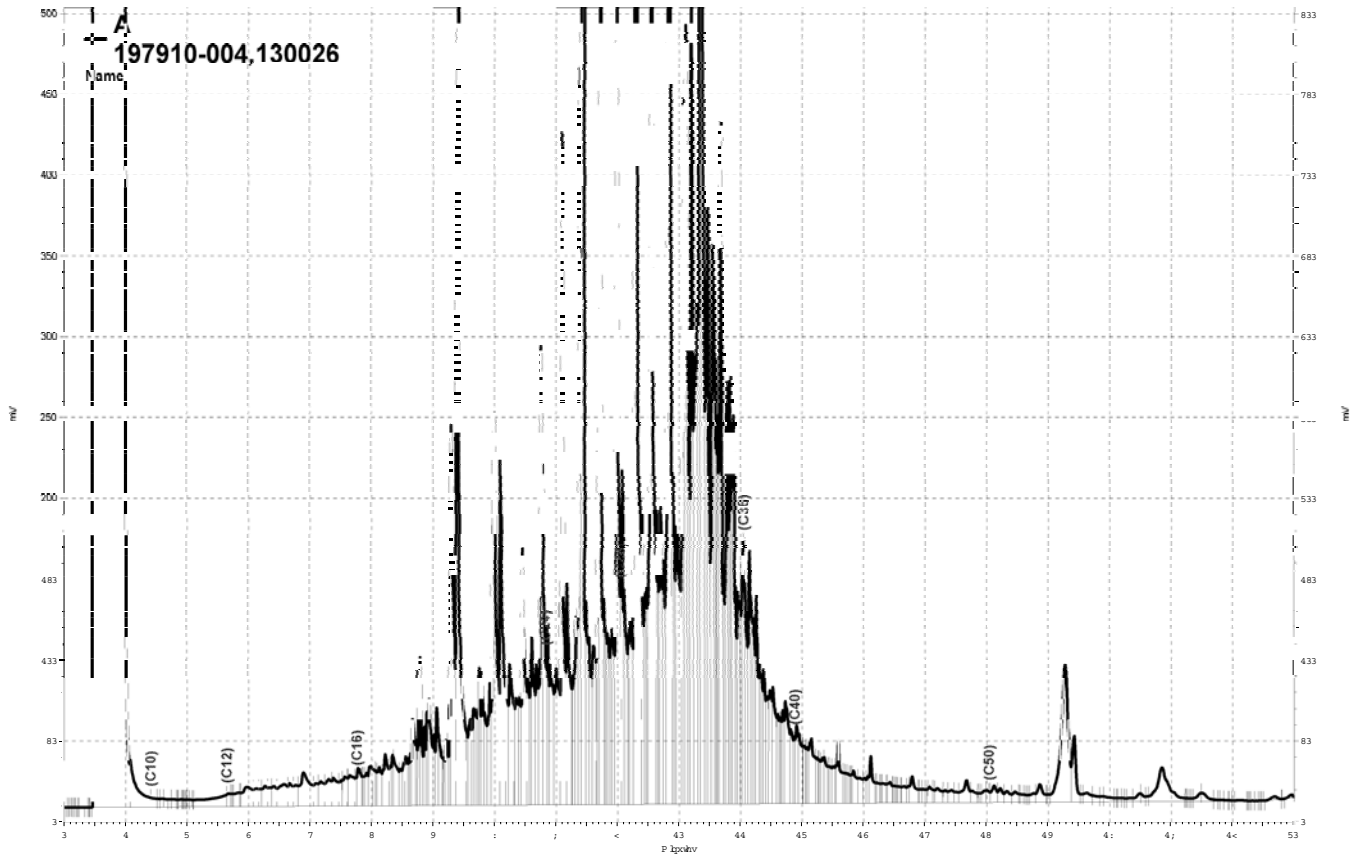


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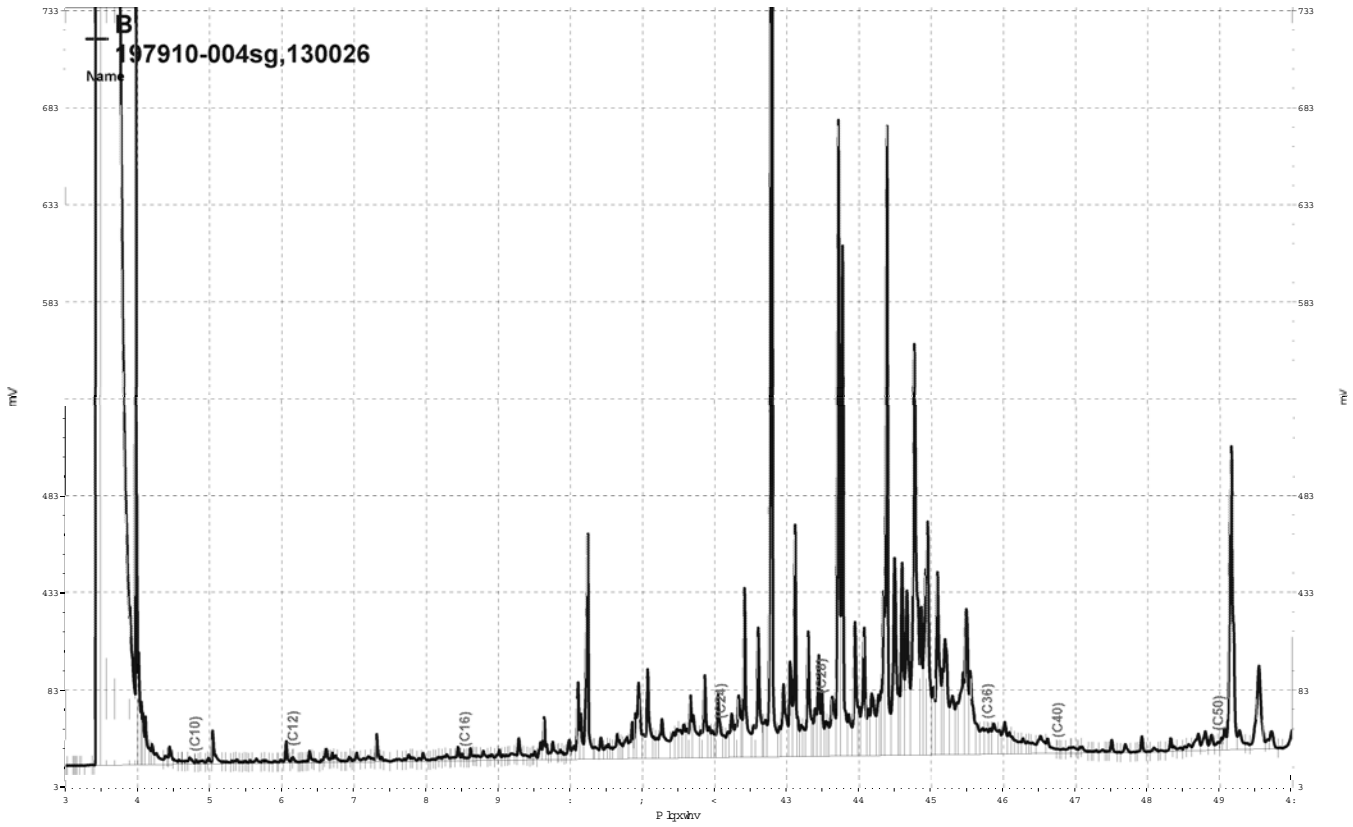


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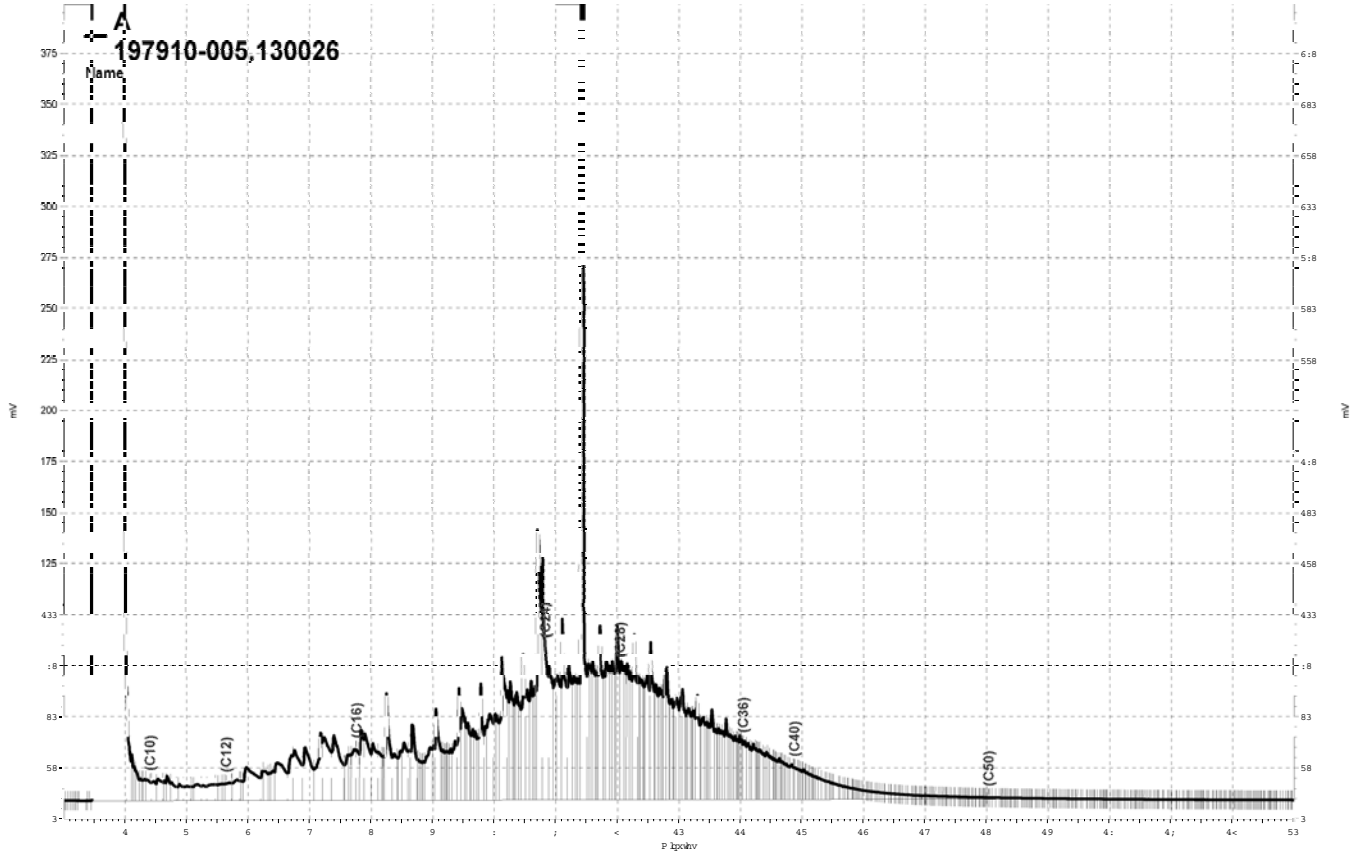


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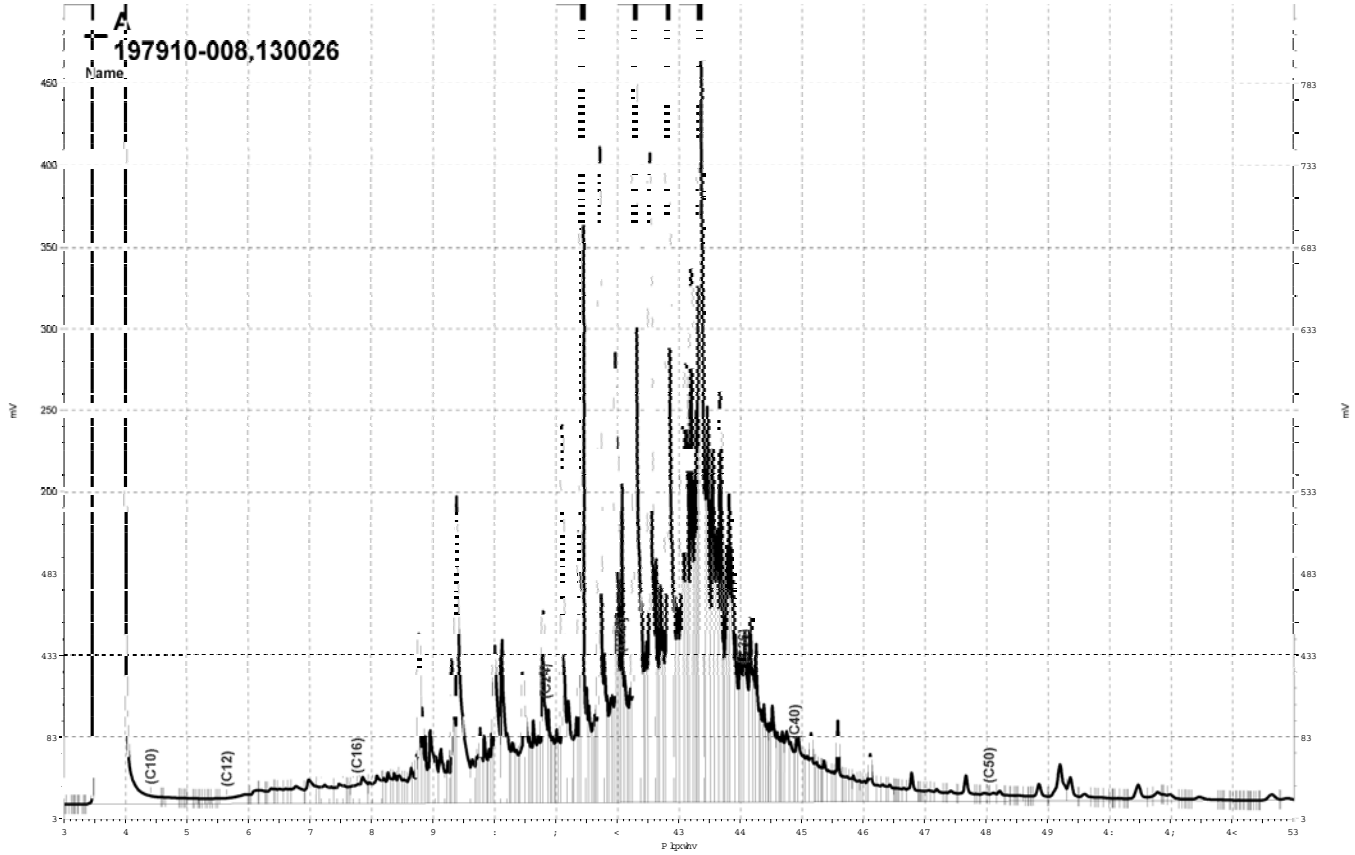


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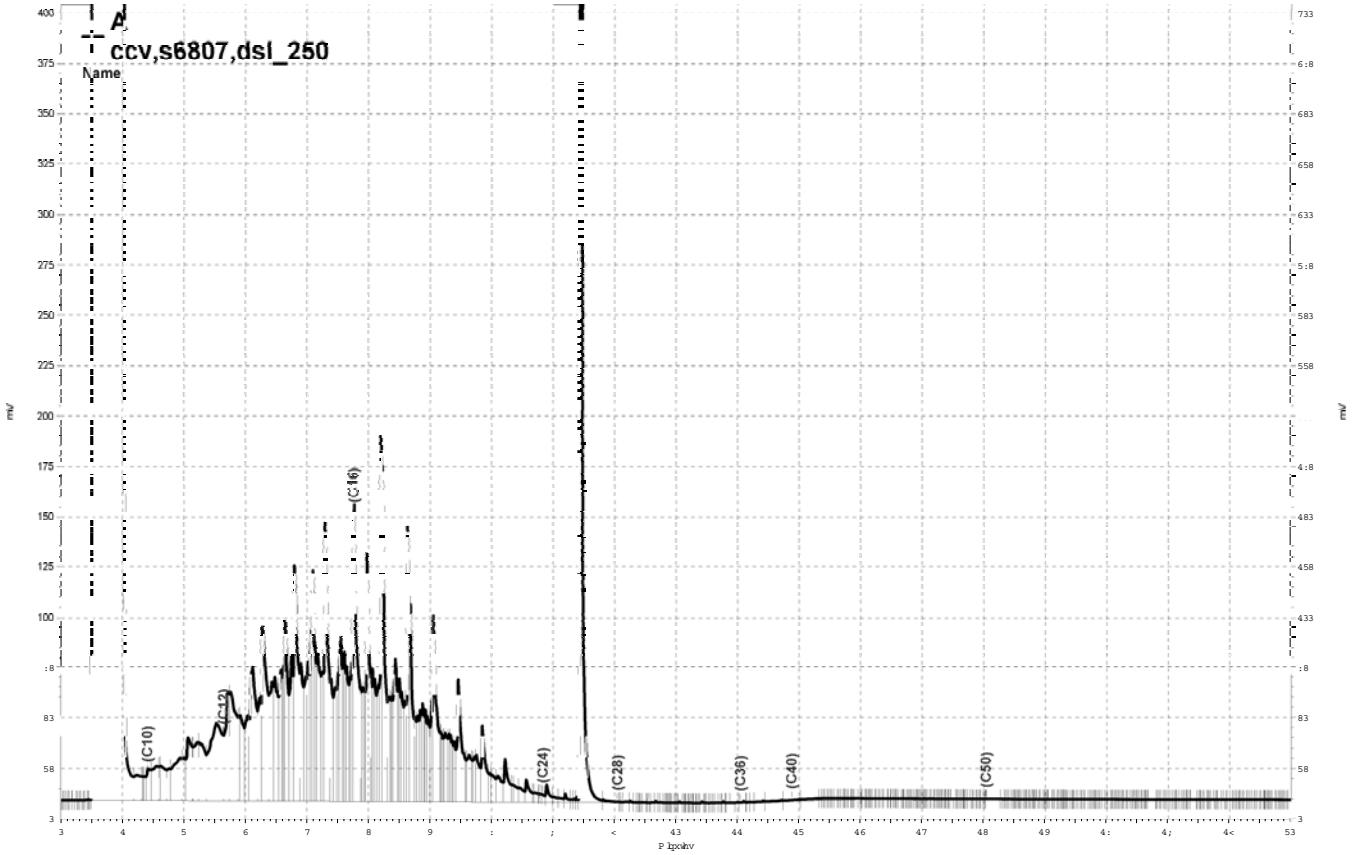


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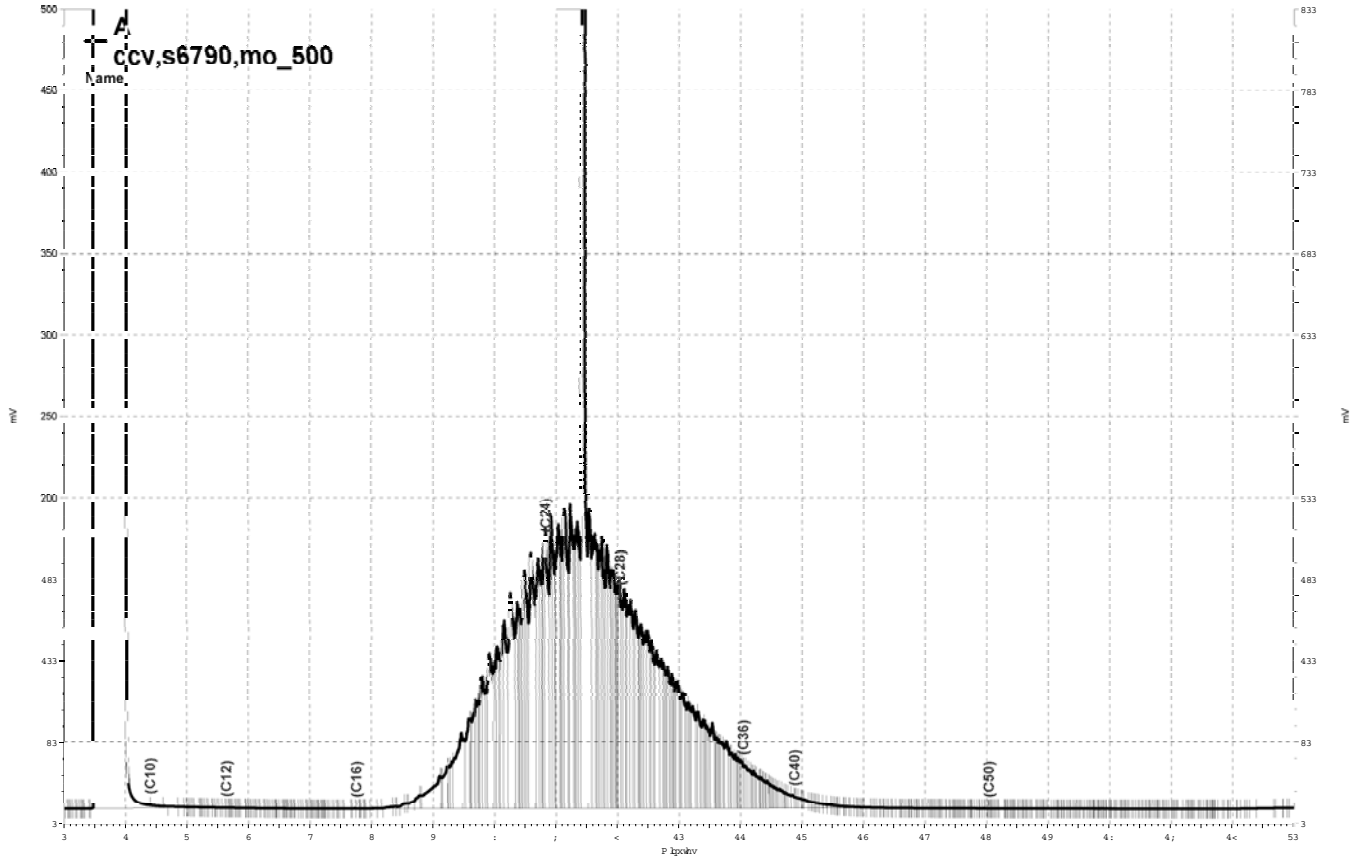


_Olp v jgulyh_h}fkurp_SurmfwJF44D_Gdwd_5:6d353/D

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-03-GW-10' | Batch#: | 129968 |
| Lab ID: | 197910-003 | Sampled: | 09/25/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-03-GW-10' | Batch#: | 129968 |
| Lab ID: | 197910-003 | Sampled: | 09/25/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-122 |
| 1,2-Dichloroethane-d4 | 123 | 74-137 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-11-GW-24' | Batch#: | 129968 |
| Lab ID: | 197910-006 | Sampled: | 09/26/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-11-GW-24' | Batch#: | 129968 |
| Lab ID: | 197910-006 | Sampled: | 09/26/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-122 |
| 1,2-Dichloroethane-d4 | 124 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | TRIP BLANK | Batch#: | 129968 |
| Lab ID: | 197910-007 | Sampled: | 09/26/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | TRIP BLANK | Batch#: | 129968 |
| Lab ID: | 197910-007 | Sampled: | 09/26/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 112 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 101 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408165 | Batch#: | 129968 |
| Matrix: | Water | Analyzed: | 09/28/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408165 | Batch#: | 129968 |
| Matrix: | Water | Analyzed: | 09/28/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 116 | 74-137 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 129968 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408166

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 27.49 | 110 | 80-133 |
| Benzene | 25.00 | 26.11 | 104 | 80-120 |
| Trichloroethene | 25.00 | 29.22 | 117 | 80-120 |
| Toluene | 25.00 | 26.98 | 108 | 80-122 |
| Chlorobenzene | 25.00 | 25.13 | 101 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-122 |
| 1,2-Dichloroethane-d4 | 136 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 107 | 80-120 |

Type: BSD Lab ID: QC408167

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 25.94 | 104 | 80-133 | 6 | 20 |
| Benzene | 25.00 | 24.43 | 98 | 80-120 | 7 | 20 |
| Trichloroethene | 25.00 | 27.41 | 110 | 80-120 | 6 | 20 |
| Toluene | 25.00 | 25.35 | 101 | 80-122 | 6 | 20 |
| Chlorobenzene | 25.00 | 24.17 | 97 | 80-120 | 4 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-122 |
| 1,2-Dichloroethane-d4 | 132 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 106 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-03-SS-0.0 | Diln Fac: | 1.000 |
| Lab ID: | 197910-001 | Batch#: | 129930 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/27/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-03-SS-0.0 | Dil'n Fac: | 1.000 |
| Lab ID: | 197910-001 | Batch#: | 129930 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/27/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 126 * | 80-124 |
| 1,2-Dichloroethane-d4 | 113 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 99 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-03-SS-25.0 | Diln Fac: | 0.9804 |
| Lab ID: | 197910-002 | Batch#: | 129930 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/27/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.8 |
| Chloromethane | ND | 9.8 |
| Vinyl Chloride | ND | 9.8 |
| Bromomethane | ND | 9.8 |
| Chloroethane | ND | 9.8 |
| Trichlorofluoromethane | ND | 4.9 |
| Acetone | ND | 25 |
| Freon 113 | ND | 4.9 |
| 1,1-Dichloroethene | ND | 4.9 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 4.9 |
| MTBE | ND | 4.9 |
| trans-1,2-Dichloroethene | ND | 4.9 |
| Vinyl Acetate | ND | 49 |
| 1,1-Dichloroethane | ND | 4.9 |
| 2-Butanone | ND | 9.8 |
| cis-1,2-Dichloroethene | ND | 4.9 |
| 2,2-Dichloropropane | ND | 4.9 |
| Chloroform | ND | 4.9 |
| Bromochloromethane | ND | 4.9 |
| 1,1,1-Trichloroethane | ND | 4.9 |
| 1,1-Dichloropropene | ND | 4.9 |
| Carbon Tetrachloride | ND | 4.9 |
| 1,2-Dichloroethane | ND | 4.9 |
| Benzene | ND | 4.9 |
| Trichloroethene | ND | 4.9 |
| 1,2-Dichloropropane | ND | 4.9 |
| Bromodichloromethane | ND | 4.9 |
| Dibromomethane | ND | 4.9 |
| 4-Methyl-2-Pentanone | ND | 9.8 |
| cis-1,3-Dichloropropene | ND | 4.9 |
| Toluene | ND | 4.9 |
| trans-1,3-Dichloropropene | ND | 4.9 |
| 1,1,2-Trichloroethane | ND | 4.9 |
| 2-Hexanone | ND | 9.8 |
| 1,3-Dichloropropane | ND | 4.9 |
| Tetrachloroethene | ND | 4.9 |
| Dibromochloromethane | ND | 4.9 |
| 1,2-Dibromoethane | ND | 4.9 |
| Chlorobenzene | ND | 4.9 |
| 1,1,1,2-Tetrachloroethane | ND | 4.9 |
| Ethylbenzene | ND | 4.9 |
| m,p-Xylenes | ND | 4.9 |
| o-Xylene | ND | 4.9 |
| Styrene | ND | 4.9 |
| Bromoform | ND | 4.9 |
| Isopropylbenzene | ND | 4.9 |
| 1,1,2,2-Tetrachloroethane | ND | 4.9 |
| 1,2,3-Trichloropropane | ND | 4.9 |
| Propylbenzene | ND | 4.9 |
| Bromobenzene | ND | 4.9 |
| 1,3,5-Trimethylbenzene | ND | 4.9 |
| 2-Chlorotoluene | ND | 4.9 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-03-SS-25.0 | Diln Fac: | 0.9804 |
| Lab ID: | 197910-002 | Batch#: | 129930 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/27/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.9 |
| tert-Butylbenzene | ND | 4.9 |
| 1,2,4-Trimethylbenzene | ND | 4.9 |
| sec-Butylbenzene | ND | 4.9 |
| para-Isopropyl Toluene | ND | 4.9 |
| 1,3-Dichlorobenzene | ND | 4.9 |
| 1,4-Dichlorobenzene | ND | 4.9 |
| n-Butylbenzene | ND | 4.9 |
| 1,2-Dichlorobenzene | ND | 4.9 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.9 |
| 1,2,4-Trichlorobenzene | ND | 4.9 |
| Hexachlorobutadiene | ND | 4.9 |
| Naphthalene | ND | 4.9 |
| 1,2,3-Trichlorobenzene | ND | 4.9 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 127 * | 80-124 |
| 1,2-Dichloroethane-d4 | 111 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 97 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-11-SS-0.0' | Diln Fac: | 0.9804 |
| Lab ID: | 197910-004 | Batch#: | 129930 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/27/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.8 |
| Chloromethane | ND | 9.8 |
| Vinyl Chloride | ND | 9.8 |
| Bromomethane | ND | 9.8 |
| Chloroethane | ND | 9.8 |
| Trichlorofluoromethane | ND | 4.9 |
| Acetone | ND | 25 |
| Freon 113 | ND | 4.9 |
| 1,1-Dichloroethene | ND | 4.9 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 4.9 |
| MTBE | ND | 4.9 |
| trans-1,2-Dichloroethene | ND | 4.9 |
| Vinyl Acetate | ND | 49 |
| 1,1-Dichloroethane | ND | 4.9 |
| 2-Butanone | ND | 9.8 |
| cis-1,2-Dichloroethene | ND | 4.9 |
| 2,2-Dichloropropane | ND | 4.9 |
| Chloroform | ND | 4.9 |
| Bromochloromethane | ND | 4.9 |
| 1,1,1-Trichloroethane | ND | 4.9 |
| 1,1-Dichloropropene | ND | 4.9 |
| Carbon Tetrachloride | ND | 4.9 |
| 1,2-Dichloroethane | ND | 4.9 |
| Benzene | ND | 4.9 |
| Trichloroethene | ND | 4.9 |
| 1,2-Dichloropropane | ND | 4.9 |
| Bromodichloromethane | ND | 4.9 |
| Dibromomethane | ND | 4.9 |
| 4-Methyl-2-Pentanone | ND | 9.8 |
| cis-1,3-Dichloropropene | ND | 4.9 |
| Toluene | ND | 4.9 |
| trans-1,3-Dichloropropene | ND | 4.9 |
| 1,1,2-Trichloroethane | ND | 4.9 |
| 2-Hexanone | ND | 9.8 |
| 1,3-Dichloropropane | ND | 4.9 |
| Tetrachloroethene | ND | 4.9 |
| Dibromochloromethane | ND | 4.9 |
| 1,2-Dibromoethane | ND | 4.9 |
| Chlorobenzene | ND | 4.9 |
| 1,1,1,2-Tetrachloroethane | ND | 4.9 |
| Ethylbenzene | ND | 4.9 |
| m,p-Xylenes | ND | 4.9 |
| o-Xylene | ND | 4.9 |
| Styrene | ND | 4.9 |
| Bromoform | ND | 4.9 |
| Isopropylbenzene | ND | 4.9 |
| 1,1,2,2-Tetrachloroethane | ND | 4.9 |
| 1,2,3-Trichloropropane | ND | 4.9 |
| Propylbenzene | ND | 4.9 |
| Bromobenzene | ND | 4.9 |
| 1,3,5-Trimethylbenzene | ND | 4.9 |
| 2-Chlorotoluene | ND | 4.9 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-11-SS-0.0' | Dil'n Fac: | 0.9804 |
| Lab ID: | 197910-004 | Batch#: | 129930 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/27/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.9 |
| tert-Butylbenzene | ND | 4.9 |
| 1,2,4-Trimethylbenzene | ND | 4.9 |
| sec-Butylbenzene | ND | 4.9 |
| para-Isopropyl Toluene | ND | 4.9 |
| 1,3-Dichlorobenzene | ND | 4.9 |
| 1,4-Dichlorobenzene | ND | 4.9 |
| n-Butylbenzene | ND | 4.9 |
| 1,2-Dichlorobenzene | ND | 4.9 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.9 |
| 1,2,4-Trichlorobenzene | ND | 4.9 |
| Hexachlorobutadiene | ND | 4.9 |
| Naphthalene | ND | 4.9 |
| 1,2,3-Trichlorobenzene | ND | 4.9 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 131 * | 80-124 |
| 1,2-Dichloroethane-d4 | 119 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 99 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-11-SS-35' | Dil'n Fac: | 0.9615 |
| Lab ID: | 197910-005 | Batch#: | 129984 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.6 |
| Chloromethane | ND | 9.6 |
| Vinyl Chloride | ND | 9.6 |
| Bromomethane | ND | 9.6 |
| Chloroethane | ND | 9.6 |
| Trichlorofluoromethane | ND | 4.8 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.8 |
| 1,1-Dichloroethene | ND | 4.8 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.8 |
| MTBE | ND | 4.8 |
| trans-1,2-Dichloroethene | ND | 4.8 |
| Vinyl Acetate | ND | 48 |
| 1,1-Dichloroethane | ND | 4.8 |
| 2-Butanone | ND | 9.6 |
| cis-1,2-Dichloroethene | ND | 4.8 |
| 2,2-Dichloropropane | ND | 4.8 |
| Chloroform | ND | 4.8 |
| Bromochloromethane | ND | 4.8 |
| 1,1,1-Trichloroethane | ND | 4.8 |
| 1,1-Dichloropropene | ND | 4.8 |
| Carbon Tetrachloride | ND | 4.8 |
| 1,2-Dichloroethane | ND | 4.8 |
| Benzene | ND | 4.8 |
| Trichloroethene | ND | 4.8 |
| 1,2-Dichloropropane | ND | 4.8 |
| Bromodichloromethane | ND | 4.8 |
| Dibromomethane | ND | 4.8 |
| 4-Methyl-2-Pentanone | ND | 9.6 |
| cis-1,3-Dichloropropene | ND | 4.8 |
| Toluene | ND | 4.8 |
| trans-1,3-Dichloropropene | ND | 4.8 |
| 1,1,2-Trichloroethane | ND | 4.8 |
| 2-Hexanone | ND | 9.6 |
| 1,3-Dichloropropane | ND | 4.8 |
| Tetrachloroethene | ND | 4.8 |
| Dibromochloromethane | ND | 4.8 |
| 1,2-Dibromoethane | ND | 4.8 |
| Chlorobenzene | ND | 4.8 |
| 1,1,1,2-Tetrachloroethane | ND | 4.8 |
| Ethylbenzene | ND | 4.8 |
| m,p-Xylenes | ND | 4.8 |
| o-Xylene | ND | 4.8 |
| Styrene | ND | 4.8 |
| Bromoform | ND | 4.8 |
| Isopropylbenzene | ND | 4.8 |
| 1,1,2,2-Tetrachloroethane | ND | 4.8 |
| 1,2,3-Trichloropropane | ND | 4.8 |
| Propylbenzene | ND | 4.8 |
| Bromobenzene | ND | 4.8 |
| 1,3,5-Trimethylbenzene | ND | 4.8 |
| 2-Chlorotoluene | ND | 4.8 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-11-SS-35' | Dil'n Fac: | 0.9615 |
| Lab ID: | 197910-005 | Batch#: | 129984 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.8 |
| tert-Butylbenzene | ND | 4.8 |
| 1,2,4-Trimethylbenzene | ND | 4.8 |
| sec-Butylbenzene | ND | 4.8 |
| para-Isopropyl Toluene | ND | 4.8 |
| 1,3-Dichlorobenzene | ND | 4.8 |
| 1,4-Dichlorobenzene | ND | 4.8 |
| n-Butylbenzene | ND | 4.8 |
| 1,2-Dichlorobenzene | ND | 4.8 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.8 |
| 1,2,4-Trichlorobenzene | ND | 4.8 |
| Hexachlorobutadiene | ND | 4.8 |
| Naphthalene | ND | 4.8 |
| 1,2,3-Trichlorobenzene | ND | 4.8 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 127 * | 80-124 |
| 1,2-Dichloroethane-d4 | 113 | 79-136 |
| Toluene-d8 | 96 | 80-120 |
| Bromofluorobenzene | 115 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-SS-0.0' | Diln Fac: | 0.9615 |
| Lab ID: | 197910-008 | Batch#: | 129984 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.6 |
| Chloromethane | ND | 9.6 |
| Vinyl Chloride | ND | 9.6 |
| Bromomethane | ND | 9.6 |
| Chloroethane | ND | 9.6 |
| Trichlorofluoromethane | ND | 4.8 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.8 |
| 1,1-Dichloroethene | ND | 4.8 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.8 |
| MTBE | ND | 4.8 |
| trans-1,2-Dichloroethene | ND | 4.8 |
| Vinyl Acetate | ND | 48 |
| 1,1-Dichloroethane | ND | 4.8 |
| 2-Butanone | ND | 9.6 |
| cis-1,2-Dichloroethene | ND | 4.8 |
| 2,2-Dichloropropane | ND | 4.8 |
| Chloroform | ND | 4.8 |
| Bromochloromethane | ND | 4.8 |
| 1,1,1-Trichloroethane | ND | 4.8 |
| 1,1-Dichloropropene | ND | 4.8 |
| Carbon Tetrachloride | ND | 4.8 |
| 1,2-Dichloroethane | ND | 4.8 |
| Benzene | ND | 4.8 |
| Trichloroethene | ND | 4.8 |
| 1,2-Dichloropropane | ND | 4.8 |
| Bromodichloromethane | ND | 4.8 |
| Dibromomethane | ND | 4.8 |
| 4-Methyl-2-Pentanone | ND | 9.6 |
| cis-1,3-Dichloropropene | ND | 4.8 |
| Toluene | ND | 4.8 |
| trans-1,3-Dichloropropene | ND | 4.8 |
| 1,1,2-Trichloroethane | ND | 4.8 |
| 2-Hexanone | ND | 9.6 |
| 1,3-Dichloropropane | ND | 4.8 |
| Tetrachloroethene | ND | 4.8 |
| Dibromochloromethane | ND | 4.8 |
| 1,2-Dibromoethane | ND | 4.8 |
| Chlorobenzene | ND | 4.8 |
| 1,1,1,2-Tetrachloroethane | ND | 4.8 |
| Ethylbenzene | ND | 4.8 |
| m,p-Xylenes | ND | 4.8 |
| o-Xylene | ND | 4.8 |
| Styrene | ND | 4.8 |
| Bromoform | ND | 4.8 |
| Isopropylbenzene | ND | 4.8 |
| 1,1,2,2-Tetrachloroethane | ND | 4.8 |
| 1,2,3-Trichloropropane | ND | 4.8 |
| Propylbenzene | ND | 4.8 |
| Bromobenzene | ND | 4.8 |
| 1,3,5-Trimethylbenzene | ND | 4.8 |
| 2-Chlorotoluene | ND | 4.8 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-SS-0.0' | Dil'n Fac: | 0.9615 |
| Lab ID: | 197910-008 | Batch#: | 129984 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.8 |
| tert-Butylbenzene | ND | 4.8 |
| 1,2,4-Trimethylbenzene | ND | 4.8 |
| sec-Butylbenzene | ND | 4.8 |
| para-Isopropyl Toluene | ND | 4.8 |
| 1,3-Dichlorobenzene | ND | 4.8 |
| 1,4-Dichlorobenzene | ND | 4.8 |
| n-Butylbenzene | ND | 4.8 |
| 1,2-Dichlorobenzene | ND | 4.8 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.8 |
| 1,2,4-Trichlorobenzene | ND | 4.8 |
| Hexachlorobutadiene | ND | 4.8 |
| Naphthalene | ND | 4.8 |
| 1,2,3-Trichlorobenzene | ND | 4.8 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 129 * | 80-124 |
| 1,2-Dichloroethane-d4 | 119 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC408011 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129930 |
| Units: | ug/Kg | Analyzed: | 09/27/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 24.36 | 97 | 74-131 |
| Benzene | 25.00 | 25.29 | 101 | 77-121 |
| Trichloroethene | 25.00 | 24.60 | 98 | 77-121 |
| Toluene | 25.00 | 25.12 | 100 | 79-122 |
| Chlorobenzene | 25.00 | 24.90 | 100 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-124 |
| 1,2-Dichloroethane-d4 | 100 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408012 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129930 |
| Units: | ug/Kg | Analyzed: | 09/27/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408012 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129930 |
| Units: | ug/Kg | Analyzed: | 09/27/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 110 | 80-124 |
| 1,2-Dichloroethane-d4 | 102 | 79-136 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 100 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC408226 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129984 |
| Units: | ug/Kg | Analyzed: | 09/28/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 28.63 | 115 | 74-131 |
| Benzene | 25.00 | 29.84 | 119 | 77-121 |
| Trichloroethene | 25.00 | 28.50 | 114 | 77-121 |
| Toluene | 25.00 | 28.16 | 113 | 79-122 |
| Chlorobenzene | 25.00 | 27.63 | 111 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 103 | 80-124 |
| 1,2-Dichloroethane-d4 | 106 | 79-136 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 96 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408227 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129984 |
| Units: | ug/Kg | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408227 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 129984 |
| Units: | ug/Kg | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 114 | 80-124 |
| 1,2-Dichloroethane-d4 | 102 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 97 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 129984 |
| MSS Lab ID: | 197913-002 | Sampled: | 09/26/07 |
| Matrix: | Soil | Received: | 09/26/07 |
| Units: | ug/Kg | Analyzed: | 09/28/07 |
| Basis: | as received | | |

Type: MS Diln Fac: 0.8197
Lab ID: QC408271

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.3835 | 40.98 | 35.33 | 86 | 61-145 |
| Benzene | <0.2673 | 40.98 | 31.54 | 77 | 57-123 |
| Trichloroethene | <0.3775 | 40.98 | 31.62 | 77 | 52-141 |
| Toluene | <0.3623 | 40.98 | 31.39 | 77 | 53-126 |
| Chlorobenzene | <0.2449 | 40.98 | 26.46 | 65 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 98 | 80-124 |
| 1,2-Dichloroethane-d4 | 91 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 104 | 80-122 |

Type: MSD Diln Fac: 0.8929
Lab ID: QC408272

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 44.64 | 45.38 | 102 | 61-145 | 16 | 26 |
| Benzene | 44.64 | 39.92 | 89 | 57-123 | 15 | 25 |
| Trichloroethene | 44.64 | 40.11 | 90 | 52-141 | 15 | 26 |
| Toluene | 44.64 | 39.42 | 88 | 53-126 | 14 | 27 |
| Chlorobenzene | 44.64 | 34.55 | 77 | 49-121 | 18 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 98 | 80-124 |
| 1,2-Dichloroethane-d4 | 94 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 102 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-11-SS-0.0' | Batch#: | 130100 |
| Lab ID: | 197910-004 | Sampled: | 09/26/07 |
| Matrix: | Soil | Received: | 09/27/07 |
| Units: | ug/Kg | Prepared: | 10/02/07 |
| Basis: | as received | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 78 | 54-120 |
| Decachlorobiphenyl | 81 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0' | Batch#: | 130100 |
| Lab ID: | 197910-008 | Sampled: | 09/26/07 |
| Matrix: | Soil | Received: | 09/27/07 |
| Units: | ug/Kg | Prepared: | 10/02/07 |
| Basis: | as received | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | 4.8 | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 59 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 81 | 54-120 |
| Decachlorobiphenyl | 74 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408694 | Batch#: | 130100 |
| Matrix: | Soil | Prepared: | 10/02/07 |
| Units: | ug/Kg | Analyzed: | 10/04/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 55 | 54-120 |
| Decachlorobiphenyl | 85 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC408695 | Batch#: | 130100 |
| Matrix: | Soil | Prepared: | 10/02/07 |
| Units: | ug/Kg | Analyzed: | 10/04/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| gamma-BHC | 13.25 | 9.430 | 71 | 44-120 |
| Heptachlor | 13.25 | 9.797 | 74 | 44-120 |
| Aldrin | 13.25 | 9.404 | 71 | 47-120 |
| Dieldrin | 26.50 | 19.59 | 74 | 50-120 |
| Endrin | 26.50 | 18.87 | 71 | 27-128 |
| 4,4'-DDT | 26.50 | 19.64 | 74 | 42-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 69 | 54-120 |
| Decachlorobiphenyl | 79 | 49-142 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130100 |
| MSS Lab ID: | 197913-004 | Sampled: | 09/26/07 |
| Matrix: | Soil | Received: | 09/26/07 |
| Units: | ug/Kg | Prepared: | 10/02/07 |
| Basis: | as received | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3620B
Lab ID: QC408696

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| gamma-BHC | 2.432 | 13.28 | 15.07 | 95 | 45-122 |
| Heptachlor | <0.4792 | 13.28 | 13.42 | 101 | 49-125 |
| Aldrin | <0.3149 | 13.28 | 12.57 | 95 | 48-120 |
| Dieldrin | <0.9902 | 26.57 | 28.83 | 108 | 50-121 |
| Endrin | <1.174 | 26.57 | 26.16 | 98 | 42-123 |
| 4,4'-DDT | 5.678 | 26.57 | 28.50 # | 86 | 29-135 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 106 | 54-120 |
| Decachlorobiphenyl | 101 | 49-142 |

Type: MSD Cleanup Method: EPA 3620B
Lab ID: QC408697

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| gamma-BHC | 13.24 | 12.54 | 76 | 45-122 | 18 | 40 |
| Heptachlor | 13.24 | 9.405 | 71 | 49-125 | 35 | 42 |
| Aldrin | 13.24 | 9.170 | 69 | 48-120 | 31 | 37 |
| Dieldrin | 26.48 | 23.05 | 87 | 50-121 | 22 | 34 |
| Endrin | 26.48 | 19.20 | 73 | 42-123 | 30 | 39 |
| 4,4'-DDT | 26.48 | 22.94 # | 65 | 29-135 | 21 | 51 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 84 | 54-120 |
| Decachlorobiphenyl | 80 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | ug/Kg | Received: | 09/27/07 |
| Basis: | as received | Prepared: | 10/02/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/03/07 |
| Batch#: | 130100 | | |

Field ID: B-11-SS-0.0' Lab ID: 197910-004
Type: SAMPLE Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 126 | 66-140 |
| Decachlorobiphenyl | 131 | 51-152 |

Field ID: B-12-SS-0.0' Lab ID: 197910-008
Type: SAMPLE Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | 49 | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 130 | 66-140 |
| Decachlorobiphenyl | 146 | 51-152 |

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC408694

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 91 | 66-140 |
| Decachlorobiphenyl | 106 | 51-152 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC408698 | Batch#: | 130100 |
| Matrix: | Soil | Prepared: | 10/02/07 |
| Units: | ug/Kg | Analyzed: | 10/03/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3665A

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Aroclor-1016 | 166.6 | 162.0 | 97 | 69-142 |
| Aroclor-1260 | 166.6 | 176.9 | 106 | 69-155 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 94 | 66-140 |
| Decachlorobiphenyl | 107 | 51-152 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130100 |
| MSS Lab ID: | 197913-004 | Sampled: | 09/26/07 |
| Matrix: | Soil | Received: | 09/26/07 |
| Units: | ug/Kg | Prepared: | 10/02/07 |
| Basis: | as received | Analyzed: | 10/03/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC408699

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Aroclor-1016 | <2.294 | 165.0 | 186.1 | 113 | 62-139 |
| Aroclor-1260 | 62.07 | 165.0 | 207.6 | 88 | 54-143 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 108 | 66-140 |
| Decachlorobiphenyl | 119 | 51-152 |

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC408700

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Aroclor-1016 | 165.6 | 157.2 | 95 | 62-139 | 17 | 33 |
| Aroclor-1260 | 165.6 | 172.2 | 66 | 54-143 | 19 | 34 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 88 | 66-140 |
| Decachlorobiphenyl | 97 | 51-152 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-03-SS-0.0 | Basis: | as received |
| Lab ID: | 197910-001 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 09/25/07 |
| Units: | mg/Kg | Received: | 09/27/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 1.1 | 0.50 | 129961 | 09/27/07 | 10/01/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.2 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Barium | 80 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.33 | 0.10 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Chromium | 70 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cobalt | 18 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Copper | 17 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Lead | 18 | 0.20 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.22 | 0.020 | 130031 | 10/01/07 | 10/01/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Nickel | 100 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Selenium | ND | 0.50 | 129961 | 09/27/07 | 10/01/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Vanadium | 41 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Zinc | 41 | 1.0 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-03-SS-25.0 | Basis: | as received |
| Lab ID: | 197910-002 | Sampled: | 09/25/07 |
| Matrix: | Soil | Received: | 09/27/07 |
| Units: | mg/Kg | | |

| Analyte | Result | RL | Diln Fac | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Arsenic | 2.4 | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Barium | 140 | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.19 | 0.10 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Chromium | 320 | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cobalt | 130 | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Copper | 49 | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Lead | 3.1 | 0.23 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.55 | 0.020 | 1.000 | 130031 | 10/01/07 | 10/01/07 | METHOD | EPA 7471A |
| Molybdenum | 3.3 | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Nickel | 2,100 | 2.5 | 10.00 | 129961 | 09/27/07 | 10/01/07 | EPA 3050B | EPA 6010B |
| Selenium | 2.8 | 0.50 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Vanadium | 22 | 0.25 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Zinc | 31 | 1.0 | 1.000 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-11-SS-0.0' | Basis: | as received |
| Lab ID: | 197910-004 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | mg/Kg | Received: | 09/27/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.9 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Barium | 100 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.41 | 0.10 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Chromium | 62 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cobalt | 20 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Copper | 26 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Lead | 18 | 0.22 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.23 | 0.020 | 130031 | 10/01/07 | 10/01/07 | METHOD | EPA 7471A |
| Molybdenum | 0.51 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Nickel | 100 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Selenium | ND | 0.50 | 129961 | 09/27/07 | 10/01/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Vanadium | 47 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Zinc | 47 | 1.0 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-11-SS-35' | Basis: | as received |
| Lab ID: | 197910-005 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | mg/Kg | Received: | 09/27/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Arsenic | 8.2 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Barium | 110 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.46 | 0.10 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Chromium | 40 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cobalt | 16 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Copper | 52 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Lead | 6.7 | 0.22 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.072 | 0.020 | 130031 | 10/01/07 | 10/01/07 | METHOD | EPA 7471A |
| Molybdenum | 0.28 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Nickel | 69 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.5 | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Vanadium | 45 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Zinc | 68 | 1.0 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-12-SS-0.0' | Basis: | as received |
| Lab ID: | 197910-008 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 09/26/07 |
| Units: | mg/Kg | Received: | 09/27/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.9 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Barium | 74 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.36 | 0.10 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Chromium | 78 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Cobalt | 16 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Copper | 21 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Lead | 21 | 0.22 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.18 | 0.020 | 130031 | 10/01/07 | 10/01/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Nickel | 100 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Selenium | 0.76 | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Vanadium | 43 | 0.25 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |
| Zinc | 60 | 1.0 | 129961 | 09/27/07 | 09/29/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408129 | Batch#: | 129961 |
| Matrix: | Soil | Prepared: | 09/27/07 |
| Units: | mg/Kg | Analyzed: | 09/29/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | 0.48 b | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.23 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 129961 |
| Units: | mg/Kg | Prepared: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/29/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408130

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 88.63 | 89 | 80-120 |
| Arsenic | 50.00 | 45.04 | 90 | 80-120 |
| Barium | 100.0 | 87.21 | 87 | 80-120 |
| Beryllium | 2.500 | 2.434 | 97 | 80-120 |
| Cadmium | 10.00 | 8.934 | 89 | 80-120 |
| Chromium | 100.0 | 86.41 | 86 | 80-120 |
| Cobalt | 25.00 | 21.07 | 84 | 80-120 |
| Copper | 12.50 | 10.60 | 85 | 80-120 |
| Lead | 100.0 | 84.89 | 85 | 80-120 |
| Molybdenum | 20.00 | 18.12 | 91 | 80-120 |
| Nickel | 25.00 | 21.36 | 85 | 80-120 |
| Selenium | 50.00 | 43.66 | 87 | 80-120 |
| Silver | 10.00 | 8.567 | 86 | 80-120 |
| Thallium | 50.00 | 43.21 | 86 | 80-120 |
| Vanadium | 25.00 | 21.59 | 86 | 80-120 |
| Zinc | 25.00 | 21.98 | 88 | 80-120 |

Type: BSD Lab ID: QC408131

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 87.37 | 87 | 80-120 | 1 | 20 |
| Arsenic | 50.00 | 44.38 | 89 | 80-120 | 1 | 20 |
| Barium | 100.0 | 86.47 | 86 | 80-120 | 1 | 20 |
| Beryllium | 2.500 | 2.410 | 96 | 80-120 | 1 | 20 |
| Cadmium | 10.00 | 8.855 | 89 | 80-120 | 1 | 20 |
| Chromium | 100.0 | 84.87 | 85 | 80-120 | 2 | 20 |
| Cobalt | 25.00 | 20.86 | 83 | 80-120 | 1 | 20 |
| Copper | 12.50 | 10.50 | 84 | 80-120 | 1 | 20 |
| Lead | 100.0 | 83.99 | 84 | 80-120 | 1 | 20 |
| Molybdenum | 20.00 | 17.83 | 89 | 80-120 | 2 | 20 |
| Nickel | 25.00 | 21.19 | 85 | 80-120 | 1 | 20 |
| Selenium | 50.00 | 43.21 | 86 | 80-120 | 1 | 20 |
| Silver | 10.00 | 8.465 | 85 | 80-120 | 1 | 20 |
| Thallium | 50.00 | 42.76 | 86 | 80-120 | 1 | 20 |
| Vanadium | 25.00 | 21.36 | 85 | 80-120 | 1 | 20 |
| Zinc | 25.00 | 21.77 | 87 | 80-120 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 129961 |
| MSS Lab ID: | 197894-011 | Sampled: | 09/25/07 |
| Matrix: | Soil | Received: | 09/25/07 |
| Units: | mg/Kg | Prepared: | 09/27/07 |
| Basis: | as received | Analyzed: | 09/29/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC408132

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 1.104 | 93.46 | 30.72 | 32 | 1-122 |
| Arsenic | 6.773 | 46.73 | 46.53 | 85 | 72-120 |
| Barium | 168.5 | 93.46 | 245.3 | 82 | 49-139 |
| Beryllium | 0.4134 | 2.336 | 2.567 | 92 | 80-120 |
| Cadmium | 0.06297 | 9.346 | 7.885 | 84 | 74-120 |
| Chromium | 60.67 | 93.46 | 135.2 | 80 | 65-120 |
| Cobalt | 12.99 | 23.36 | 31.63 | 80 | 60-120 |
| Copper | 26.48 | 11.68 | 36.94 | 89 | 47-146 |
| Lead | 11.41 | 93.46 | 85.65 | 79 | 53-123 |
| Molybdenum | 0.1521 | 18.69 | 14.37 | 76 | 66-120 |
| Nickel | 78.68 | 23.36 | 96.87 | 78 | 43-142 |
| Selenium | <0.07415 | 46.73 | 39.52 | 85 | 71-120 |
| Silver | 0.08443 | 9.346 | 8.128 | 86 | 66-120 |
| Thallium | 0.1285 | 46.73 | 36.95 | 79 | 62-120 |
| Vanadium | 34.45 | 23.36 | 53.57 | 82 | 52-139 |
| Zinc | 63.89 | 23.36 | 81.71 | 76 | 42-147 |

Type: MSD Lab ID: QC408133

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 97.09 | 32.83 | 33 | 1-122 | 3 | 30 |
| Arsenic | 48.54 | 47.36 | 84 | 72-120 | 2 | 20 |
| Barium | 97.09 | 246.1 | 80 | 49-139 | 1 | 23 |
| Beryllium | 2.427 | 2.626 | 91 | 80-120 | 1 | 20 |
| Cadmium | 9.709 | 8.051 | 82 | 74-120 | 2 | 20 |
| Chromium | 97.09 | 136.8 | 78 | 65-120 | 1 | 20 |
| Cobalt | 24.27 | 32.18 | 79 | 60-120 | 1 | 24 |
| Copper | 12.14 | 36.74 | 85 | 47-146 | 2 | 21 |
| Lead | 97.09 | 87.29 | 78 | 53-123 | 2 | 28 |
| Molybdenum | 19.42 | 14.89 | 76 | 66-120 | 0 | 20 |
| Nickel | 24.27 | 96.29 | 73 | 43-142 | 1 | 26 |
| Selenium | 48.54 | 41.46 | 85 | 71-120 | 1 | 20 |
| Silver | 9.709 | 8.296 | 85 | 66-120 | 2 | 20 |
| Thallium | 48.54 | 38.16 | 78 | 62-120 | 1 | 20 |
| Vanadium | 24.27 | 54.33 | 82 | 52-139 | 0 | 20 |
| Zinc | 24.27 | 81.06 | 71 | 42-147 | 2 | 27 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408403 | Batch#: | 130031 |
| Matrix: | Soil | Prepared: | 10/01/07 |
| Units: | mg/Kg | Analyzed: | 10/01/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130031 |
| Units: | mg/Kg | Prepared: | 10/01/07 |
| Basis: | as received | Analyzed: | 10/01/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC408404 | 0.5000 | 0.5180 | 104 | 80-120 | | |
| BSD | QC408405 | 0.5000 | 0.4930 | 99 | 80-120 | 5 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130031 |
| MSS Lab ID: | 197895-055 | Sampled: | 09/25/07 |
| Matrix: | Soil | Received: | 09/25/07 |
| Units: | mg/Kg | Prepared: | 10/01/07 |
| Basis: | as received | Analyzed: | 10/01/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC408407 | 0.03185 | 0.5208 | 0.5823 | 106 | 70-143 | | |
| MSD | QC408408 | | 0.4545 | 0.5100 | 105 | 70-143 | 0 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-03-GW-10' | Sampled: | 09/25/07 |
| Lab ID: | 197910-003 | Received: | 09/27/07 |
| Matrix: | Filtrate | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL | Batch# | Prep | Analysis |
|---|---|---|---|---|---|
| Antimony | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 129973 | EPA 3010A | EPA 6010B |
| Barium | 100 | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 129973 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 129973 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 129985 | METHOD | EPA 7470A |
| Molybdenum | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Nickel | 13 | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 129973 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-11-GW-24' | Sampled: | 09/26/07 |
| Lab ID: | 197910-006 | Received: | 09/27/07 |
| Matrix: | Filtrate | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL | Batch# | Prep | Analysis |
|---|---|---|---|---|---|
| Antimony | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 129973 | EPA 3010A | EPA 6010B |
| Barium | 330 | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 129973 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 129973 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 129985 | METHOD | EPA 7470A |
| Molybdenum | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 129973 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 129973 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 129973 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408190 | Batch#: | 129973 |
| Matrix: | Filtrate | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 6.1 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.0 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Filtrate | Batch#: | 129973 |
| Units: | ug/L | Prepared: | 09/28/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408191

| Analyte | Spiked | Result | %REC | Limits | Analyzed |
|---|---|---|---|---|---|
| Antimony | 500.0 | 540.7 | 108 | 80-120 | 09/28/07 |
| Arsenic | 100.0 | 99.83 | 100 | 80-120 | 10/03/07 |
| Barium | 2,000 | 2,066 | 103 | 80-120 | 09/28/07 |
| Beryllium | 50.00 | 57.71 | 115 | 80-120 | 09/28/07 |
| Cadmium | 50.00 | 59.20 | 118 | 80-120 | 09/28/07 |
| Chromium | 200.0 | 207.5 | 104 | 80-120 | 09/28/07 |
| Cobalt | 500.0 | 517.5 | 104 | 80-120 | 09/28/07 |
| Copper | 250.0 | 237.0 | 95 | 80-120 | 09/28/07 |
| Lead | 100.0 | 103.4 | 103 | 80-120 | 09/28/07 |
| Molybdenum | 400.0 | 421.1 | 105 | 80-120 | 09/28/07 |
| Nickel | 500.0 | 535.9 | 107 | 80-120 | 09/28/07 |
| Selenium | 100.0 | 115.9 | 116 | 80-120 | 09/28/07 |
| Silver | 50.00 | 47.29 | 95 | 80-120 | 09/28/07 |
| Thallium | 100.0 | 102.3 | 102 | 80-120 | 09/28/07 |
| Vanadium | 500.0 | 504.3 | 101 | 80-120 | 09/28/07 |
| Zinc | 500.0 | 584.0 | 117 | 80-120 | 09/28/07 |

Type: BSD Lab ID: QC408192

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | 500.0 | 514.8 | 103 | 80-120 | 5 | 20 | 09/28/07 |
| Arsenic | 100.0 | 99.46 | 99 | 80-120 | 0 | 20 | 10/03/07 |
| Barium | 2,000 | 2,021 | 101 | 80-120 | 2 | 20 | 09/28/07 |
| Beryllium | 50.00 | 56.37 | 113 | 80-120 | 2 | 20 | 09/28/07 |
| Cadmium | 50.00 | 54.21 | 108 | 80-120 | 9 | 20 | 09/28/07 |
| Chromium | 200.0 | 202.7 | 101 | 80-120 | 2 | 20 | 09/28/07 |
| Cobalt | 500.0 | 501.8 | 100 | 80-120 | 3 | 20 | 09/28/07 |
| Copper | 250.0 | 240.9 | 96 | 80-120 | 2 | 20 | 09/28/07 |
| Lead | 100.0 | 97.94 | 98 | 80-120 | 5 | 20 | 09/28/07 |
| Molybdenum | 400.0 | 404.3 | 101 | 80-120 | 4 | 20 | 09/28/07 |
| Nickel | 500.0 | 513.7 | 103 | 80-120 | 4 | 20 | 09/28/07 |
| Selenium | 100.0 | 103.6 | 104 | 80-120 | 11 | 20 | 09/28/07 |
| Silver | 50.00 | 48.06 | 96 | 80-120 | 2 | 20 | 09/28/07 |
| Thallium | 100.0 | 106.2 | 106 | 80-120 | 4 | 20 | 09/28/07 |
| Vanadium | 500.0 | 501.7 | 100 | 80-120 | 1 | 20 | 09/28/07 |
| Zinc | 500.0 | 540.1 | 108 | 80-120 | 8 | 20 | 09/28/07 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | B-02-GW-30' | Batch#: | 129973 |
| MSS Lab ID: | 197909-003 | Sampled: | 09/25/07 |
| Matrix: | Filtrate | Received: | 09/27/07 |
| Units: | ug/L | Prepared: | 09/28/07 |
| Diln Fac: | 1.000 | Analyzed: | 09/28/07 |

Type: MS Lab ID: QC408193

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 4.140 | 500.0 | 502.5 | 100 | 80-120 |
| Arsenic | <2.042 | 100.0 | 113.3 | 113 | 80-127 |
| Barium | 198.9 | 2,000 | 2,103 | 95 | 80-120 |
| Beryllium | 0.2294 | 50.00 | 54.09 | 108 | 80-120 |
| Cadmium | <0.1091 | 50.00 | 50.17 | 100 | 80-120 |
| Chromium | <0.2448 | 200.0 | 193.2 | 97 | 80-120 |
| Cobalt | <0.3034 | 500.0 | 464.0 | 93 | 80-120 |
| Copper | 2.701 | 250.0 | 242.9 | 96 | 80-120 |
| Lead | <0.6892 | 100.0 | 93.43 | 93 | 76-120 |
| Molybdenum | 1.197 | 400.0 | 392.8 | 98 | 80-120 |
| Nickel | 1.392 | 500.0 | 462.1 | 92 | 80-120 |
| Selenium | 2.513 | 100.0 | 97.80 | 95 | 80-128 |
| Silver | <0.7459 | 50.00 | 47.92 | 96 | 73-122 |
| Thallium | 3.418 | 100.0 | 101.5 | 98 | 78-120 |
| Vanadium | <1.034 | 500.0 | 485.6 | 97 | 80-120 |
| Zinc | 8.891 | 500.0 | 495.4 | 97 | 80-123 |

Type: MSD Lab ID: QC408194

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 517.4 | 103 | 80-120 | 3 | 20 |
| Arsenic | 100.0 | 114.8 | 115 | 80-127 | 1 | 20 |
| Barium | 2,000 | 2,179 | 99 | 80-120 | 4 | 20 |
| Beryllium | 50.00 | 55.59 | 111 | 80-120 | 3 | 20 |
| Cadmium | 50.00 | 51.46 | 103 | 80-120 | 3 | 20 |
| Chromium | 200.0 | 198.8 | 99 | 80-120 | 3 | 20 |
| Cobalt | 500.0 | 477.5 | 95 | 80-120 | 3 | 20 |
| Copper | 250.0 | 250.9 | 99 | 80-120 | 3 | 20 |
| Lead | 100.0 | 96.31 | 96 | 76-120 | 3 | 20 |
| Molybdenum | 400.0 | 405.0 | 101 | 80-120 | 3 | 20 |
| Nickel | 500.0 | 476.6 | 95 | 80-120 | 3 | 20 |
| Selenium | 100.0 | 102.0 | 99 | 80-128 | 4 | 20 |
| Silver | 50.00 | 49.19 | 98 | 73-122 | 3 | 20 |
| Thallium | 100.0 | 106.1 | 103 | 78-120 | 4 | 20 |
| Vanadium | 500.0 | 498.1 | 100 | 80-120 | 3 | 20 |
| Zinc | 500.0 | 513.0 | 101 | 80-123 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 129985 |
| Lab ID: | QC408228 | Prepared: | 09/28/07 |
| Matrix: | Filtrate | Analyzed: | 09/28/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 129985 |
| Matrix: | Filtrate | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC408229 | 5.000 | 5.240 | 105 | 80-120 | | |
| BSD | QC408230 | 5.000 | 5.230 | 105 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 129985 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 09/25/07 |
| MSS Lab ID: | 197861-002 | Received: | 09/25/07 |
| Matrix: | Water | Prepared: | 09/28/07 |
| Units: | ug/L | Analyzed: | 09/28/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC408232 | 0.1290 | 5.000 | 5.800 | 113 | 79-125 | | |
| MSD | QC408233 | | 5.000 | 5.750 | 112 | 79-125 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Matrix: | Water | Batch#: | 129933 |
| Units: | mg/L | Received: | 09/27/07 |

| Field ID | Type | Lab ID | Result | RL | Sampled | Analyzed |
|---|---|---|---|---|---|---|
| B-03-GW-10' | SAMPLE | 197910-003 | 0.82 | 0.05 | 09/25/07 16:30 | 09/27/07 11:54 |
| B-11-GW-24' | SAMPLE | 197910-006 | 4.5 | 0.05 | 09/26/07 12:00 | 09/27/07 11:16 |
| | BLANK | QC408021 | ND | 0.05 | | 09/27/07 10:20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | B-03-GW-10' | Batch#: | 129933 |
| MSS Lab ID: | 197910-003 | Sampled: | 09/25/07 16:30 |
| Matrix: | Water | Received: | 09/27/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC408022 | | 1.000 | 0.9680 | 97 | 80-120 | | | 1.000 | 09/27/07 12:27 |
| BSD | QC408023 | | 1.000 | 0.9534 | 95 | 80-120 | 2 | 20 | 1.000 | 09/27/07 12:45 |
| MS | QC408060 | 0.8191 | 2.500 | 3.186 | 95 | 80-120 | | | 5.000 | 09/27/07 13:22 |
| MSD | QC408061 | | 2.500 | 3.028 | 88 | 80-120 | 5 | 20 | 5.000 | 09/27/07 13:40 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130091 |
| Units: | mg/Kg | Received: | 09/27/07 |
| Basis: | as received | | |

| Field ID | Type | Lab ID | Result | RL | Sampled | Analyzed |
|---|---|---|---|---|---|---|
| B-03-SS-25.0 | SAMPLE | 197910-002 | ND | 0.5 | 09/25/07 13:00 | 10/02/07 14:26 |
| B-11-SS-35' | SAMPLE | 197910-005 | ND | 0.5 | 09/26/07 09:30 | 10/02/07 14:47 |
| | BLANK | QC408656 | ND | 0.5 | | 10/02/07 13:28 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197910 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | mg/Kg | Batch#: | 130091 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|---|
| BS | QC408657 | 10.00 | 9.704 | 97 | 80-120 | | | 10/02/07 13:45 |
| BSD | QC408658 | 10.00 | 9.781 | 98 | 80-120 | 1 | 20 | 10/02/07 14:02 |

RPD= Relative Percent Difference

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510-204-2225

~~197909~~ AMK 09/26/07

# Chain of Custody Record

197910

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 9/25/07 |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | 1827-15-B |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | 1 of 2 COCs |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | Job No. 379-1827-15-02 |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | SDG No. |
| Project Name: Cloverdale Project | ☐ 1 week | | |
| Site: Cloverdale, Ca | ☐ 2 days | | |
| C&T-WO-07-002 | ☐ 1 day | | |

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filtered Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B-03-55-0.0 | 9/25/07 | 12:00 | 250ml poly | So | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| 2 | B-03-55-25.0 | | 13:00 | 250ml poly | So | 1 | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 3 | B-03-GW-10' | | 16:30 | VOA | GW | 3 | | ✓ | | | | | | | |
| | | | | VOA | | 3 | | | | | ✓ | | | | |
| | | | | 1L amber | | 2 | | | | | | | | hold | Hold |
| | | | | 1L amber | | 1 | | | | ✓ | | | | | |
| | | | | 1L amber | | 1 | | | | | | | hold | | Hold |
| | | | | 250ml poly | | 1 | | | | | | ✓ | | | |
| | | | | 250ml poly | | 1 | ✓ | | ✓ | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| NA | Trip Blank | | | VOA | AQ | 1 | | | | | | | | | |

**Preservation Used:** 1= Ice, 2= HCl; 3= $H_2SO_4$; 4=$HNO_3$; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For _____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Richard A-C | Weiss Associates | 9/25/07 17:00 | Anne Kath | C&T | 9/27/07 10:30 AM |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

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510-204-2225

197910

# Chain of Custody Record

| | | | | |
|---|---|---|---|---|
| Weiss Associates | Project Manager: J. Adams | Site Contact: R. Davis | Date: 9/26/07 | 1827-15 - C |
| 5801 Christie Avenue, Suite 600 | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS | 2 of 2 COCs |
| Emeryville, CA 94608 | Analysis Turnaround Time | | | Job No. 379-1827-15-02 |
| (510) - 450 - 6000 Phone | Calendar ( C ) or Work Days (W) 5 days | | | |
| (510) - 547 - 5043 FAX | TAT if different from above: 5 days | | | SDG No. |
| Project Name: Cloverdale Project | ☐ 2 weeks | | | |
| Site: Cloverdale, Ca | ☐ 1 week | | | |
| C&T-WO-07-002 | ☐ 2 days | | | |
| | ☐ 1 day | | | |

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | B-11-SS-0.0' | 9/26/07 | 8:00 | Poly | SO | 1 | ✓ | ✓ | ✓ | ✓ | | ✓ | X | AMK | |
| 5 | B-11-SS-35' | | 09:30 | Poly | SO | 1 | ✓ | ✓ | ✓ | ✓ | ✓ | | | 9/27/07 | |
| 6 | B-11-GW-24' | 9/26/07 | 12:00 | VOA | GW | 3 | ✓ | | | | | | | | per J. Adams 9/27/07 |
| | ↓ | ↓ | ↓ | VOA | ↓ | 3 | | | | ✓ | | | | | |
| | | | | 1L amber | | 2 | | | ✓ | | | | | | |
| | | | | Poly | | 1 | | ✓ | | | | | | | |
| | | | | 250 ml poly | | 1 | | | | | ✓ | | | | |
| 8 | B-12-SS-0.0' | 9/26/07 | 10:50 | POLY | SO | 1 | X | X | X | X | X | X | X | AMK 9/27/07 | |
| 7 | Trip Blank | | | VOA | AQ | 1 | | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ________

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For ________ Months*

Special Instructions/QC Requirements & Comments:
Received

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Weiss Associates | 9/26/07 14:00 | Anne Kathain | C&T | 9/27/07 10:30 Am |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

**Subject:** Re: 379-1827-15-02 - C&T Login Summary (197910)
**From:** "Joyce E. Adams" <jea@weiss.com>
**Date:** Thu, 27 Sep 2007 15:25:55 -0700
**To:** "Anne Kathain" <Anne@ctberk.com>
**CC:** "Joyce E. Adams" <JEA@weiss.com>

This looks correct and yes please run the trip blank for VOCs.

Thank you,
Joyce

"Anne Kathain" <Anne@ctberk.com> 9/27/2007 2:52 PM >>>

********Please confirm whether or not you need the TRIP BLANK analyzed*******
C&T Login Summary for 197910

Project:379-1827-15-02

Site:Cloverdale Project
Lab Login #:197910
Report Due:10/04/07
PO#:
C&T Proj Mgr:Anne Kathain

Report To:Weiss Associates

350 East Middlefield Rd

Mountain View, CA 94043

ATTN: Joyce Adams

(650) 968-7000

Bill To:Weiss Associates

350 East Middlefield Rd

Mountain View, CA 94043

ATTN: Joyce Adams

(650) 968-7000

Client IDLab IDSampledReceivedMatrixAnalysesCOC #Comments
B-03-SS-0.000109/2509/27

use Project ID as Project#; for RSK-175-CO2 write "RSK-CO2" on

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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 350 East Middlefield Rd | Location : Cloverdale Project |
| Mountain View, CA 94043 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-03-GW-7.5 | 197961-001 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/05/2007
Project Manager

Signature: _____ Date: 10/08/2007
Operations Manager

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# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **197961** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **09/28/07** |
| Samples Received: | **09/28/07** |

This hardcopy data package contains sample and QC results for one water sample, requested for the above referenced project on 09/28/07. The sample was received on ice and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B):**
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the LCS/MS/MSD for batch 130056. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B):**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A):**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0):**
No analytical problems were encountered.

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-03-GW-7.5 | Batch#: | 130056 |
| Matrix: | Water | Sampled: | 09/27/07 |
| Units: | ug/L | Received: | 09/28/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/01/07 |

Type: SAMPLE Lab ID: 197961-001

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 116 | 73-134 |
| Bromofluorobenzene (FID) | 120 | 77-140 |

Type: BLANK Lab ID: QC408510

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 105 | 73-134 |
| Bromofluorobenzene (FID) | 100 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC408511 | Batch#: | 130056 |
| Matrix: | Water | Analyzed: | 10/01/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,739 | 87 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 148 * | 73-134 |
| Bromofluorobenzene (FID) | 138 | 77-140 |

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130056 |
| MSS Lab ID: | 197825-003 | Sampled: | 09/24/07 |
| Matrix: | Water | Received: | 09/24/07 |
| Units: | ug/L | Analyzed: | 10/02/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC408512

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 794.2 | 2,000 | 2,647 | 93 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 141 * | 73-134 |
| Bromofluorobenzene (FID) | 192 * | 77-140 |

Type: MSD Lab ID: QC408513

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 2,628 | 92 | 72-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 132 | 73-134 |
| Bromofluorobenzene (FID) | 177 * | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-03-GW-7.5 | Batch#: | 130096 |
| Matrix: | Water | Sampled: | 09/27/07 |
| Units: | ug/L | Received: | 09/28/07 |
| Diln Fac: | 1.000 | Prepared: | 10/02/07 |

Type: SAMPLE Analyzed: 10/04/07
Lab ID: 197961-001

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | 79 Y | 50 | |
| Motor Oil C24-C36 | 120 J | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 99 | 61-133 |

Type: BLANK Analyzed: 10/03/07
Lab ID: QC408677

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 98 | 61-133 |

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130096 |
| Units: | ug/L | Prepared: | 10/02/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/03/07 |

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC408678

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 1,892 | 76 | 58-128 |

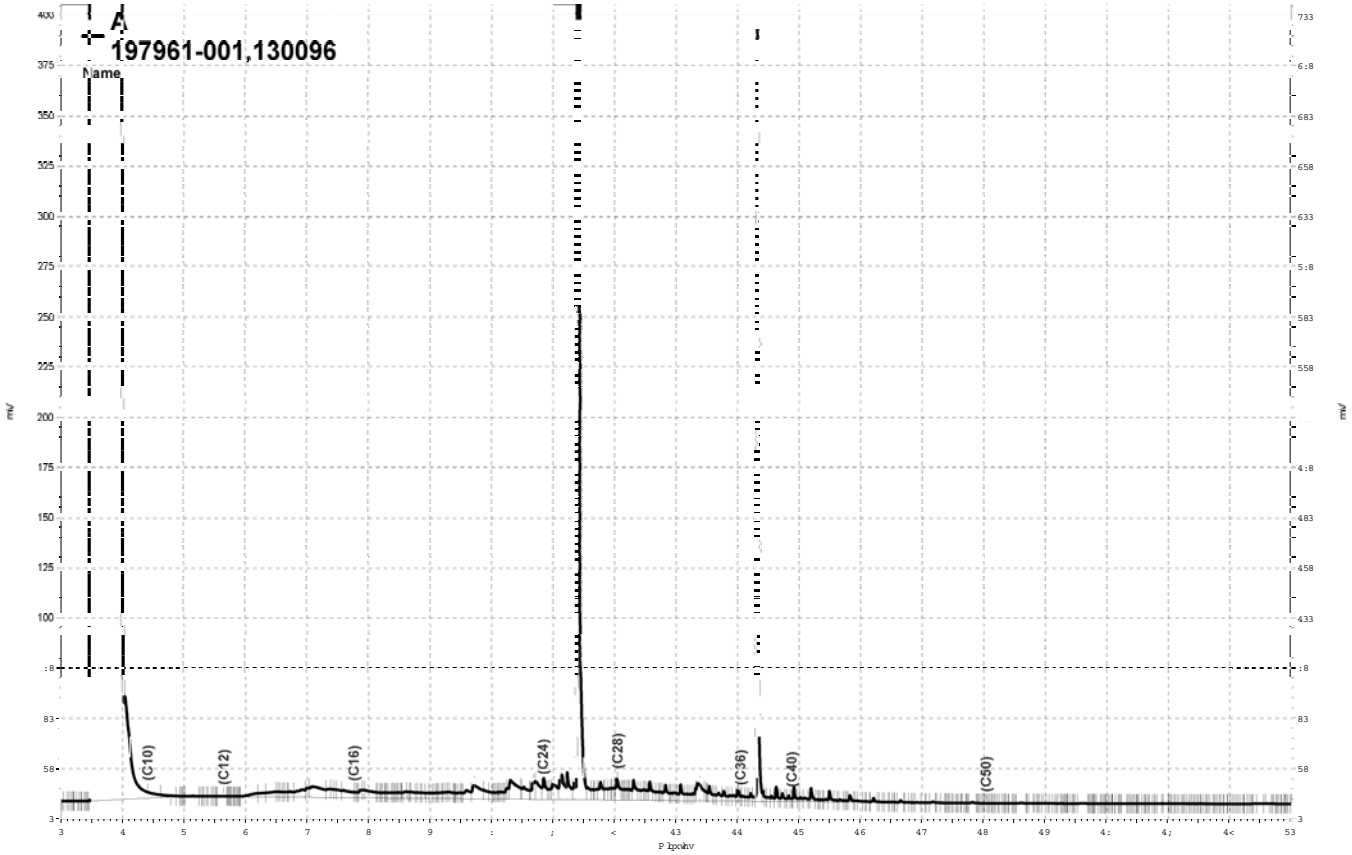
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 80 | 61-133 |

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC408679

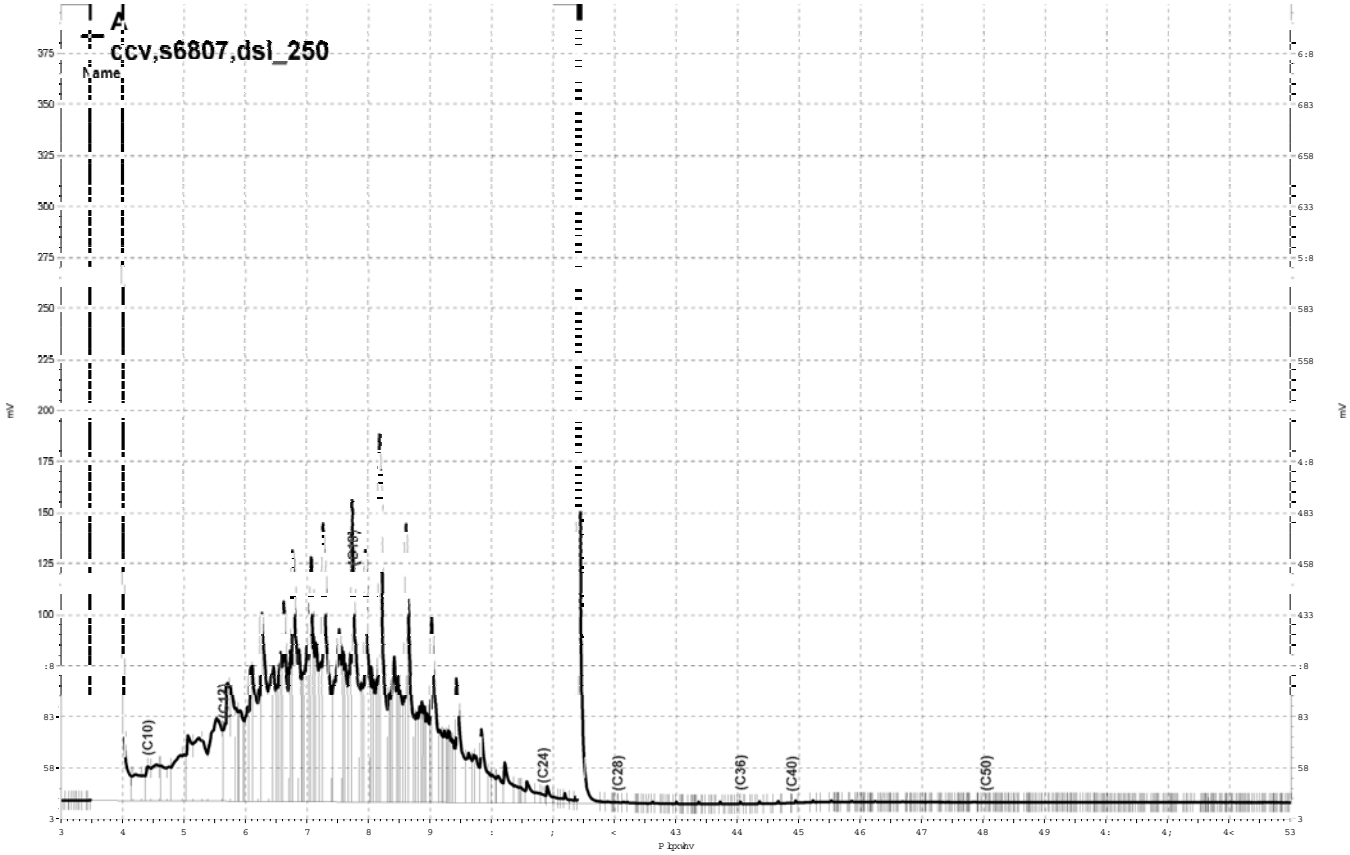
| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,464 | 99 | 58-128 | 26 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 103 | 61-133 |

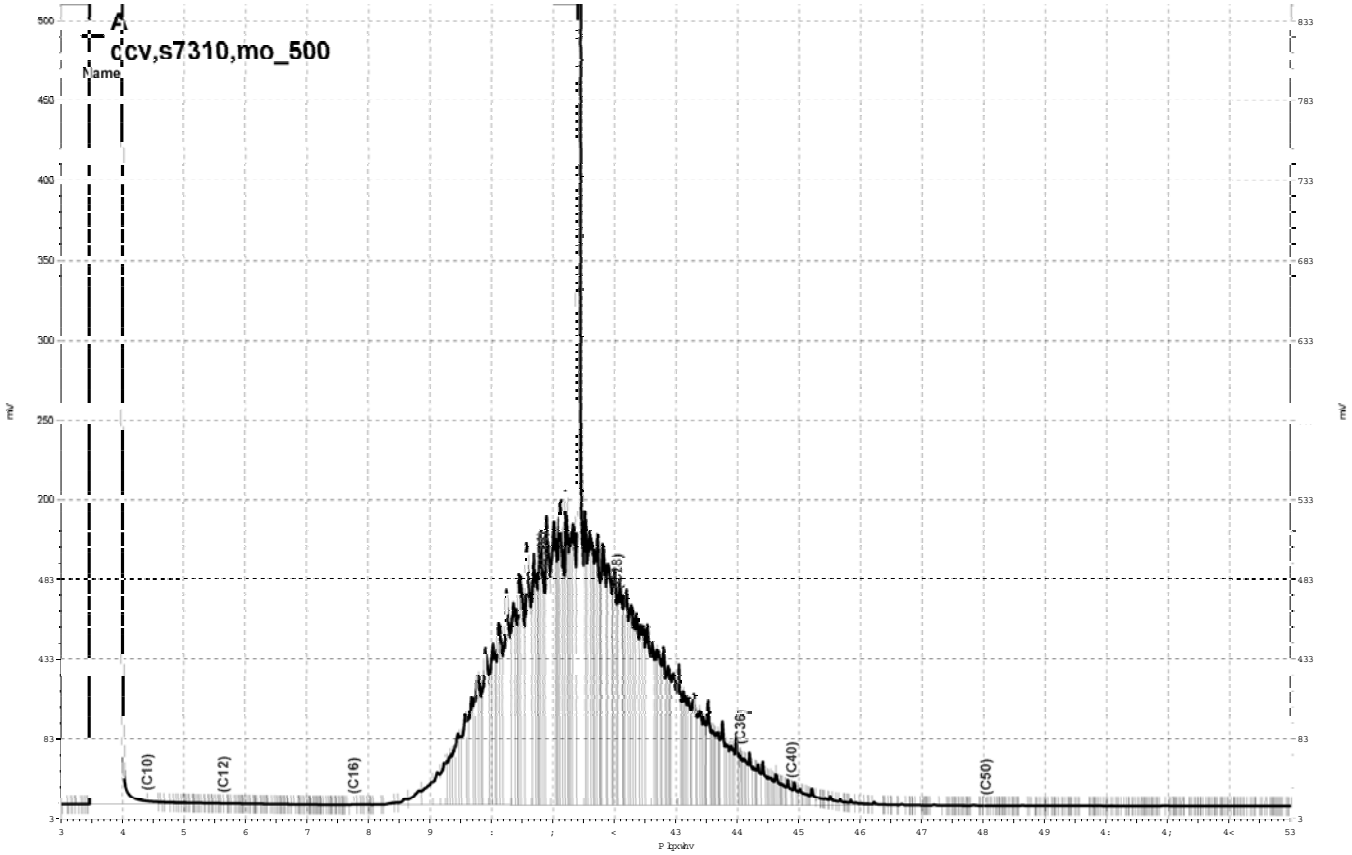
RPD= Relative Percent Difference




_Olp v jgulyh_h}fkurp_SurmfwvJF44D_Gdwd_5:9d369/D




_Olp v jgulyh_h}fkurp_SurmfwvJF44D_Gdwd_5:9d363/D




_Olp v jgulyh_h}fkurp_SurmfwJF44D_Gdwd_5:9d364/D

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# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-03-GW-7.5 | Batch#: | 130029 |
| Lab ID: | 197961-001 | Sampled: | 09/27/07 |
| Matrix: | Water | Received: | 09/28/07 |
| Units: | ug/L | Analyzed: | 10/01/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-03-GW-7.5 | Batch#: | 130029 |
| Lab ID: | 197961-001 | Sampled: | 09/27/07 |
| Matrix: | Water | Received: | 09/28/07 |
| Units: | ug/L | Analyzed: | 10/01/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 119 | 74-137 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 130029 |
| Units: | ug/L | Analyzed: | 10/01/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408398

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 22.29 | 89 | 80-133 |
| Benzene | 25.00 | 22.79 | 91 | 80-120 |
| Trichloroethene | 25.00 | 26.27 | 105 | 80-120 |
| Toluene | 25.00 | 26.47 | 106 | 80-122 |
| Chlorobenzene | 25.00 | 24.14 | 97 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 118 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 101 | 80-120 |

Type: BSD Lab ID: QC408399

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 21.02 | 84 | 80-133 | 6 | 20 |
| Benzene | 25.00 | 22.33 | 89 | 80-120 | 2 | 20 |
| Trichloroethene | 25.00 | 25.59 | 102 | 80-120 | 3 | 20 |
| Toluene | 25.00 | 24.00 | 96 | 80-122 | 10 | 20 |
| Chlorobenzene | 25.00 | 23.07 | 92 | 80-120 | 5 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 101 | 80-122 |
| 1,2-Dichloroethane-d4 | 120 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408400 | Batch#: | 130029 |
| Matrix: | Water | Analyzed: | 10/01/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408400 | Batch#: | 130029 |
| Matrix: | Water | Analyzed: | 10/01/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 124 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-03-GW-7.5 | Diln Fac: | 1.000 |
| Lab ID: | 197961-001 | Sampled: | 09/27/07 |
| Matrix: | Filtrate | Received: | 09/28/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Barium | 470 | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.4 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130083 | 10/02/07 | 10/02/07 | METHOD | EPA 7470A |
| Molybdenum | 270 | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Nickel | 37 | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408391 | Batch#: | 130028 |
| Matrix: | Water | Prepared: | 10/01/07 |
| Units: | ug/L | Analyzed: | 10/01/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 5.0 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.4 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130028 |
| Units: | ug/L | Prepared: | 10/01/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/01/07 |

Type: BS Lab ID: QC408392

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 455.3 | 91 | 80-120 |
| Arsenic | 100.0 | 95.70 | 96 | 80-120 |
| Barium | 2,000 | 1,786 | 89 | 80-120 |
| Beryllium | 50.00 | 51.49 | 103 | 80-120 |
| Cadmium | 50.00 | 46.43 | 93 | 80-120 |
| Chromium | 200.0 | 178.0 | 89 | 80-120 |
| Cobalt | 500.0 | 437.7 | 88 | 80-120 |
| Copper | 250.0 | 223.2 | 89 | 80-120 |
| Lead | 100.0 | 88.14 | 88 | 80-120 |
| Molybdenum | 400.0 | 366.1 | 92 | 80-120 |
| Nickel | 500.0 | 447.1 | 89 | 80-120 |
| Selenium | 100.0 | 95.32 | 95 | 80-120 |
| Silver | 50.00 | 45.41 | 91 | 80-120 |
| Thallium | 100.0 | 94.91 | 95 | 80-120 |
| Vanadium | 500.0 | 452.0 | 90 | 80-120 |
| Zinc | 500.0 | 463.5 | 93 | 80-120 |

Type: BSD Lab ID: QC408393

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 443.9 | 89 | 80-120 | 3 | 20 |
| Arsenic | 100.0 | 91.64 | 92 | 80-120 | 4 | 20 |
| Barium | 2,000 | 1,719 | 86 | 80-120 | 4 | 20 |
| Beryllium | 50.00 | 49.60 | 99 | 80-120 | 4 | 20 |
| Cadmium | 50.00 | 45.12 | 90 | 80-120 | 3 | 20 |
| Chromium | 200.0 | 173.1 | 87 | 80-120 | 3 | 20 |
| Cobalt | 500.0 | 421.2 | 84 | 80-120 | 4 | 20 |
| Copper | 250.0 | 214.9 | 86 | 80-120 | 4 | 20 |
| Lead | 100.0 | 84.72 | 85 | 80-120 | 4 | 20 |
| Molybdenum | 400.0 | 356.6 | 89 | 80-120 | 3 | 20 |
| Nickel | 500.0 | 429.7 | 86 | 80-120 | 4 | 20 |
| Selenium | 100.0 | 93.39 | 93 | 80-120 | 2 | 20 |
| Silver | 50.00 | 43.69 | 87 | 80-120 | 4 | 20 |
| Thallium | 100.0 | 92.92 | 93 | 80-120 | 2 | 20 |
| Vanadium | 500.0 | 433.5 | 87 | 80-120 | 4 | 20 |
| Zinc | 500.0 | 444.2 | 89 | 80-120 | 4 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | B-03-GW-7.5 | Batch#: | 130028 |
| MSS Lab ID: | 197961-001 | Sampled: | 09/27/07 |
| Matrix: | Water | Received: | 09/28/07 |
| Units: | ug/L | Prepared: | 10/01/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/01/07 |

Type: MS Lab ID: QC408394

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | <0.9637 | 500.0 | 451.7 | 90 | 80-120 |
| Arsenic | 1.407 | 100.0 | 96.66 | 95 | 80-127 |
| Barium | 473.5 | 2,000 | 2,300 | 91 | 80-120 |
| Beryllium | 0.1753 | 50.00 | 52.98 | 106 | 80-120 |
| Cadmium | <0.3555 | 50.00 | 46.09 | 92 | 80-120 |
| Chromium | 1.093 | 200.0 | 179.3 | 89 | 80-120 |
| Cobalt | 0.6526 | 500.0 | 431.8 | 86 | 80-120 |
| Copper | 2.108 | 250.0 | 226.9 | 90 | 80-120 |
| Lead | <1.150 | 100.0 | 86.65 | 87 | 76-120 |
| Molybdenum | 269.6 | 400.0 | 643.9 | 94 | 80-120 |
| Nickel | 37.34 | 500.0 | 472.4 | 87 | 80-120 |
| Selenium | 5.068 | 100.0 | 99.50 | 94 | 80-128 |
| Silver | <0.7500 | 50.00 | 45.85 | 92 | 73-122 |
| Thallium | 2.322 | 100.0 | 93.35 | 91 | 78-120 |
| Vanadium | <0.6065 | 500.0 | 456.3 | 91 | 80-120 |
| Zinc | <3.056 | 500.0 | 462.2 | 92 | 80-123 |

Type: MSD Lab ID: QC408395

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 449.1 | 90 | 80-120 | 1 | 20 |
| Arsenic | 100.0 | 98.87 | 97 | 80-127 | 2 | 20 |
| Barium | 2,000 | 2,306 | 92 | 80-120 | 0 | 20 |
| Beryllium | 50.00 | 53.09 | 106 | 80-120 | 0 | 20 |
| Cadmium | 50.00 | 47.23 | 94 | 80-120 | 2 | 20 |
| Chromium | 200.0 | 183.7 | 91 | 80-120 | 2 | 20 |
| Cobalt | 500.0 | 433.2 | 87 | 80-120 | 0 | 20 |
| Copper | 250.0 | 228.1 | 90 | 80-120 | 1 | 20 |
| Lead | 100.0 | 88.28 | 88 | 76-120 | 2 | 20 |
| Molybdenum | 400.0 | 654.2 | 96 | 80-120 | 2 | 20 |
| Nickel | 500.0 | 474.7 | 87 | 80-120 | 0 | 20 |
| Selenium | 100.0 | 102.7 | 98 | 80-128 | 3 | 20 |
| Silver | 50.00 | 46.02 | 92 | 73-122 | 0 | 20 |
| Thallium | 100.0 | 96.12 | 94 | 78-120 | 3 | 20 |
| Vanadium | 500.0 | 458.9 | 92 | 80-120 | 1 | 20 |
| Zinc | 500.0 | 463.5 | 93 | 80-123 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130083 |
| Lab ID: | QC408622 | Prepared: | 10/02/07 |
| Matrix: | Water | Analyzed: | 10/02/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130083 |
| Matrix: | Water | Prepared: | 10/02/07 |
| Units: | ug/L | Analyzed: | 10/02/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC408623 | 5.000 | 5.440 | 109 | 80-120 | | |
| BSD | QC408624 | 5.000 | 5.350 | 107 | 80-120 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130083 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 09/25/07 |
| MSS Lab ID: | 197861-001 | Received: | 09/25/07 |
| Matrix: | Filtrate | Prepared: | 10/02/07 |
| Units: | ug/L | Analyzed: | 10/02/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC408626 | <0.04502 | 5.000 | 5.860 | 117 | 79-125 | | |
| MSD | QC408627 | | 5.000 | 5.890 | 118 | 79-125 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-03-GW-7.5 | Batch#: | 130003 |
| Matrix: | Water | Sampled: | 09/27/07 13:00 |
| Units: | mg/L | Received: | 09/28/07 |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 197961-001 | 0.28 | 0.05 | 09/28/07 15:11 |
| BLANK | QC408292 | ND | 0.05 | 09/28/07 14:07 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197961 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130003 |
| MSS Lab ID: | 197962-001 | Sampled: | 09/28/07 08:20 |
| Matrix: | Water | Received: | 09/28/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC408293 | | 1.000 | 0.9534 | 95 | 80-120 | | | 1.000 | 09/28/07 14:24 |
| BSD | QC408294 | | 1.000 | 0.9615 | 96 | 80-120 | 1 | 20 | 1.000 | 09/28/07 14:42 |
| MS | QC408311 | 12.04 | 5.000 | 16.95 | 98 | 80-120 | | | 10.00 | 09/28/07 18:09 |
| MSD | QC408312 | | 5.000 | 16.95 | 98 | 80-120 | 0 | 20 | 10.00 | 09/28/07 18:27 |

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

# Chain of Custody Record

197961

| | | | | |
|---|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 9/27/07 | 1827-15-D |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS | 1 of 1 COCs |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | | Job No. 379-1827-15-02 |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | | SDG No. |
| Project Name: Cloverdale Project | ☐ 1 week | | | |
| Site: Cloverdale, Ca | ☐ 2 days | | | |
| C&T-WO-07-002 | ☐ 1 day | | | |

| Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filtered Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pestcides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-03-GW-7.5 | 9/27/07 | 1:00 | VOA | GW | 3 | | ✓ | | | | | | | |
| | | | VOA | GW | 3 | | | | | ✓ | | | | |
| | | | 1 Lamber | GW | 2 | | | | ✓ | | | | | |
| | | | Poly 250ml | GW | 1 | | | | | | ✓ | | | |
| | | | 750ml Poly | GW | 1 | ✓ | | ✓ | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Robert K. [signature] | Weiss Associates | 9/27/07 2:00 | [signature] | C&T | 9-28-07 1502 |
| | | | | | |
| | | | | | |

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 350 East Middlefield Rd | Location : Cloverdale Project |
| Mountain View, CA 94043 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-12-GW-28 | 197970-001 |
| TRIP BLANK | 197970-002 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/17/2007
Project Manager

Signature: _____ Date: 10/17/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **197970** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/05/07** |
| Samples Received: | **09/28/07** |

This hardcopy data package contains sample and QC results for one water sample, requested for the above referenced project on 10/05/07. The sample was received cold and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B):**
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the LCS/MS/MSD for batch 130056. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B):**
No analytical problems were encountered.

**Pesticides (EPA 8081A):**
High ICAL percent RSD (relative standard deviation) was observed for 4,4'-DDT in the calibration analyzed 10/10/07 15:50; average ICAL %RSD met method requirements, and affected data was qualified with "b". 197970-001 was prepared outside of hold time; affected data was qualified with "b". Analysis was requested on the last day of the hold. No other analytical problems were encountered.

**Polychlorinated Biphenyls (PCBs) (EPA 8082):**
197970-001 was prepared outside of hold time; affected data was qualified with "b". Analysis was requested on the last day of the hold. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A):**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0):**
No analytical problems were encountered.

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-12-GW-28 | Batch#: | 130056 |
| Matrix: | Water | Sampled: | 09/28/07 |
| Units: | ug/L | Received: | 09/28/07 |
| Diln Fac: | 1.000 | | |

Type: SAMPLE Analyzed: 10/02/07
Lab ID: 197970-001

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 116 | 73-134 |
| Bromofluorobenzene (FID) | 125 | 77-140 |

Type: BLANK Analyzed: 10/01/07
Lab ID: QC408510

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 105 | 73-134 |
| Bromofluorobenzene (FID) | 100 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC408511 | Batch#: | 130056 |
| Matrix: | Water | Analyzed: | 10/01/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,739 | 87 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 148 * | 73-134 |
| Bromofluorobenzene (FID) | 138 | 77-140 |

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130056 |
| MSS Lab ID: | 197825-003 | Sampled: | 09/24/07 |
| Matrix: | Water | Received: | 09/24/07 |
| Units: | ug/L | Analyzed: | 10/02/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC408512

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 794.2 | 2,000 | 2,647 | 93 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 141 * | 73-134 |
| Bromofluorobenzene (FID) | 192 * | 77-140 |

Type: MSD Lab ID: QC408513

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 2,628 | 92 | 72-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 132 | 73-134 |
| Bromofluorobenzene (FID) | 177 * | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-12-GW-28 | Batch#: | 130096 |
| Matrix: | Water | Sampled: | 09/28/07 |
| Units: | ug/L | Received: | 09/28/07 |
| Diln Fac: | 1.000 | Prepared: | 10/02/07 |

Type: SAMPLE
Lab ID: 197970-001

Cleanup Method: EPA 3630C

| Analyte | Result | RL | MDL | Analyzed |
|---|---|---|---|---|
| Diesel C10-C24 | 760 Y | 50 | | 10/04/07 |
| Diesel C10-C24 (SGCU) | 380 Y | 50 | | 11/01/07 |
| Motor Oil C24-C36 | 670 | 300 | 85 | 10/04/07 |
| Motor Oil C24-C36 (SGCU) | 670 | 300 | 130 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 94 | 61-133 | 10/04/07 |
| Hexacosane (SGCU) | 105 | 61-133 | 11/01/07 |

Type: BLANK
Lab ID: QC408677

Analyzed: 10/03/07
Cleanup Method: EPA 3630C

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Diesel C10-C24 (SGCU) | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 98 | 61-133 |
| Hexacosane (SGCU) | 96 | 61-133 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130096 |
| Units: | ug/L | Prepared: | 10/02/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/03/07 |

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC408678

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 1,892 | 76 | 58-128 |

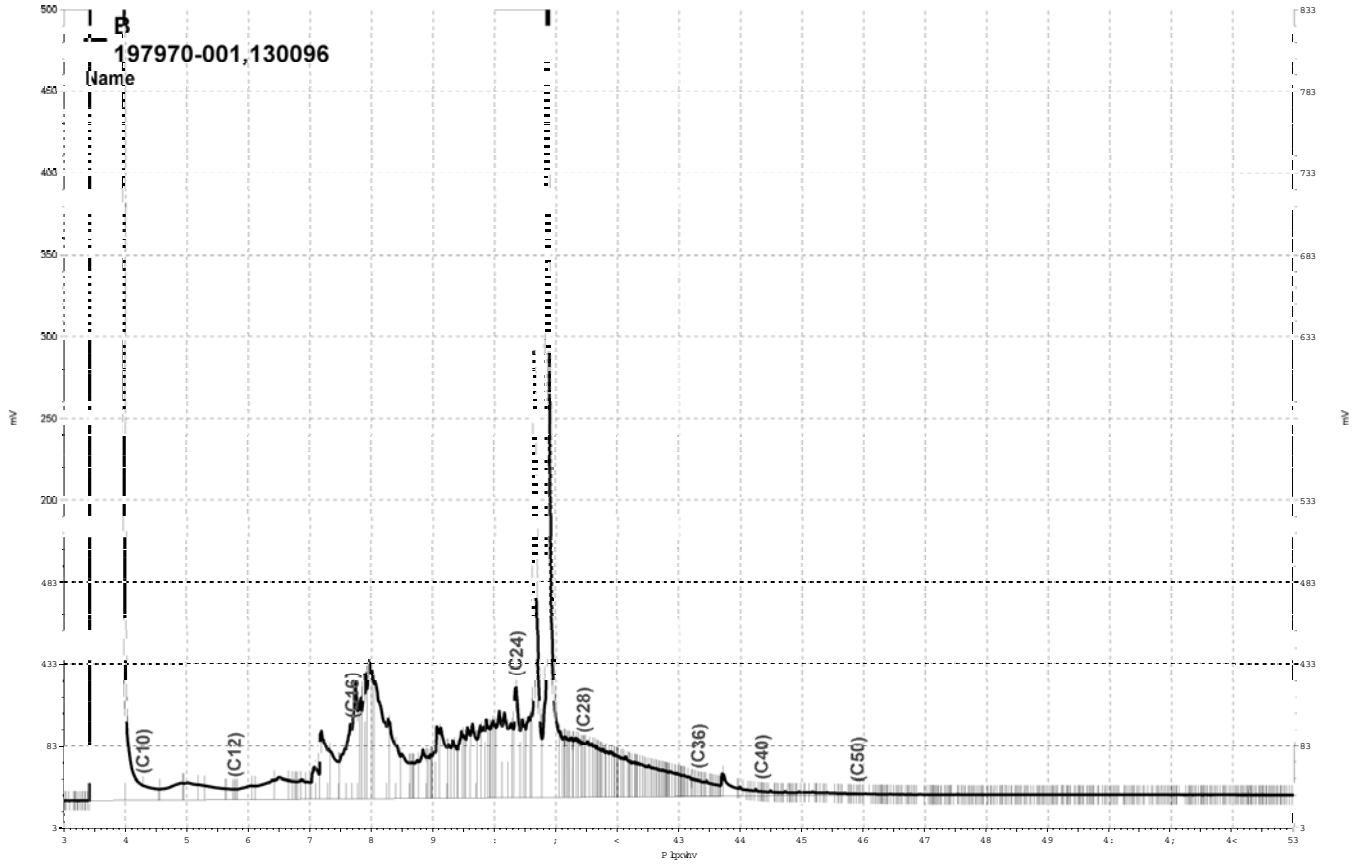
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 80 | 61-133 |

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC408679

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,464 | 99 | 58-128 | 26 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 103 | 61-133 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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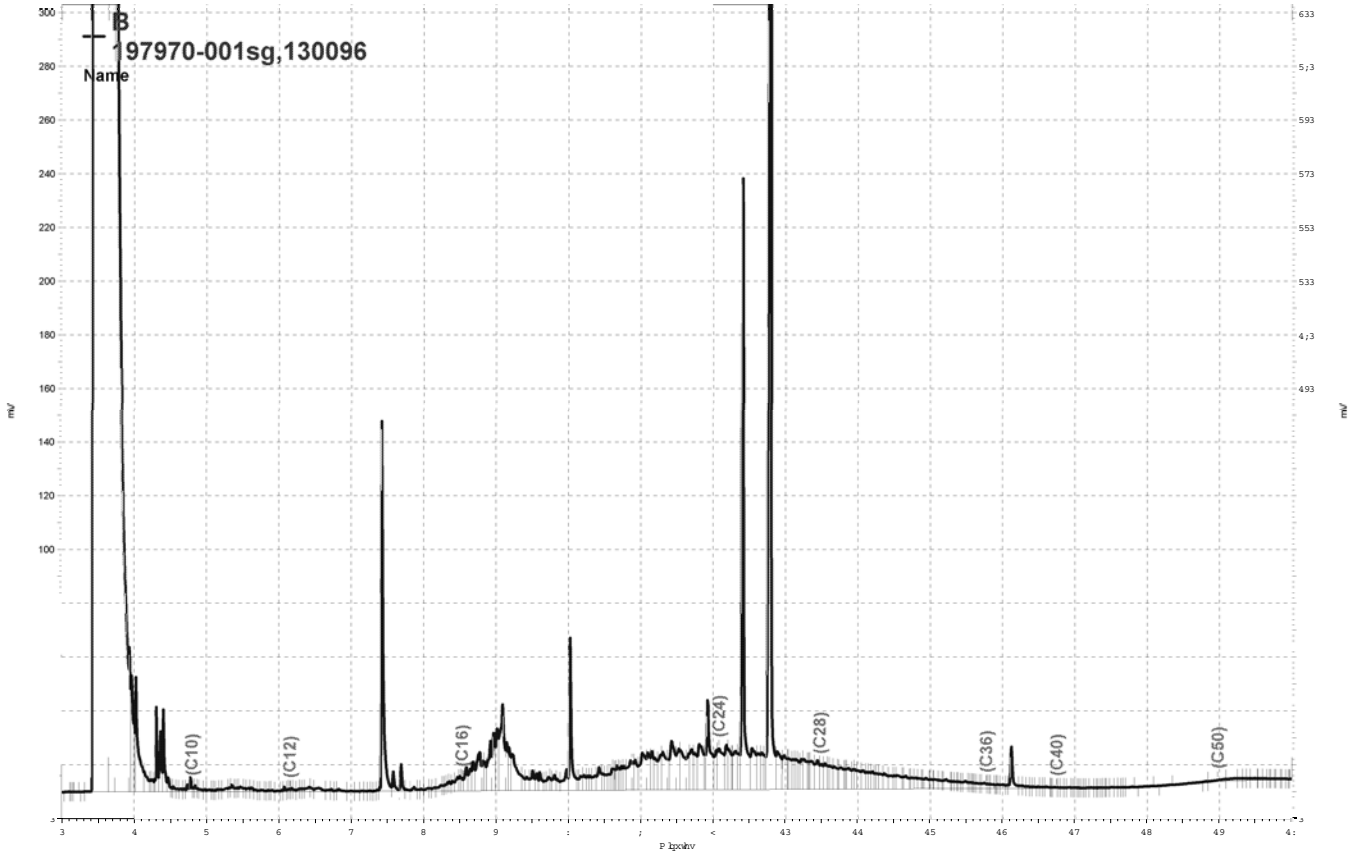


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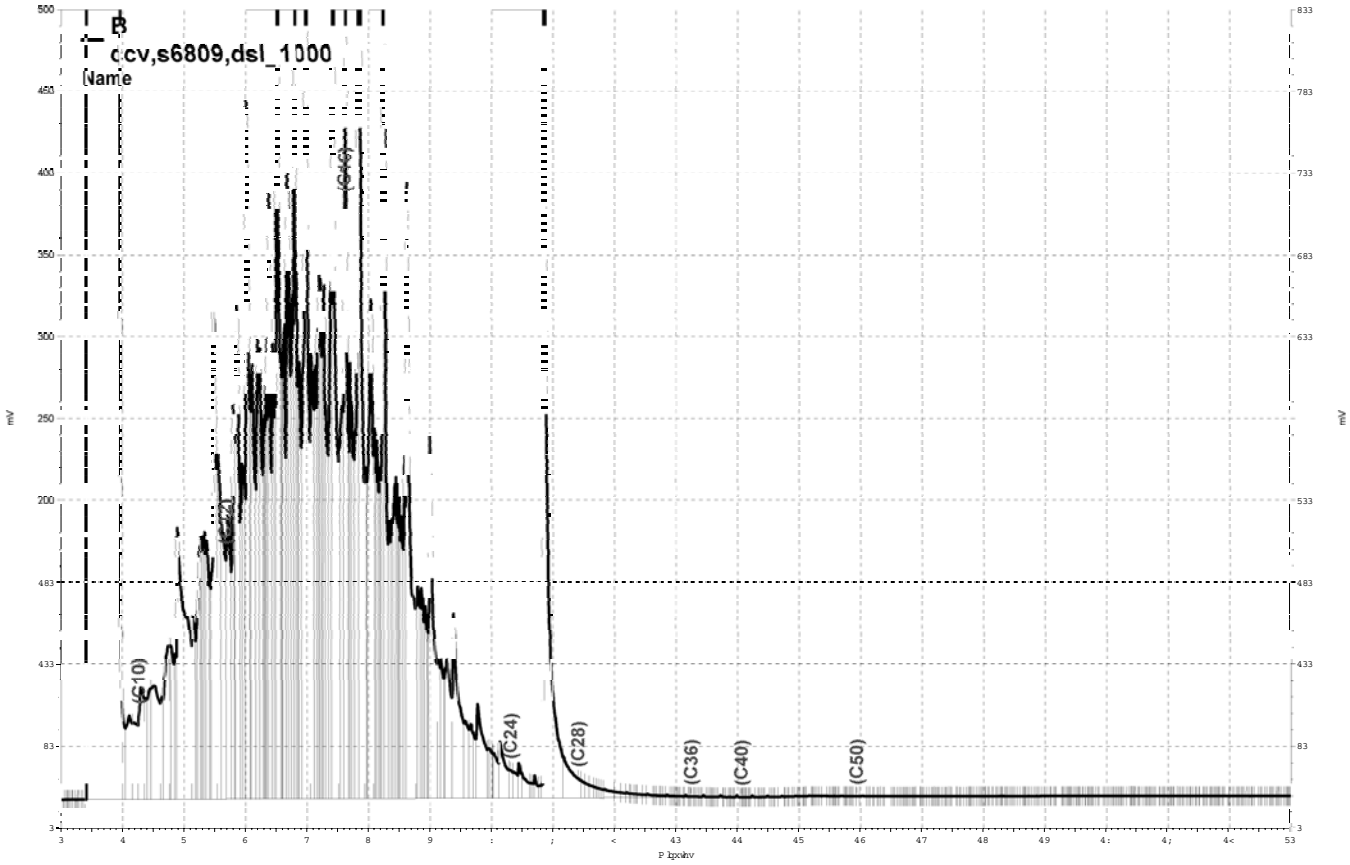


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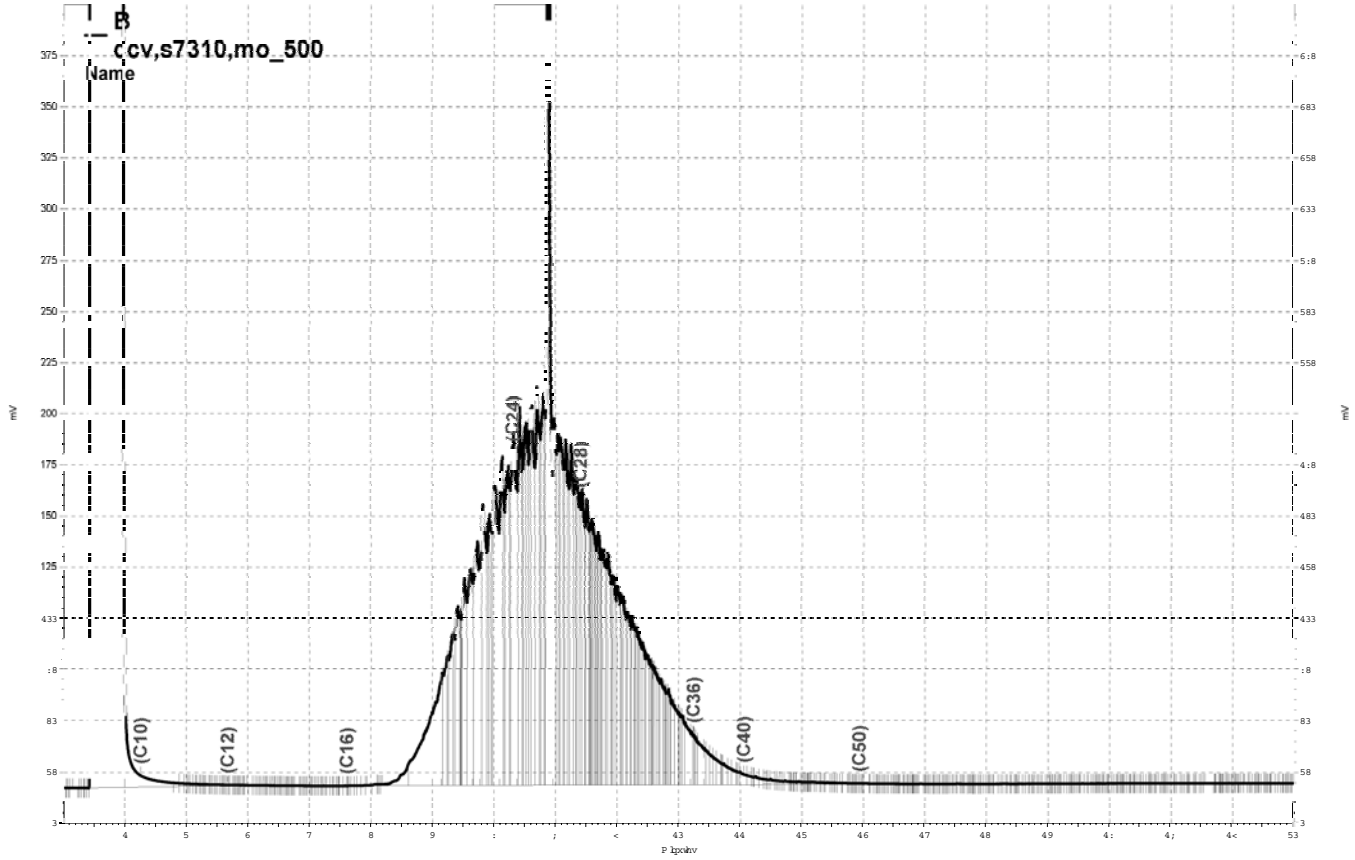


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Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-GW-28 | Batch#: | 130029 |
| Lab ID: | 197970-001 | Sampled: | 09/28/07 |
| Matrix: | Water | Received: | 09/28/07 |
| Units: | ug/L | Analyzed: | 10/01/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-GW-28 | Batch#: | 130029 |
| Lab ID: | 197970-001 | Sampled: | 09/28/07 |
| Matrix: | Water | Received: | 09/28/07 |
| Units: | ug/L | Analyzed: | 10/01/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 119 | 74-137 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 130029 |
| Units: | ug/L | Analyzed: | 10/01/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408398

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 22.29 | 89 | 80-133 |
| Benzene | 25.00 | 22.79 | 91 | 80-120 |
| Trichloroethene | 25.00 | 26.27 | 105 | 80-120 |
| Toluene | 25.00 | 26.47 | 106 | 80-122 |
| Chlorobenzene | 25.00 | 24.14 | 97 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 118 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 101 | 80-120 |

Type: BSD Lab ID: QC408399

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 21.02 | 84 | 80-133 | 6 | 20 |
| Benzene | 25.00 | 22.33 | 89 | 80-120 | 2 | 20 |
| Trichloroethene | 25.00 | 25.59 | 102 | 80-120 | 3 | 20 |
| Toluene | 25.00 | 24.00 | 96 | 80-122 | 10 | 20 |
| Chlorobenzene | 25.00 | 23.07 | 92 | 80-120 | 5 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 101 | 80-122 |
| 1,2-Dichloroethane-d4 | 120 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408400 | Batch#: | 130029 |
| Matrix: | Water | Analyzed: | 10/01/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408400 | Batch#: | 130029 |
| Matrix: | Water | Analyzed: | 10/01/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 124 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-GW-28 | Batch#: | 130279 |
| Lab ID: | 197970-001 | Sampled: | 09/28/07 |
| Matrix: | Water | Received: | 09/28/07 |
| Units: | ug/L | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND b | 0.05 |
| beta-BHC | ND b | 0.05 |
| gamma-BHC | ND b | 0.05 |
| delta-BHC | ND b | 0.05 |
| Heptachlor | ND b | 0.05 |
| Aldrin | ND b | 0.05 |
| Heptachlor epoxide | ND b | 0.05 |
| Endosulfan I | ND b | 0.05 |
| Dieldrin | ND b | 0.1 |
| 4,4'-DDE | ND b | 0.1 |
| Endrin | ND b | 0.1 |
| Endosulfan II | ND b | 0.1 |
| Endosulfan sulfate | ND b | 0.1 |
| 4,4'-DDD | ND b | 0.1 |
| Endrin aldehyde | ND b | 0.1 |
| 4,4'-DDT | ND # b | 0.1 |
| alpha-Chlordane | ND b | 0.05 |
| gamma-Chlordane | ND b | 0.05 |
| Methoxychlor | ND b | 0.5 |
| Toxaphene | ND b | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 43 b | 43-120 |
| Decachlorobiphenyl | 47 b | 39-135 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409446 | Batch#: | 130279 |
| Matrix: | Water | Prepared: | 10/07/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 0.05 |
| beta-BHC | ND | 0.05 |
| gamma-BHC | ND | 0.05 |
| delta-BHC | ND | 0.05 |
| Heptachlor | ND | 0.05 |
| Aldrin | ND | 0.05 |
| Heptachlor epoxide | ND | 0.05 |
| Endosulfan I | ND | 0.05 |
| Dieldrin | ND | 0.1 |
| 4,4'-DDE | ND | 0.1 |
| Endrin | ND | 0.1 |
| Endosulfan II | ND | 0.1 |
| Endosulfan sulfate | ND | 0.1 |
| 4,4'-DDD | ND | 0.1 |
| Endrin aldehyde | ND | 0.1 |
| 4,4'-DDT | ND | 0.1 |
| alpha-Chlordane | ND | 0.05 |
| gamma-Chlordane | ND | 0.05 |
| Methoxychlor | ND | 0.5 |
| Toxaphene | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 79 | 43-120 |
| Decachlorobiphenyl | 59 | 39-135 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409447 | Batch#: | 130279 |
| Matrix: | Water | Prepared: | 10/07/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| gamma-BHC | 0.2000 | 0.1571 | 79 | 64-126 |
| Heptachlor | 0.2000 | 0.1434 | 72 | 50-124 |
| Aldrin | 0.2000 | 0.1380 | 69 | 48-123 |
| Dieldrin | 0.4000 | 0.3100 | 78 | 59-131 |
| Endrin | 0.4000 | 0.3722 | 93 | 54-129 |
| 4,4'-DDT | 0.4000 | 0.3534 | 88 | 39-140 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 70 | 43-120 |
| Decachlorobiphenyl | 44 | 39-135 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130279 |
| MSS Lab ID: | 198061-003 | Sampled: | 10/03/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/12/07 |

Type: MS Lab ID: QC409448

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| gamma-BHC | <0.005430 | 0.1905 | 0.1701 | 89 | 68-120 |
| Heptachlor | <0.005230 | 0.1905 | 0.1618 | 85 | 56-120 |
| Aldrin | <0.005225 | 0.1905 | 0.1513 | 79 | 61-120 |
| Dieldrin | <0.01031 | 0.3810 | 0.3229 # | 85 | 59-121 |
| Endrin | <0.01092 | 0.3810 | 0.3454 | 91 | 65-120 |
| 4,4'-DDT | <0.01445 | 0.3810 | 0.2898 # b | 76 | 42-126 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 81 | 43-120 |
| Decachlorobiphenyl | 48 | 39-135 |

Type: MSD Lab ID: QC409449

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| gamma-BHC | 0.1905 | 0.1588 | 83 | 68-120 | 7 | 30 |
| Heptachlor | 0.1905 | 0.1587 | 83 | 56-120 | 2 | 33 |
| Aldrin | 0.1905 | 0.1508 | 79 | 61-120 | 0 | 30 |
| Dieldrin | 0.3810 | 0.3388 # | 89 | 59-121 | 5 | 32 |
| Endrin | 0.3810 | 0.3611 | 95 | 65-120 | 4 | 36 |
| 4,4'-DDT | 0.3810 | 0.3216 # b | 84 | 42-126 | 10 | 40 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 77 | 43-120 |
| Decachlorobiphenyl | 55 | 39-135 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | B-12-GW-28 | Sampled: | 09/28/07 |
| Matrix: | Water | Received: | 09/28/07 |
| Units: | ug/L | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/11/07 |
| Batch#: | 130281 | | |

Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 197970-001

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND b | 0.50 |
| Aroclor-1221 | ND b | 1.0 |
| Aroclor-1232 | ND b | 0.50 |
| Aroclor-1242 | ND b | 0.50 |
| Aroclor-1248 | ND b | 0.50 |
| Aroclor-1254 | ND b | 0.50 |
| Aroclor-1260 | ND b | 0.50 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 73 b | 54-128 |
| Decachlorobiphenyl | 50 b | 25-122 |

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409453

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 0.50 |
| Aroclor-1221 | ND | 1.0 |
| Aroclor-1232 | ND | 0.50 |
| Aroclor-1242 | ND | 0.50 |
| Aroclor-1248 | ND | 0.50 |
| Aroclor-1254 | ND | 0.50 |
| Aroclor-1260 | ND | 0.50 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 110 | 54-128 |
| Decachlorobiphenyl | 79 | 25-122 |

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Matrix: | Water | Batch#: | 130281 |
| Units: | ug/L | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/11/07 |

Type: BS Cleanup Method: EPA 3665A
Lab ID: QC409454

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Aroclor-1016 | 5.000 | 6.108 | 122 | 71-140 |
| Aroclor-1260 | 5.000 | 6.128 | 123 | 68-150 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 111 | 54-128 |
| Decachlorobiphenyl | 68 | 25-122 |

Type: BSD Cleanup Method: EPA 3665A
Lab ID: QC409455

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Aroclor-1016 | 5.000 | 5.548 | 111 | 71-140 | 10 | 21 |
| Aroclor-1260 | 5.000 | 5.494 | 110 | 68-150 | 11 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 116 | 54-128 |
| Decachlorobiphenyl | 92 | 25-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-12-GW-28 | Diln Fac: | 1.000 |
| Lab ID: | 197970-001 | Sampled: | 09/28/07 |
| Matrix: | Filtrate | Received: | 09/28/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Barium | 140 | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.4 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130230 | 10/05/07 | 10/05/07 | METHOD | EPA 7470A |
| Molybdenum | 25 | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |
| Zinc | 28 | 20 | 130028 | 10/01/07 | 10/01/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408391 | Batch#: | 130028 |
| Matrix: | Water | Prepared: | 10/01/07 |
| Units: | ug/L | Analyzed: | 10/01/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 5.0 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.4 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130028 |
| Units: | ug/L | Prepared: | 10/01/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/01/07 |

Type: BS Lab ID: QC408392

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 455.3 | 91 | 80-120 |
| Arsenic | 100.0 | 95.70 | 96 | 80-120 |
| Barium | 2,000 | 1,786 | 89 | 80-120 |
| Beryllium | 50.00 | 51.49 | 103 | 80-120 |
| Cadmium | 50.00 | 46.43 | 93 | 80-120 |
| Chromium | 200.0 | 178.0 | 89 | 80-120 |
| Cobalt | 500.0 | 437.7 | 88 | 80-120 |
| Copper | 250.0 | 223.2 | 89 | 80-120 |
| Lead | 100.0 | 88.14 | 88 | 80-120 |
| Molybdenum | 400.0 | 366.1 | 92 | 80-120 |
| Nickel | 500.0 | 447.1 | 89 | 80-120 |
| Selenium | 100.0 | 95.32 | 95 | 80-120 |
| Silver | 50.00 | 45.41 | 91 | 80-120 |
| Thallium | 100.0 | 94.91 | 95 | 80-120 |
| Vanadium | 500.0 | 452.0 | 90 | 80-120 |
| Zinc | 500.0 | 463.5 | 93 | 80-120 |

Type: BSD Lab ID: QC408393

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 443.9 | 89 | 80-120 | 3 | 20 |
| Arsenic | 100.0 | 91.64 | 92 | 80-120 | 4 | 20 |
| Barium | 2,000 | 1,719 | 86 | 80-120 | 4 | 20 |
| Beryllium | 50.00 | 49.60 | 99 | 80-120 | 4 | 20 |
| Cadmium | 50.00 | 45.12 | 90 | 80-120 | 3 | 20 |
| Chromium | 200.0 | 173.1 | 87 | 80-120 | 3 | 20 |
| Cobalt | 500.0 | 421.2 | 84 | 80-120 | 4 | 20 |
| Copper | 250.0 | 214.9 | 86 | 80-120 | 4 | 20 |
| Lead | 100.0 | 84.72 | 85 | 80-120 | 4 | 20 |
| Molybdenum | 400.0 | 356.6 | 89 | 80-120 | 3 | 20 |
| Nickel | 500.0 | 429.7 | 86 | 80-120 | 4 | 20 |
| Selenium | 100.0 | 93.39 | 93 | 80-120 | 2 | 20 |
| Silver | 50.00 | 43.69 | 87 | 80-120 | 4 | 20 |
| Thallium | 100.0 | 92.92 | 93 | 80-120 | 2 | 20 |
| Vanadium | 500.0 | 433.5 | 87 | 80-120 | 4 | 20 |
| Zinc | 500.0 | 444.2 | 89 | 80-120 | 4 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | B-03-GW-7.5 | Batch#: | 130028 |
| MSS Lab ID: | 197961-001 | Sampled: | 09/27/07 |
| Matrix: | Water | Received: | 09/28/07 |
| Units: | ug/L | Prepared: | 10/01/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/01/07 |

Type: MS Lab ID: QC408394

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | <0.9637 | 500.0 | 451.7 | 90 | 80-120 |
| Arsenic | 1.407 | 100.0 | 96.66 | 95 | 80-127 |
| Barium | 473.5 | 2,000 | 2,300 | 91 | 80-120 |
| Beryllium | 0.1753 | 50.00 | 52.98 | 106 | 80-120 |
| Cadmium | <0.3555 | 50.00 | 46.09 | 92 | 80-120 |
| Chromium | 1.093 | 200.0 | 179.3 | 89 | 80-120 |
| Cobalt | 0.6526 | 500.0 | 431.8 | 86 | 80-120 |
| Copper | 2.108 | 250.0 | 226.9 | 90 | 80-120 |
| Lead | <1.150 | 100.0 | 86.65 | 87 | 76-120 |
| Molybdenum | 269.6 | 400.0 | 643.9 | 94 | 80-120 |
| Nickel | 37.34 | 500.0 | 472.4 | 87 | 80-120 |
| Selenium | 5.068 | 100.0 | 99.50 | 94 | 80-128 |
| Silver | <0.7500 | 50.00 | 45.85 | 92 | 73-122 |
| Thallium | 2.322 | 100.0 | 93.35 | 91 | 78-120 |
| Vanadium | <0.6065 | 500.0 | 456.3 | 91 | 80-120 |
| Zinc | <3.056 | 500.0 | 462.2 | 92 | 80-123 |

Type: MSD Lab ID: QC408395

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 449.1 | 90 | 80-120 | 1 | 20 |
| Arsenic | 100.0 | 98.87 | 97 | 80-127 | 2 | 20 |
| Barium | 2,000 | 2,306 | 92 | 80-120 | 0 | 20 |
| Beryllium | 50.00 | 53.09 | 106 | 80-120 | 0 | 20 |
| Cadmium | 50.00 | 47.23 | 94 | 80-120 | 2 | 20 |
| Chromium | 200.0 | 183.7 | 91 | 80-120 | 2 | 20 |
| Cobalt | 500.0 | 433.2 | 87 | 80-120 | 0 | 20 |
| Copper | 250.0 | 228.1 | 90 | 80-120 | 1 | 20 |
| Lead | 100.0 | 88.28 | 88 | 76-120 | 2 | 20 |
| Molybdenum | 400.0 | 654.2 | 96 | 80-120 | 2 | 20 |
| Nickel | 500.0 | 474.7 | 87 | 80-120 | 0 | 20 |
| Selenium | 100.0 | 102.7 | 98 | 80-128 | 3 | 20 |
| Silver | 50.00 | 46.02 | 92 | 73-122 | 0 | 20 |
| Thallium | 100.0 | 96.12 | 94 | 78-120 | 3 | 20 |
| Vanadium | 500.0 | 458.9 | 92 | 80-120 | 1 | 20 |
| Zinc | 500.0 | 463.5 | 93 | 80-123 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130230 |
| Lab ID: | QC409253 | Prepared: | 10/05/07 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130230 |
| Matrix: | Water | Prepared: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409254 | 5.000 | 5.460 | 109 | 80-120 | | |
| BSD | QC409255 | 5.000 | 5.390 | 108 | 80-120 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130230 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/02/07 |
| MSS Lab ID: | 198043-005 | Received: | 10/02/07 |
| Matrix: | Filtrate | Prepared: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409260 | <0.04502 | 5.000 | 5.510 | 110 | 79-125 | | |
| MSD | QC409261 | | 5.000 | 5.580 | 112 | 79-125 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-12-GW-28 | Batch#: | 129995 |
| Matrix: | Water | Sampled: | 09/28/07 12:30 |
| Units: | mg/L | Received: | 09/28/07 |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 197970-001 | 0.39 | 0.05 | 09/28/07 17:34 |
| BLANK | QC408263 | ND | 0.05 | 09/28/07 10:50 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 197970 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | B-12-GW-28 | Batch#: | 129995 |
| MSS Lab ID: | 197970-001 | Sampled: | 09/28/07 12:30 |
| Matrix: | Water | Received: | 09/28/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC408264 | | 1.000 | 1.054 | 105 | 80-120 | | | 1.000 | 09/28/07 13:33 |
| BSD | QC408265 | | 1.000 | 1.016 | 102 | 80-120 | 4 | 20 | 1.000 | 09/28/07 13:51 |
| MS | QC408341 | 0.3897 | 2.500 | 2.942 | 102 | 80-120 | | | 5.000 | 09/29/07 00:16 |
| MSD | QC408342 | | 2.500 | 3.062 | 107 | 80-120 | 4 | 20 | 5.000 | 09/29/07 00:34 |

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

# Chain of Custody Record

197970

| | | | |
|---|---|---|---|
| Weiss Associates | Project Manager: J. Adams | Site Contact: R. Davis | Date: 9/27/07 |
| 5801 Christie Avenue, Suite 600 | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: |
| Emeryville, CA 94608 | Analysis Turnaround Time | | |
| (510) - 450 - 6000 Phone | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 547 - 5043 FAX | TAT if different from above: 5 days | | |
| Project Name: Cloverdale Project | ☐ 2 weeks ☒ 1 week ☐ 2 days ☐ 1 day | | |
| Site: Cloverdale, Ca | | | |
| C&T-WO-07-002 | | | |

1827-15 - D
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

| Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filtered Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-12-GW-28 | 9/28/07 | 12:30 | VOA | GW | 3 | | ✓ | | | | | | | |
| | | | VOA | GW | 3 | | | | | ✓ | | | | |
| | | | 1L amber | GW | 2 | | | | ✓ | | | | | |
| | | | 250 ml poly | GW | 1 | | | | | | ✓ | | | |
| | | | 750ml poly | GW | 1 | ✓ | | ✓ | | | | | | |
| Trip Blank | | | VOA | AQ | 1 | | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Robert M. Q. | Weiss Associates | 9/28/07 | | CET | 9/28/07 4:55 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

cold & intact

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1824-15-2 |
| 350 East Middlefield Rd | |
| Mountain View, CA 94043 | Level : II |

| Sample ID | Lab ID |
|---|---|
| MGM-30 | 198041-001 |
| MGM-35 | 198041-002 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/09/2007
Project Manager

Signature: _____ Date: 10/09/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198041** |
| Client: | **Weiss Associates** |
| Project: | **379-1824-15-2** |
| Request Date: | **10/02/07** |
| Samples Received: | **10/02/07** |

This hardcopy data package contains sample and QC results for two water samples, requested for the above referenced project on 10/02/07. The samples were received cold and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B):**

High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the LCS/MS/MSD for batch 130204. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**

No analytical problems were encountered.

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198041 | Prep: | EPA 5030B |
| Client: | Weiss Associates | Analysis: | EPA 8015B |
| Project#: | 379-1824-15-2 | | |
| Matrix: | Water | Batch#: | 130204 |
| Units: | ug/L | Sampled: | 10/01/07 |
| Diln Fac: | 1.000 | Received: | 10/02/07 |

Field ID: MGM-30 Lab ID: 198041-001
Type: SAMPLE Analyzed: 10/05/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | 65 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 114 | 73-134 |
| Bromofluorobenzene (FID) | 114 | 77-140 |

Field ID: MGM-35 Lab ID: 198041-002
Type: SAMPLE Analyzed: 10/05/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 106 | 73-134 |
| Bromofluorobenzene (FID) | 95 | 77-140 |

Type: BLANK Analyzed: 10/04/07
Lab ID: QC409145

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 106 | 73-134 |
| Bromofluorobenzene (FID) | 101 | 77-140 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198041 | Prep: | EPA 5030B |
| Client: | Weiss Associates | Analysis: | EPA 8015B |
| Project#: | 379-1824-15-2 | | |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409147 | Batch#: | 130204 |
| Matrix: | Water | Analyzed: | 10/04/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,916 | 96 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 145 * | 73-134 |
| Bromofluorobenzene (FID) | 134 | 77-140 |

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198041 | Prep: | EPA 5030B |
| Client: | Weiss Associates | Analysis: | EPA 8015B |
| Project#: | 379-1824-15-2 | | |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 198025-001 | Batch#: | 130204 |
| Matrix: | Water | Sampled: | 10/02/07 |
| Units: | ug/L | Received: | 10/02/07 |

Type: MS Analyzed: 10/04/07
Lab ID: QC409148

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 16.39 | 2,000 | 1,786 | 88 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 147 * | 73-134 |
| Bromofluorobenzene (FID) | 146 * | 77-140 |

Type: MSD Analyzed: 10/05/07
Lab ID: QC409149

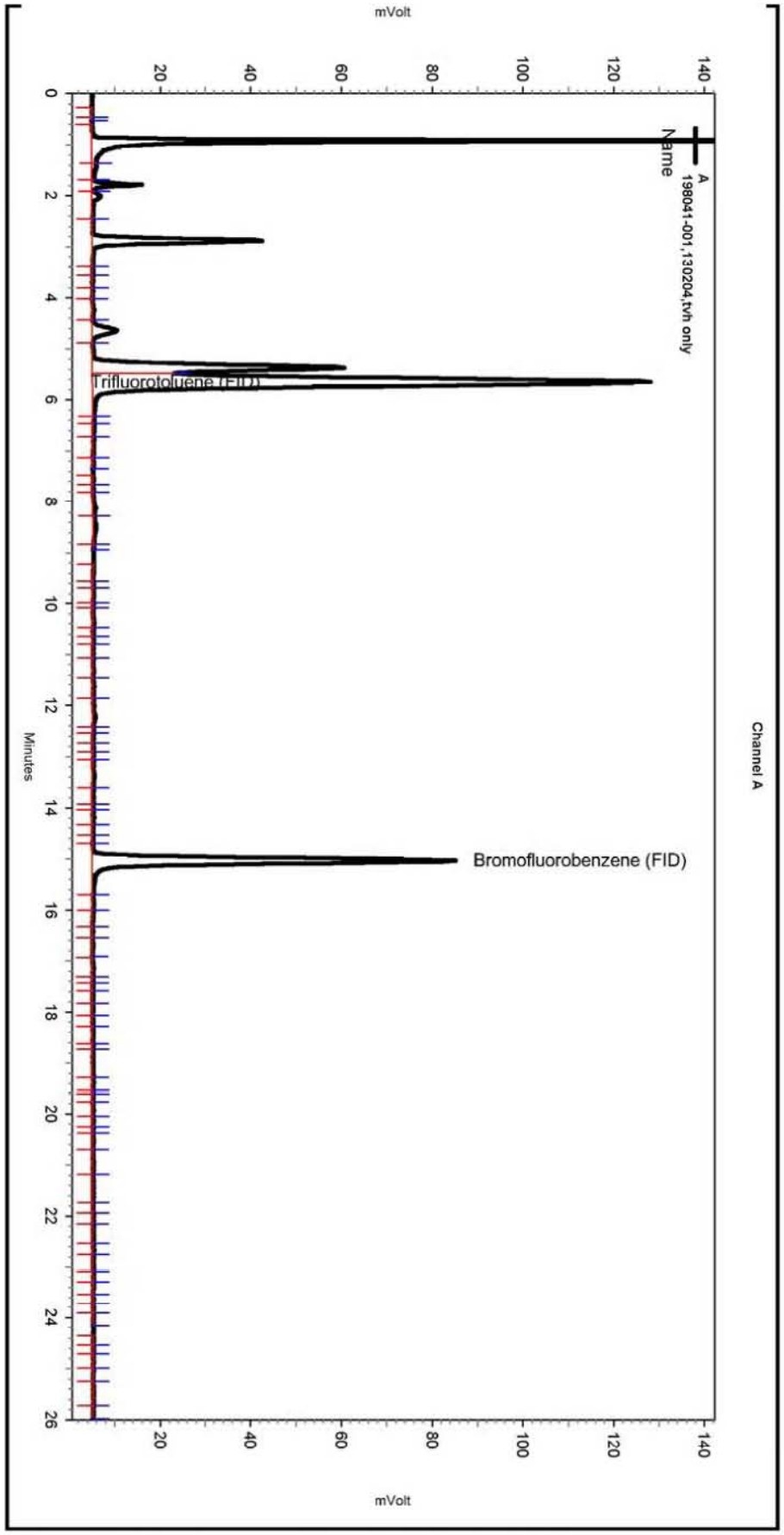
| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,889 | 93 | 72-120 | 6 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 151 * | 73-134 |
| Bromofluorobenzene (FID) | 152 * | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC05\Sequence\277.seq**
Sample Name: **198041-001,130204,tvh only**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC05\Data\277_012**
Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 1. Analyst (lims2k3\tvh1)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe264.met

Software Version 3.1.7
Run Date: 10/5/2007 8:08:00 AM
Analysis Date: 10/5/2007 10:28:46 AM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: a1.3




---< General Method Parameters >---

No items selected for this section

---< A >---

No items selected for this section

Integration Events

| Enabled | Event Type | Start (Minutes) | Stop (Minutes) | Value |
|---|---|---|---|---|
| Yes | Width | 0 | 0 | 0.2 |
| Yes | Threshold | 0 | 0 | 50 |

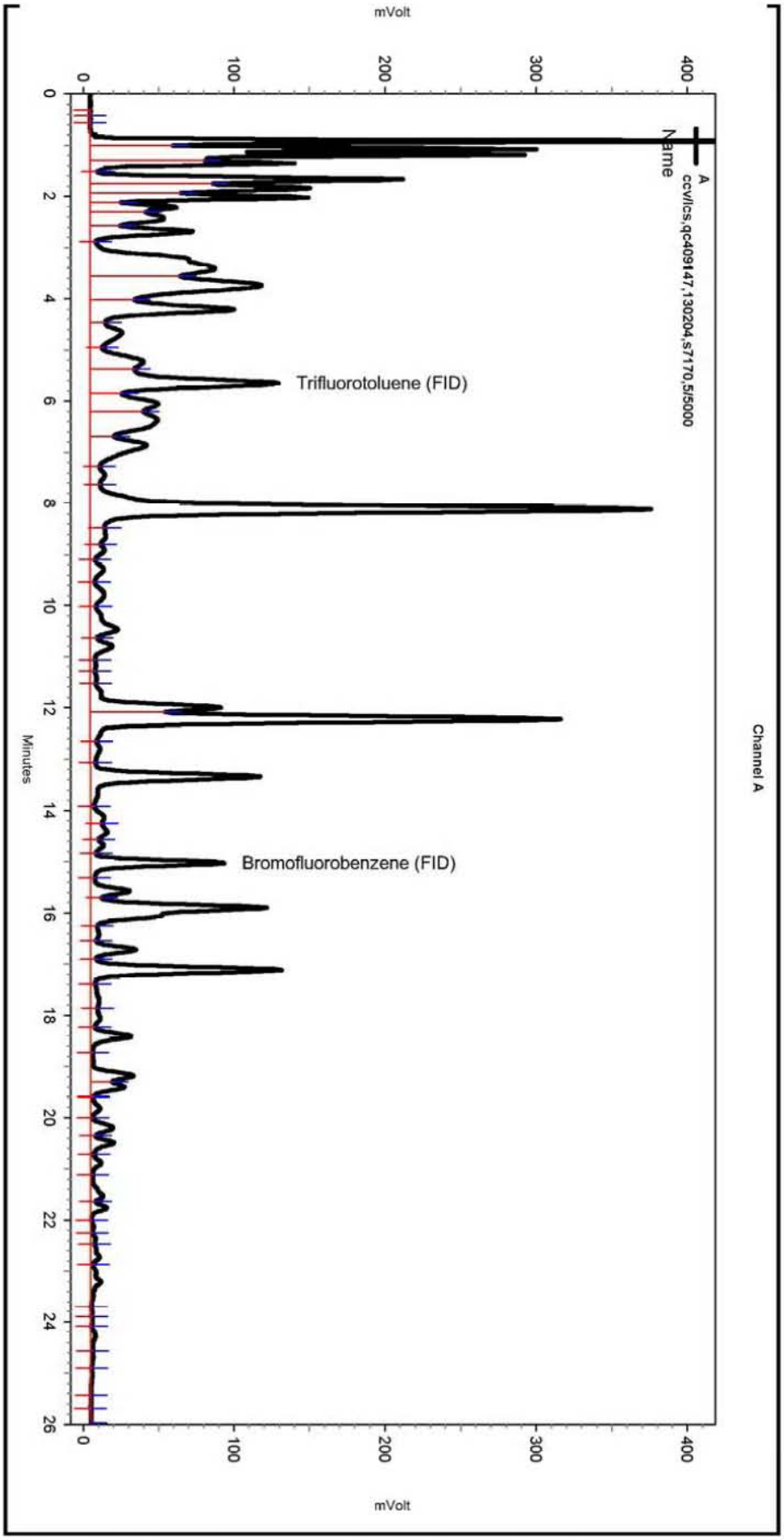
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\277_012

| Enabled | Event Type | Start (Minutes) | Stop (Minutes) | Value |
|---|---|---|---|---|
| None | | | | |

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC05\Sequence\277.seq**
Sample Name: **ccv/lcs,qc409147,130204,s7170,5/5000**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC05\Data\277_003**
Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 1. Analyst (lims2k3\tvh1)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe264.met

Software Version 3.1.7
Run Date: 10/4/2007 3:27:02 PM
Analysis Date: 10/5/2007 10:28:01 AM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: {Data Description}




---< General Method Parameters >---

No items selected for this section

---< A >---

No items selected for this section

Integration Events

| Enabled | Event Type | Start (Minutes) | Stop (Minutes) | Value |
|---|---|---|---|---|
| Yes | Width | 0 | 0 | 0.2 |
| Yes | Threshold | 0 | 0 | 50 |

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\277_003

| Enabled | Event Type | Start (Minutes) | Stop (Minutes) | Value |
|---|---|---|---|---|

None

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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198041 | Prep: | EPA 3520C |
| Client: | Weiss Associates | Analysis: | EPA 8015B |
| Project#: | 379-1824-15-2 | | |
| Matrix: | Water | Sampled: | 10/01/07 |
| Units: | ug/L | Received: | 10/02/07 |
| Diln Fac: | 1.000 | Prepared: | 10/04/07 |
| Batch#: | 130202 | | |

Field ID: MGM-30 Lab ID: 198041-001
Type: SAMPLE Analyzed: 10/05/07

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 96 | 61-133 |

Field ID: MGM-35 Lab ID: 198041-002
Type: SAMPLE Cleanup Method: EPA 3630C

| Analyte | Result | RL | MDL | Analyzed |
|---|---|---|---|---|
| Diesel C10-C24 | 160 Y | 50 | | 10/05/07 |
| Diesel C10-C24 (SGCU) | ND | 50 | | 11/01/07 |
| Motor Oil C24-C36 | 150 J | 300 | 56 | 10/05/07 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 130 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 103 | 61-133 | 10/05/07 |
| Hexacosane (SGCU) | 91 | 61-133 | 11/01/07 |

Type: BLANK Analyzed: 10/05/07
Lab ID: QC409139 Cleanup Method: EPA 3630C

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Diesel C10-C24 (SGCU) | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 56 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 103 | 61-133 |
| Hexacosane (SGCU) | 115 | 61-133 |

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198041 | Prep: | EPA 3520C |
| Client: | Weiss Associates | Analysis: | EPA 8015B |
| Project#: | 379-1824-15-2 | | |
| Matrix: | Water | Batch#: | 130202 |
| Units: | ug/L | Prepared: | 10/04/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/05/07 |

Type: BS
Lab ID: QC409140
Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,621 | 105 | 58-128 |

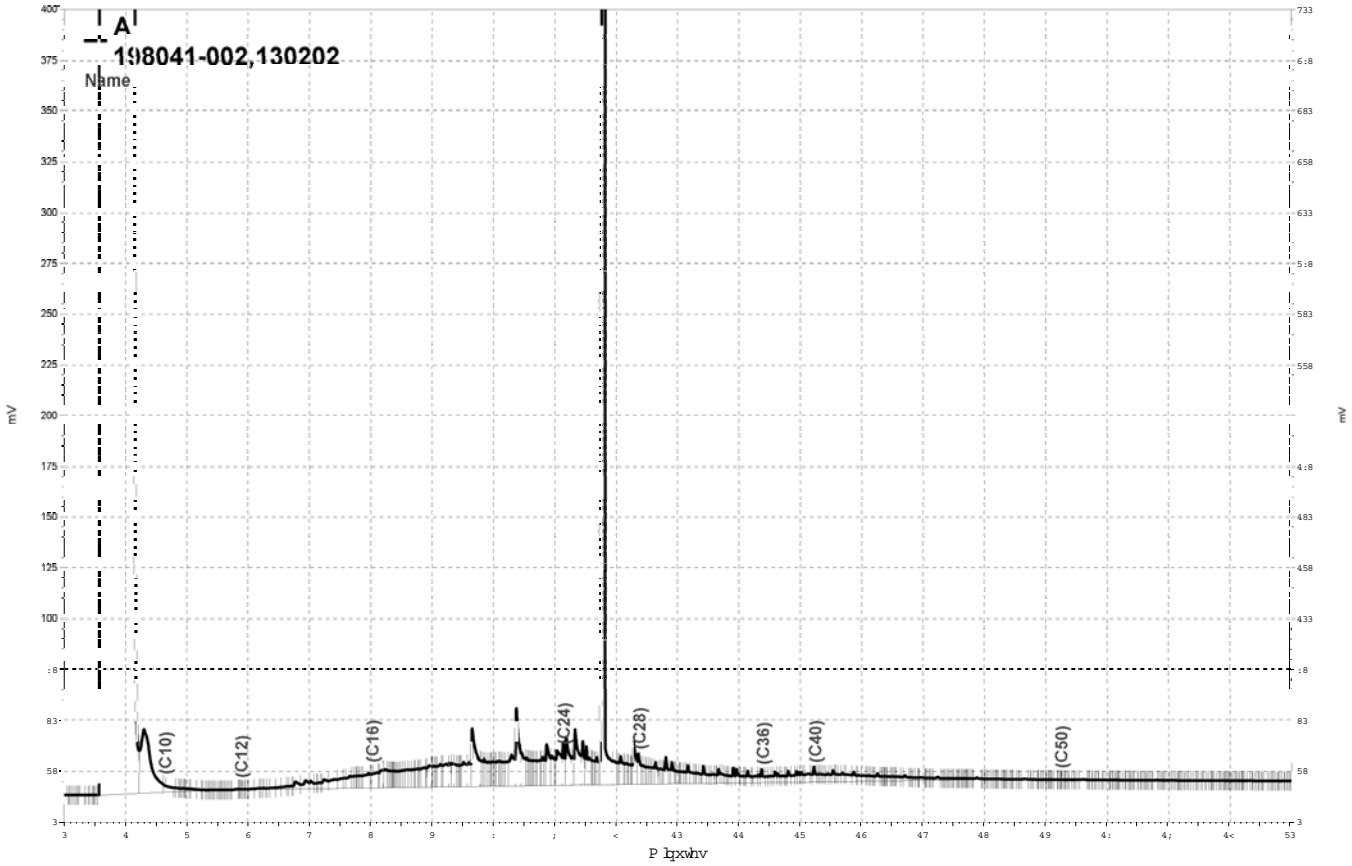
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 115 | 61-133 |

Type: BSD
Lab ID: QC409141
Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,425 | 97 | 58-128 | 8 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 107 | 61-133 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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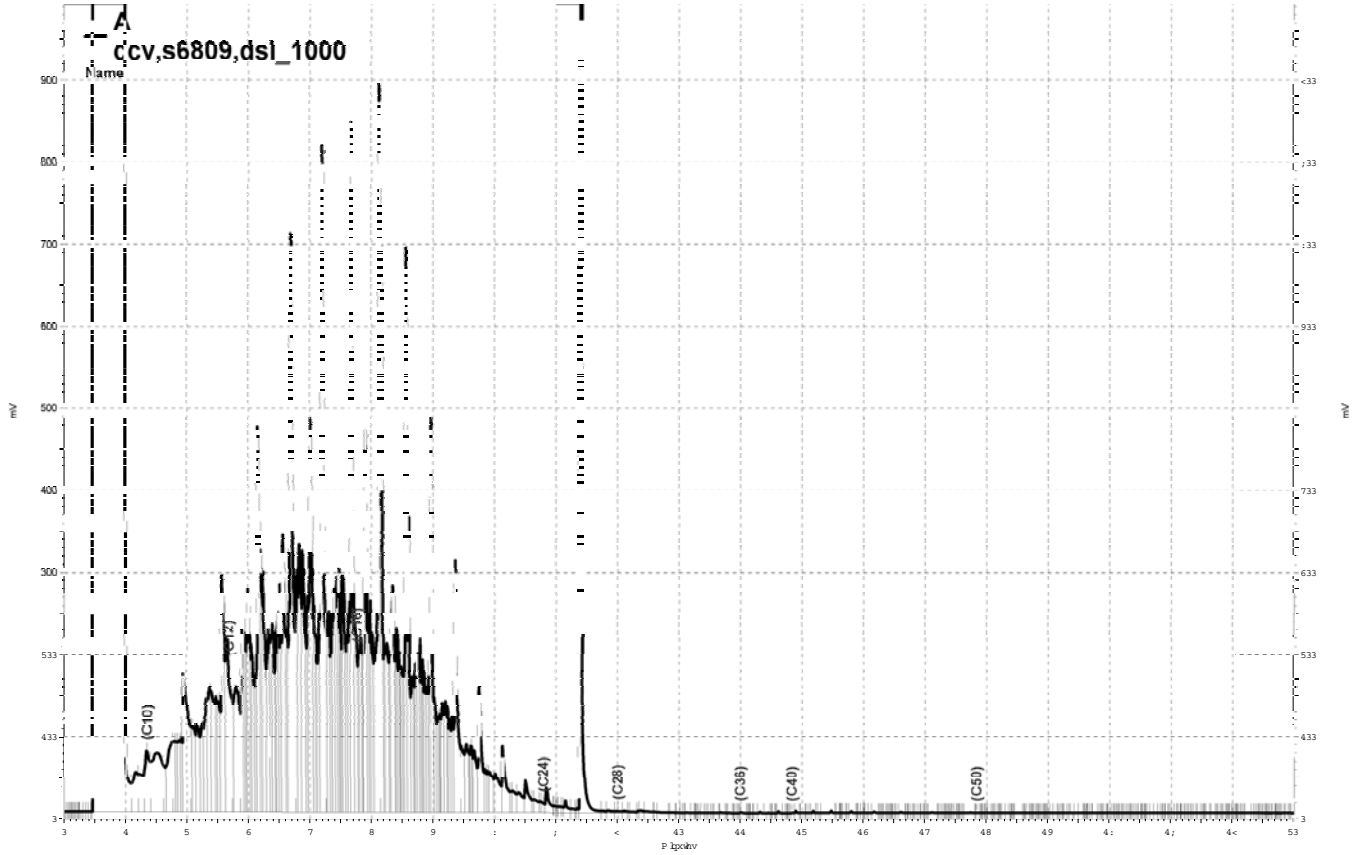


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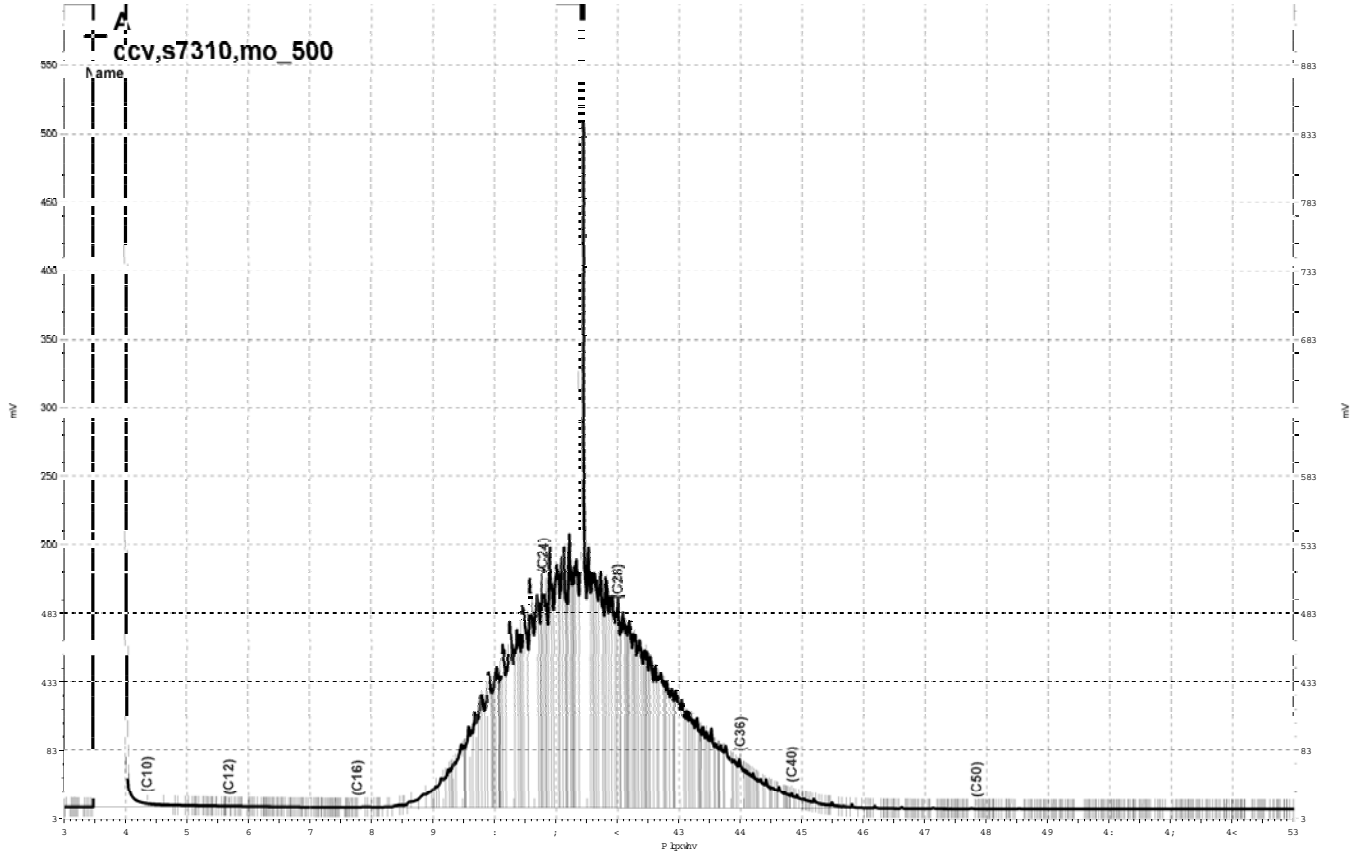


_Olp v jgulyh h}fkurp _Surmhfwv_J F44D_Gdwd_5::d36</D

198041

Weiss Associates
Environmental Science, Engineering and Management Services
5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
A Jacobs Associates Incorporated, 2004

Please send analytic results, EDD, EDF, and the original chain-of-custody form to:
**Joyce Adams (jea@weiss.com)**

Project ID: 379--1824--15-2
Protocol No.: 1824-100107

**INSTRUCTIONS FOR LAB PERSONNEL:**
GeoTracker EDF required? ☐ Yes ☒ No
Include laboratory QA/QC data with report.
Specify analytic/prep method and detection limit in report.
Notify us of any anomalous peaks in GC or other scans.
Call immediately with any questions or problems.

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: CTC Laboratory Name: C & T Berkeley Site Name: Perry Johnson

| Sample ID | Sample Date | Sample Time | # of Containers | Sample/ Container Type[1] | Volume | Preservative? | Filter? 2 | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MGM-30 | 10/01/07 | 1130 | 2 | W/A | 1 L | none | N | Y | N | TPH-D/TPH-MO | 8015M | Petroleum Hydrocarbons in the diesel-motor oil range |
| MGM-30 | " | 1130 | 3 | VOAs | 40 ml | HCL | N | Y | N | TPH-G | 8015M | |
| MGM-35 | " | 0942 | 2 | W/A | 1 L | none | N | Y | N | TPH-D/TPH-MO | 8015M | Petroleum Hydrocarbons in the diesel-motor oil range |
| MGM-35 | " | 0942 | 3 | VOAs | 40 ml | HCL | N | Y | N | TPH-G | 8015M | |
| MGM-40 | " | " | 2 | W/A | 1 L | none | N | Y | N | TPH-D/TPH-MO | 8015M | Petroleum Hydrocarbons in the diesel-motor oil range |
| MGM-40 | " | " | 2 | VOAs | 40 ml | HCL | N | Y | N | TPH-G | 8015M | |

1 Released by (Signature), Date, Time: 10/01/07 1600 ☒ | 3 Released by (Signature), Date, Time: ☐ | 5 Released by (Signature), Date, Time: ☐
1 (Affiliation): [illegible] | 3 (Affiliation): | 5 (Affiliation):
2 Received by (Signature), Date, Time: 10/2/07 1130 ☐ | 4 Received by (Signature), Date, Time: ☐ | 6 Received by (Signature), Date, Time: ☐
2 (Affiliation): CTC | 4 (Affiliation): | 6 (Affiliation):

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Filtered (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

***Other instructions:***

**Page _____ of _____**

intact cold
RC

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

# COOLER RECEIPT CHECKLIST

Login#: 198041 Date Received: 10-2-07 Number of Coolers: 1
Client: Weiss Project: Perry Johnson

A. Preliminary Examination Phase
Date Opened: 10-2-07 By (print): Faith Nichols (sign) [signature]

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
   If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? ..... YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: Ziploc bags
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... (YES) NO
   Type of ice: Wet Temperature: No temp blank, All on ice
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-2-07 By (print): Troy Windsor (sign) [signature]

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-12-SS-42' | 198049-001 |
| B-12-SS-0.0' | 198049-002 |
| B-12-GW-33' | 198049-003 |
| B-10-SS-0.0' | 198049-004 |
| B-10-SS-45' | 198049-005 |
| B-10-GW-27.5' | 198049-006 |
| B-10-GW-45' | 198049-007 |
| TRIP BLANK | 198049-008 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/24/2007
Project Manager

Signature: _____ Date: 10/25/2007
Operations Manager

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198049** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/03/07, 10/05/07** |
| Samples Received: | **10/03/07** |

This hardcopy data package contains sample and QC results for four soil samples and four water samples, requested for the above referenced project on 10/03/07 and 10/05/07. The samples were received intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
High surrogate recoveries were observed for trifluorotoluene (FID) in the MS/MSD for batch 130252; the corresponding bromofluorobenzene (FID) surrogate recoveries were within limits, and the parent sample was not a project sample. No other analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
Low recoveries were observed for toluene and chlorobenzene in the MSD of B-10-SS-0.0' (lab # 198049-004); the LCS was within limits. High RPD was observed for benzene and trichloroethene in the MS/MSD of B-10-SS-0.0' (lab # 198049-004); these analytes were not detected at or above the RL in the associated samples. No other analytical problems were encountered.

**Pesticides (EPA 8081A) Water:**
High ICAL percent RSD (relative standard deviation) was observed for 4,4'-DDT in the calibration analyzed 10/10/07 15:50; average ICAL %RSD met method requirements, and affected data was qualified with "b". No other analytical problems were encountered.

**Pesticides (EPA 8081A) Soil:**
No analytical problems were encountered.

**Polychlorinated Biphenyls (PCBs) (EPA 8082) Water:**
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198049** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/03/07, 10/05/07** |
| Samples Received: | **10/03/07** |

**Polychlorinated Biphenyls (PCBs) (EPA 8082) Soil:**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
High recovery was observed for zinc in the MSD for batch 130163; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Soil:**
No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130252 |
| Units: | ug/L | Received: | 10/03/07 |
| Diln Fac: | 1.000 | | |

| | | | |
|---|---|---|---|
| Field ID: | B-12-GW-33' | Sampled: | 10/01/07 |
| Type: | SAMPLE | Analyzed: | 10/06/07 |
| Lab ID: | 198049-003 | | |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 73-134 |
| Bromofluorobenzene (FID) | 98 | 77-140 |

| | | | |
|---|---|---|---|
| Field ID: | B-10-GW-27.5' | Sampled: | 10/01/07 |
| Type: | SAMPLE | Analyzed: | 10/06/07 |
| Lab ID: | 198049-006 | | |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 78 | 73-134 |
| Bromofluorobenzene (FID) | 81 | 77-140 |

| | | | |
|---|---|---|---|
| Field ID: | B-10-GW-45' | Sampled: | 10/02/07 |
| Type: | SAMPLE | Analyzed: | 10/06/07 |
| Lab ID: | 198049-007 | | |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 73-134 |
| Bromofluorobenzene (FID) | 97 | 77-140 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/05/07 |
| Lab ID: | QC409338 | | |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 104 | 73-134 |
| Bromofluorobenzene (FID) | 95 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409339 | Batch#: | 130252 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 970.2 | 97 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 127 | 73-134 |
| Bromofluorobenzene (FID) | 103 | 77-140 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130252 |
| MSS Lab ID: | 197934-009 | Sampled: | 09/27/07 |
| Matrix: | Water | Received: | 09/27/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409340

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 18.39 | 2,000 | 1,837 | 91 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 143 * | 73-134 |
| Bromofluorobenzene (FID) | 107 | 77-140 |

Type: MSD Lab ID: QC409341

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,872 | 93 | 72-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 145 * | 73-134 |
| Bromofluorobenzene (FID) | 111 | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130246 |
| Units: | mg/Kg | Sampled: | 10/01/07 |
| Basis: | as received | Received: | 10/03/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-12-SS-42' Lab ID: 198049-001
Type: SAMPLE Analyzed: 10/06/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.96 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 97 | 71-132 |
| Bromofluorobenzene (FID) | 95 | 69-145 |

Field ID: B-12-SS-0.0' Lab ID: 198049-002
Type: SAMPLE Analyzed: 10/06/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.94 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 86 | 71-132 |
| Bromofluorobenzene (FID) | 97 | 69-145 |

Field ID: B-10-SS-0.0' Lab ID: 198049-004
Type: SAMPLE Analyzed: 10/06/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.95 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 91 | 71-132 |
| Bromofluorobenzene (FID) | 99 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130246 |
| Units: | mg/Kg | Sampled: | 10/01/07 |
| Basis: | as received | Received: | 10/03/07 |
| Diln Fac: | 1.000 | | |

| | | | |
|---|---|---|---|
| Field ID: | B-10-SS-45' | Lab ID: | 198049-005 |
| Type: | SAMPLE | Analyzed: | 10/06/07 |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 94 | 71-132 |
| Bromofluorobenzene (FID) | 100 | 69-145 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/05/07 |
| Lab ID: | QC409318 | | |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 88 | 71-132 |
| Bromofluorobenzene (FID) | 95 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC409320 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130246 |
| Units: | mg/Kg | Analyzed: | 10/05/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 5.000 | 5.059 | 101 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 99 | 69-145 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 197959-002 | Batch#: | 130246 |
| Matrix: | Soil | Sampled: | 09/28/07 |
| Units: | mg/Kg | Received: | 09/28/07 |
| Basis: | as received | Analyzed: | 10/06/07 |

Type: MS Lab ID: QC409321

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 0.2565 | 10.10 | 7.144 | 68 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 98 | 69-145 |

Type: MSD Lab ID: QC409322

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 10.10 | 6.202 | 59 | 43-120 | 14 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 97 | 71-132 |
| Bromofluorobenzene (FID) | 97 | 69-145 |

RPD= Relative Percent Difference

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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130235 |
| Units: | ug/L | Received: | 10/03/07 |
| Diln Fac: | 1.000 | Prepared: | 10/05/07 |

Field ID: B-12-GW-33' Sampled: 10/01/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 198049-003

| Analyte | Result | RL | MDL | Analyzed |
|---|---|---|---|---|
| Diesel C10-C24 | 110 Y | 50 | | 10/08/07 |
| Diesel C10-C24 (SGCU) | 58 Y | 50 | | 11/01/07 |
| Motor Oil C24-C36 | 120 J | 300 | 64 | 10/08/07 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 130 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 116 | 61-133 | 10/08/07 |
| Hexacosane (SGCU) | 103 | 61-133 | 11/01/07 |

Field ID: B-10-GW-27.5' Sampled: 10/01/07
Type: SAMPLE Analyzed: 10/08/07
Lab ID: 198049-006

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 64 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 115 | 61-133 |

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130235 |
| Units: | ug/L | Received: | 10/03/07 |
| Diln Fac: | 1.000 | Prepared: | 10/05/07 |

| | | | |
|---|---|---|---|
| Field ID: | B-10-GW-45' | Sampled: | 10/02/07 |
| Type: | SAMPLE | Analyzed: | 10/08/07 |
| Lab ID: | 198049-007 | | |

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | 52 Y | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 106 | 61-133 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/08/07 |
| Lab ID: | QC409284 | Cleanup Method: | EPA 3630C |

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Diesel C10-C24 (SGCU) | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 64 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 120 | 61-133 |
| Hexacosane (SGCU) | 104 | 61-133 |

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130235 |
| Units: | ug/L | Prepared: | 10/05/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/08/07 |

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC409285

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,649 | 106 | 58-128 |

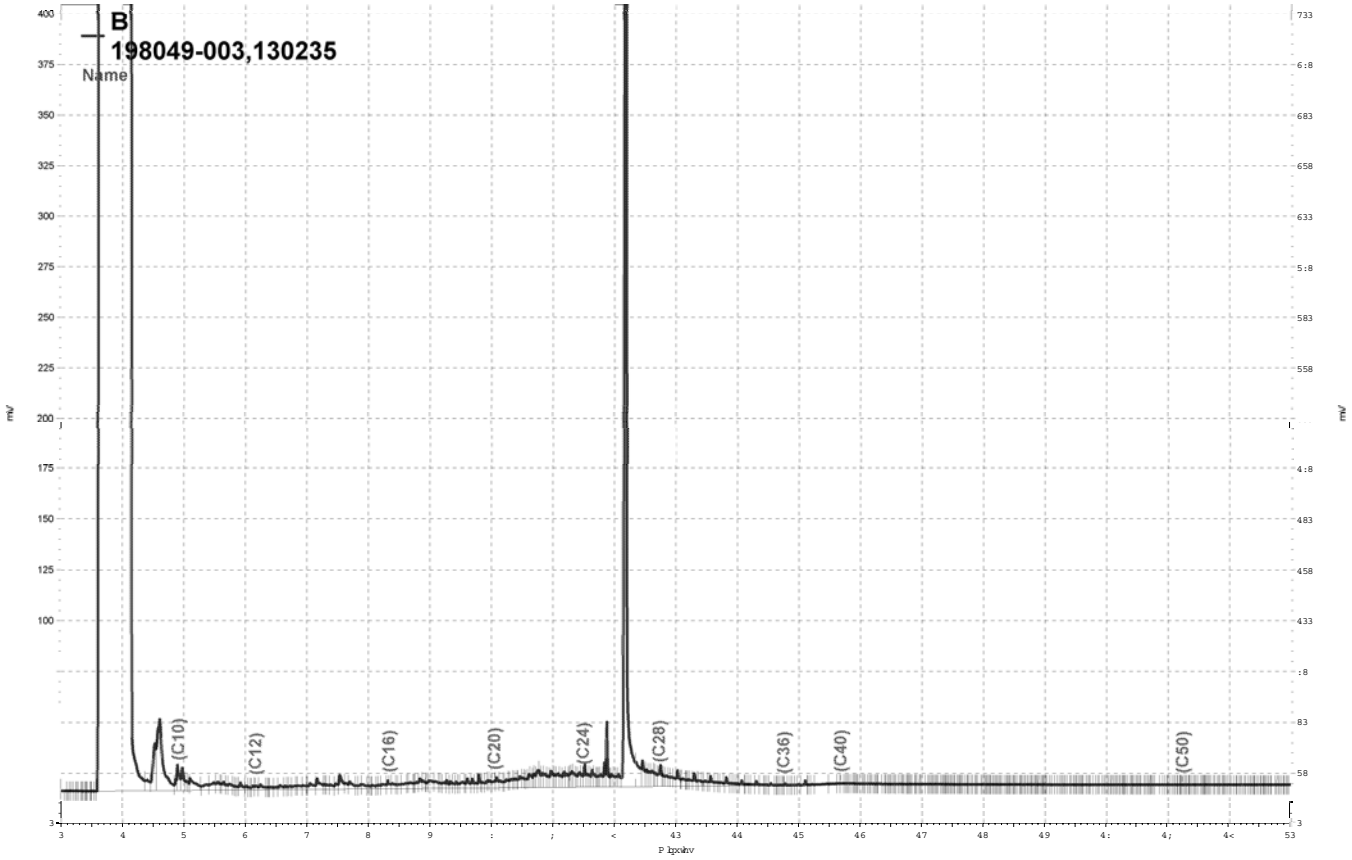
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 110 | 61-133 |

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC409286

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,235 | 89 | 58-128 | 17 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 94 | 61-133 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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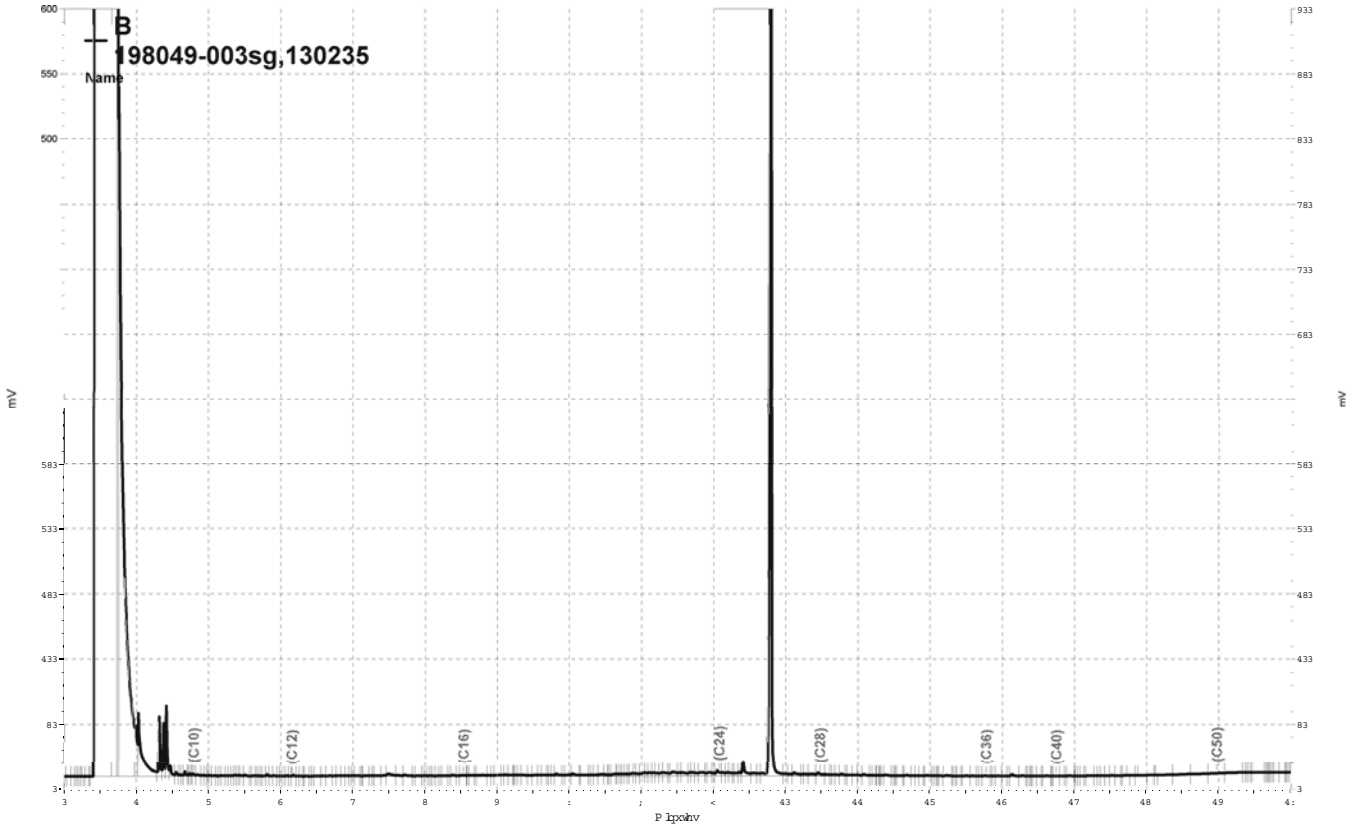


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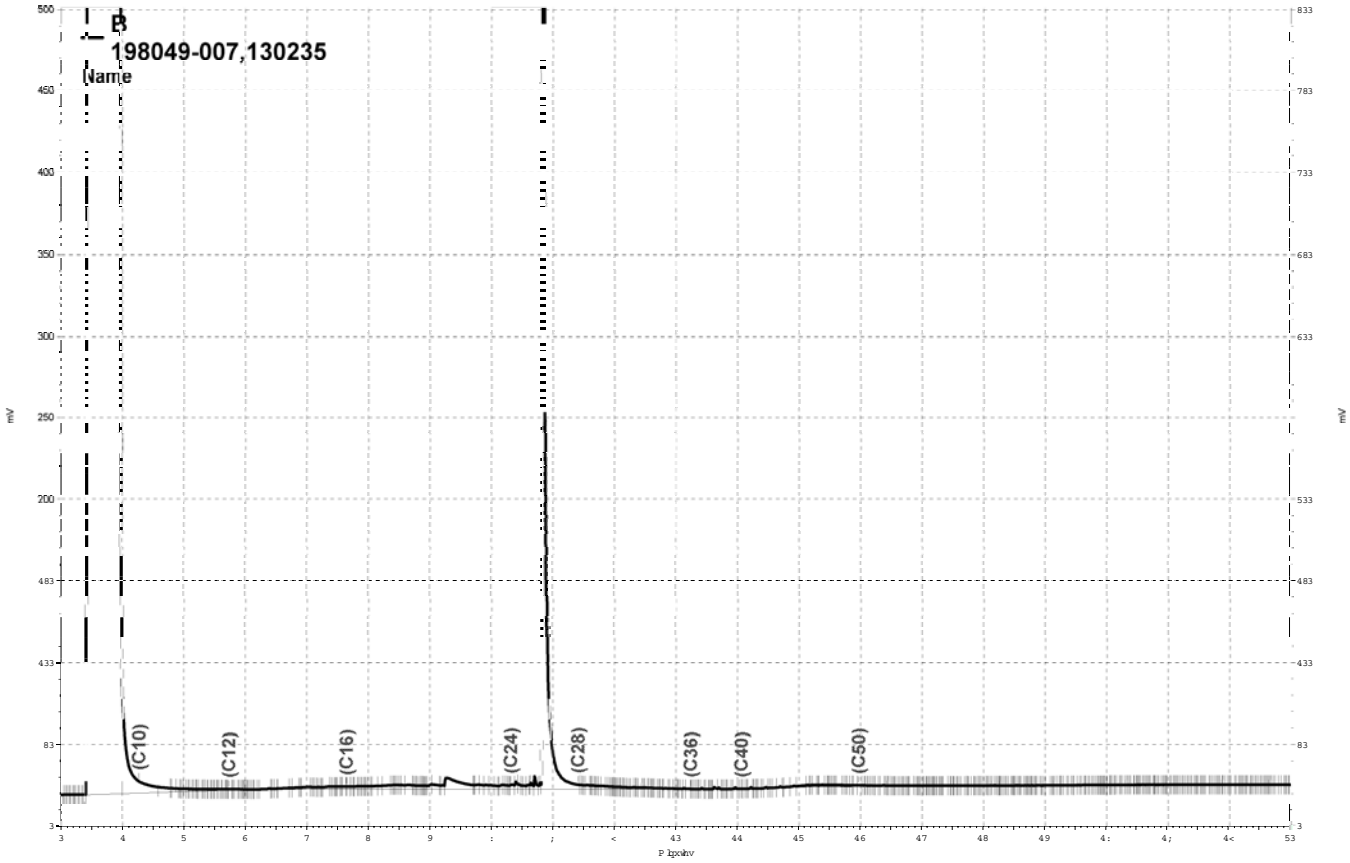


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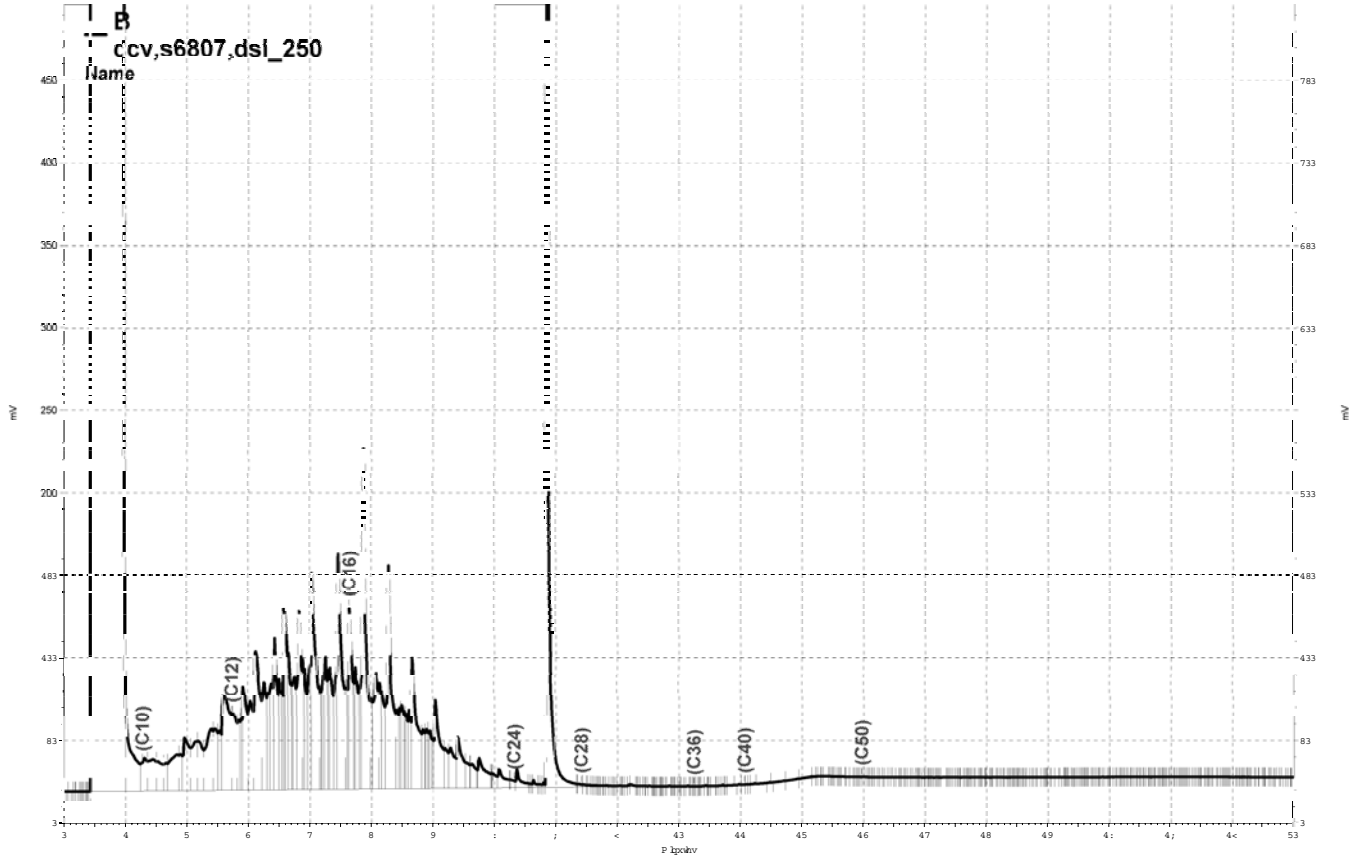


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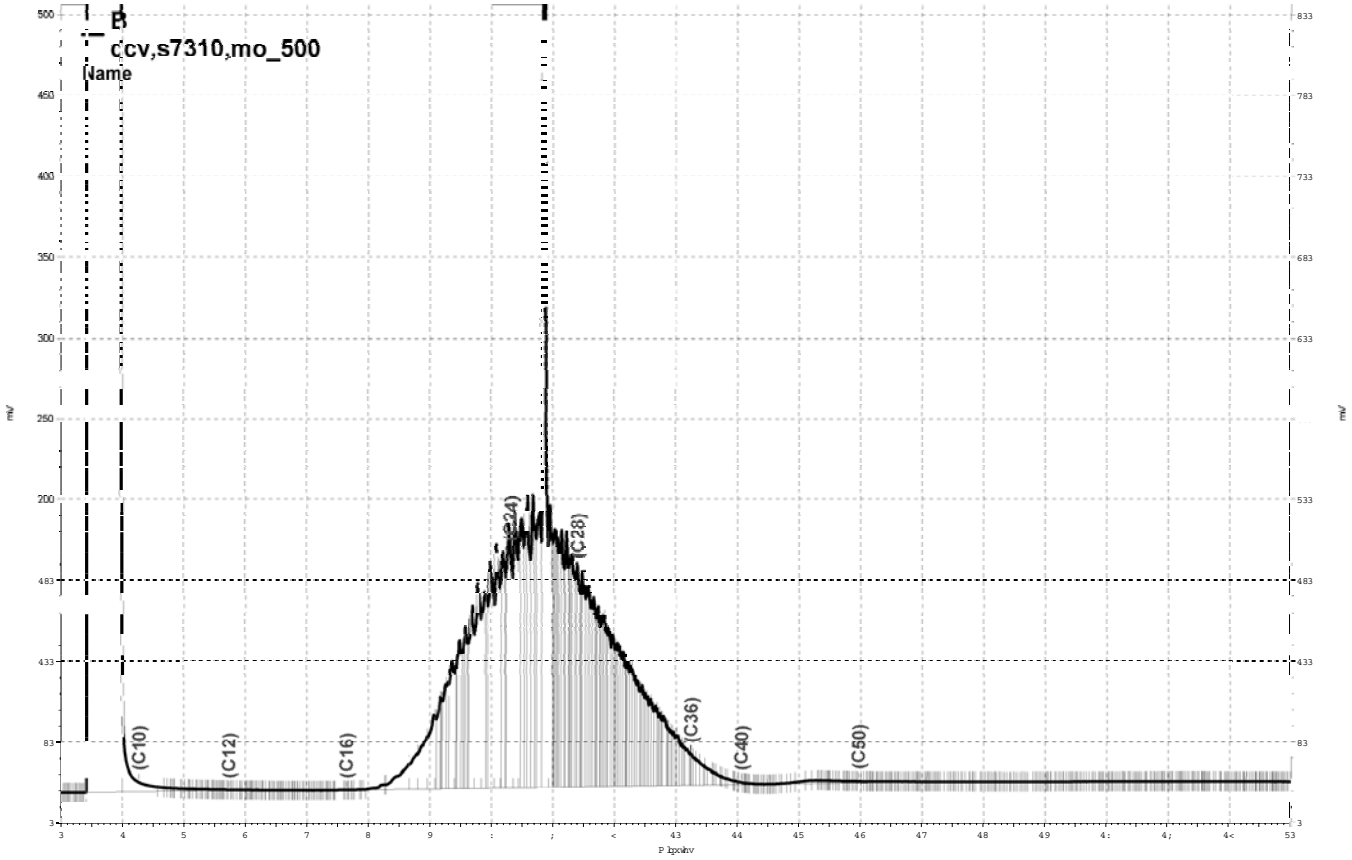


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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | mg/Kg | Received: | 10/03/07 |
| Basis: | as received | Prepared: | 10/08/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-12-SS-42' | Batch#: 130290
Type: SAMPLE | Analyzed: 10/09/07
Lab ID: 198049-001

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 11 Y | 1.0 |
| Motor Oil C24-C36 | 34 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 70 | 46-128 |

Field ID: B-12-SS-0.0' | Batch#: 130316
Type: SAMPLE | Analyzed: 10/09/07
Lab ID: 198049-002

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 10 Y | 1.0 |
| Motor Oil C24-C36 | 60 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 81 | 46-128 |

Field ID: B-10-SS-0.0' | Batch#: 130316
Type: SAMPLE | Analyzed: 10/09/07
Lab ID: 198049-004

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 18 Y | 2.0 |
| Motor Oil C24-C36 | 86 | 10 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 85 | 46-128 |

Field ID: B-10-SS-45' | Batch#: 130316
Type: SAMPLE | Cleanup Method: EPA 3630C
Lab ID: 198049-005

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 42 Y | 1.0 | 10/09/07 |
| Diesel C10-C24 (SGCU) | 29 Y | 1.0 | 11/01/07 |
| Motor Oil C24-C36 | 190 | 5.0 | 10/09/07 |
| Motor Oil C24-C36 (SGCU) | 160 | 5.0 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 78 | 46-128 | 10/09/07 |
| Hexacosane (SGCU) | 72 | 46-128 | 11/01/07 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | mg/Kg | Received: | 10/03/07 |
| Basis: | as received | Prepared: | 10/08/07 |
| Diln Fac: | 1.000 | | |

| | | | |
|---|---|---|---|
| Type: | BLANK | Batch#: | 130290 |
| Lab ID: | QC409481 | Analyzed: | 10/09/07 |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 97 | 46-128 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/09/07 |
| Lab ID: | QC409589 | Cleanup Method: | EPA 3630C |
| Batch#: | 130316 | | |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Diesel C10-C24 (SGCU) | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |
| Motor Oil C24-C36 (SGCU) | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 103 | 46-128 |
| Hexacosane (SGCU) | 120 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409482 | Batch#: | 130290 |
| Matrix: | Soil | Prepared: | 10/08/07 |
| Units: | mg/Kg | Analyzed: | 10/08/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 50.37 | 46.78 | 93 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 97 | 46-128 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130290 |
| MSS Lab ID: | 197916-006 | Sampled: | 09/26/07 |
| Matrix: | Soil | Received: | 09/27/07 |
| Units: | mg/Kg | Prepared: | 10/08/07 |
| Basis: | as received | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC409483

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 26.75 | 49.78 | 80.32 | 108 | 31-150 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 102 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC409484

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.77 | 68.35 | 84 | 31-150 | 16 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 95 | 46-128 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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Batch QC Report

## Total Extractable Hydrocarbons

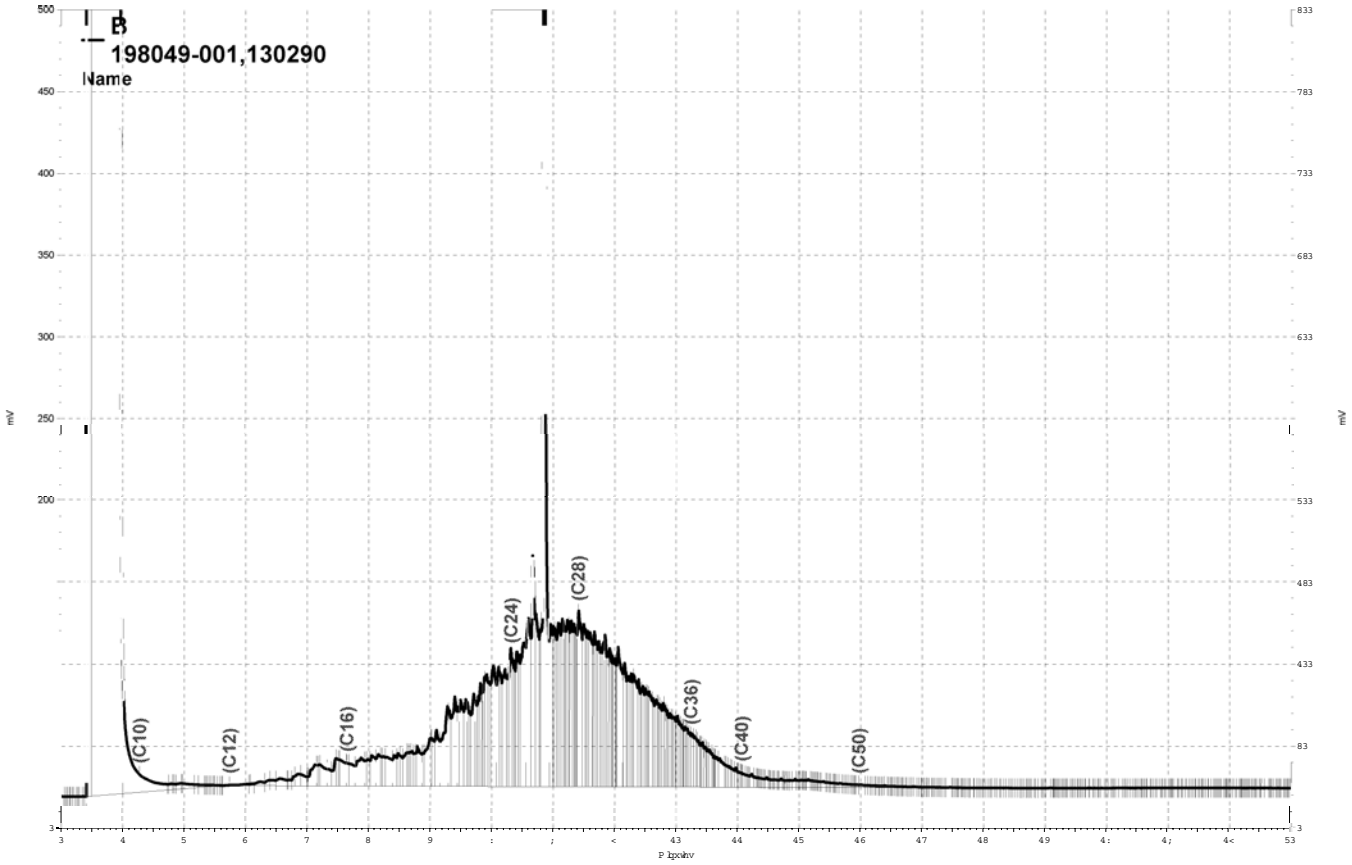
| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409590 | Batch#: | 130316 |
| Matrix: | Soil | Prepared: | 10/08/07 |
| Units: | mg/Kg | Analyzed: | 10/09/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.96 | 49.67 | 99 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 104 | 46-128 |

SGCU= Silica gel cleanup

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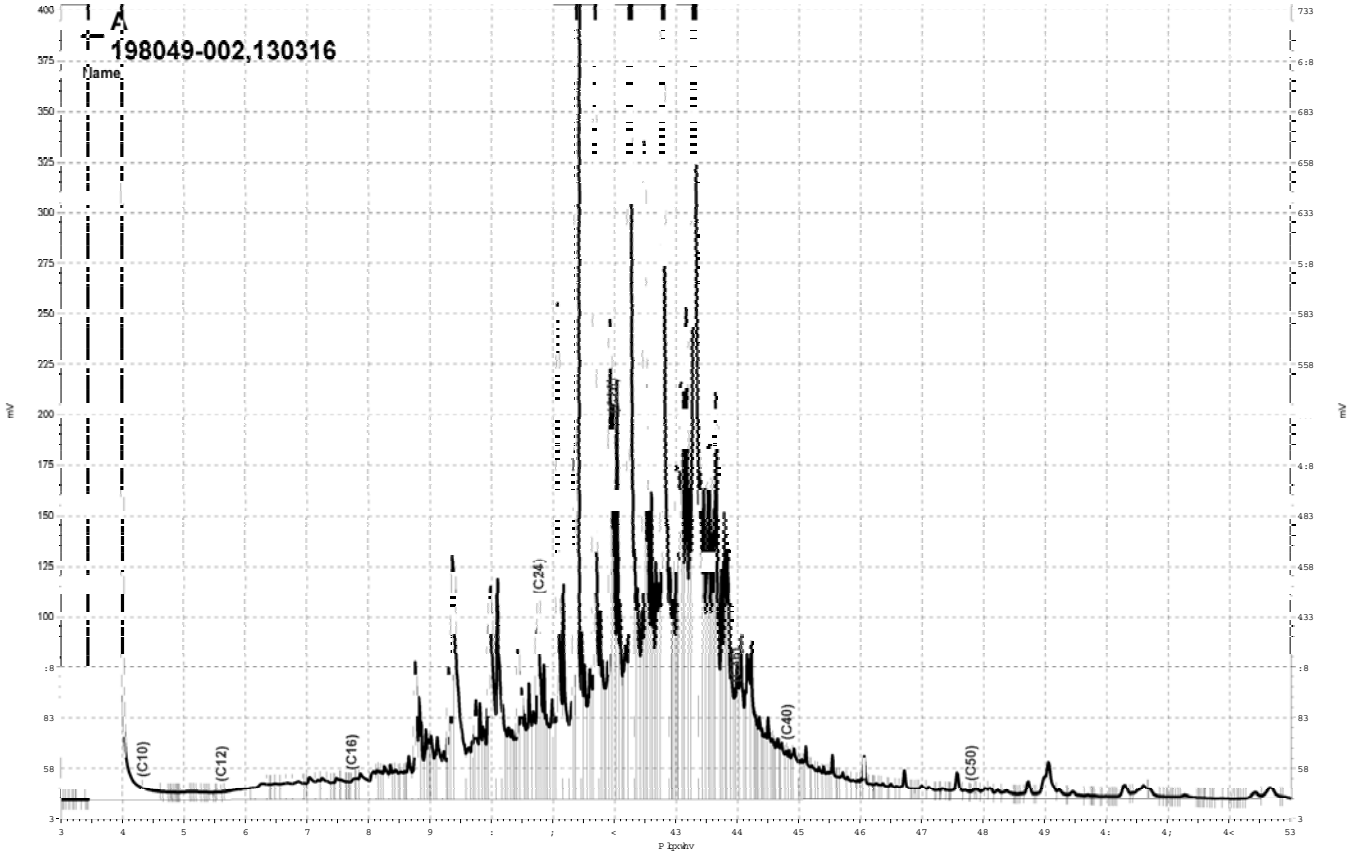


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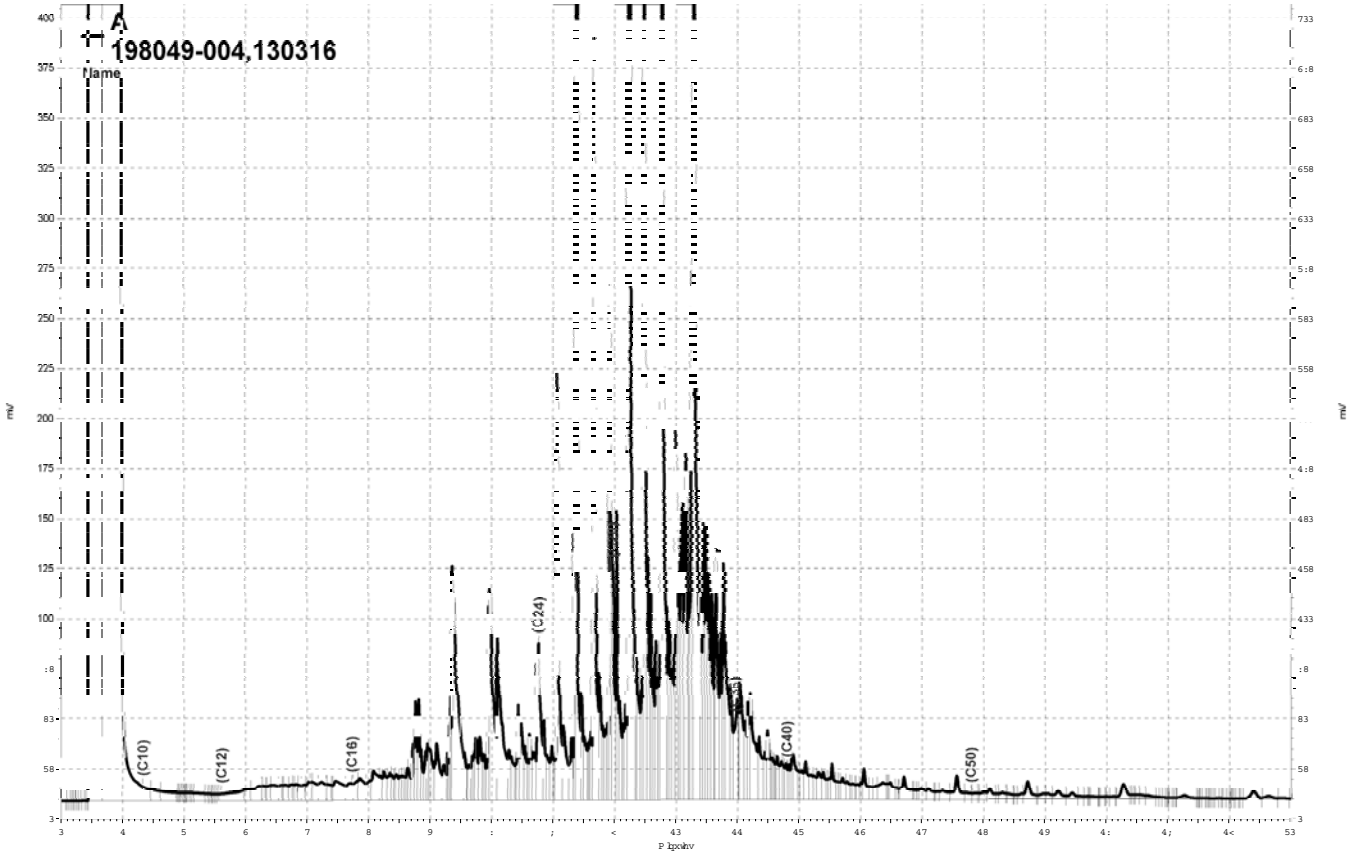


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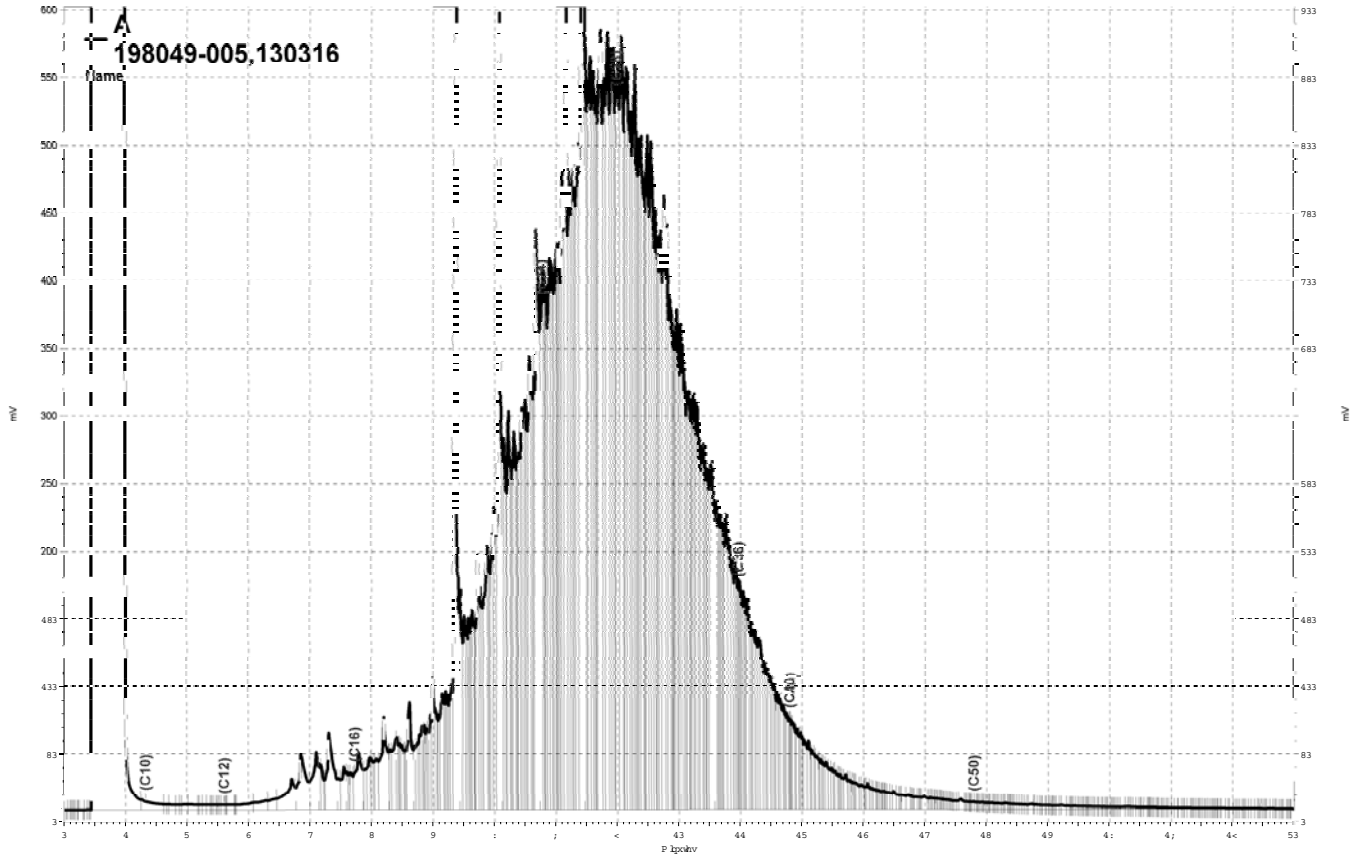


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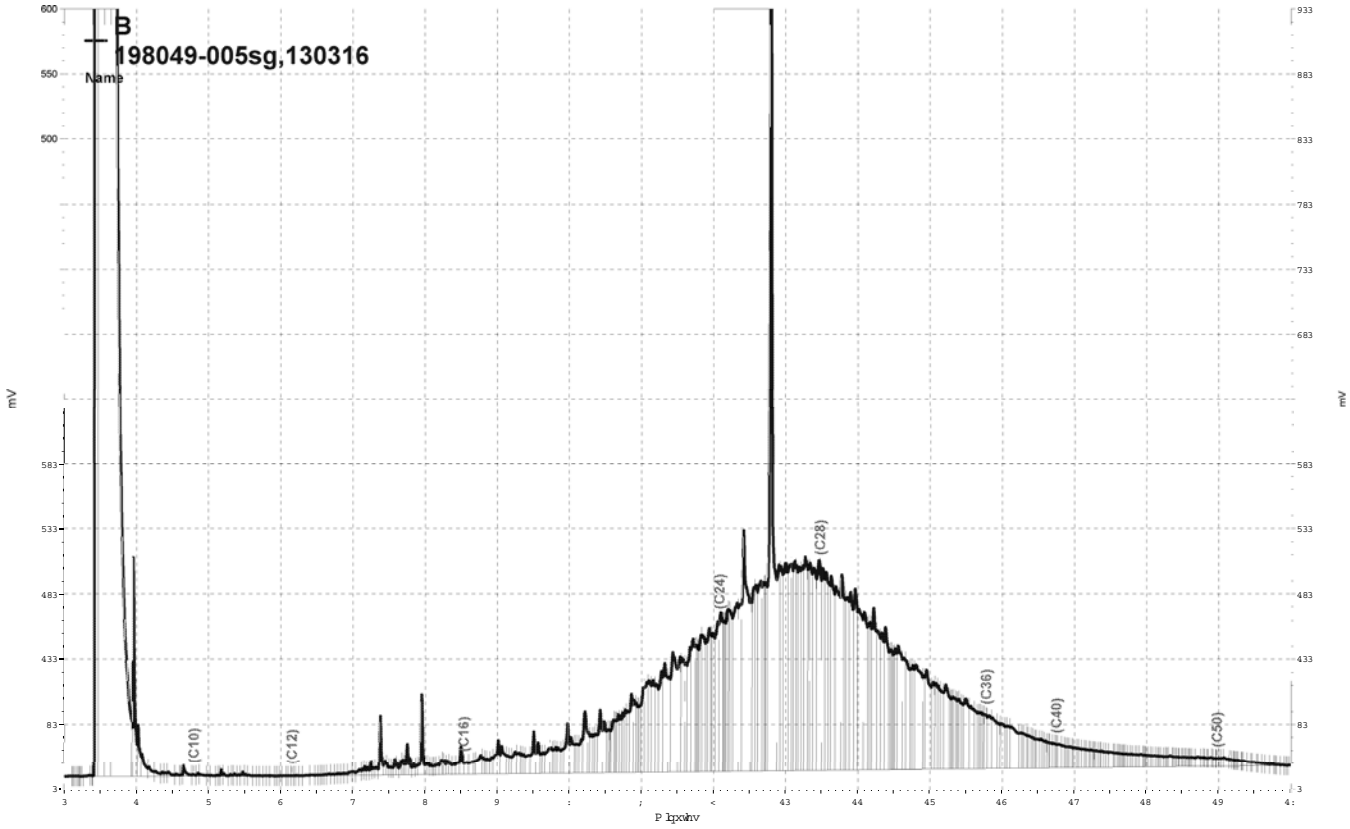
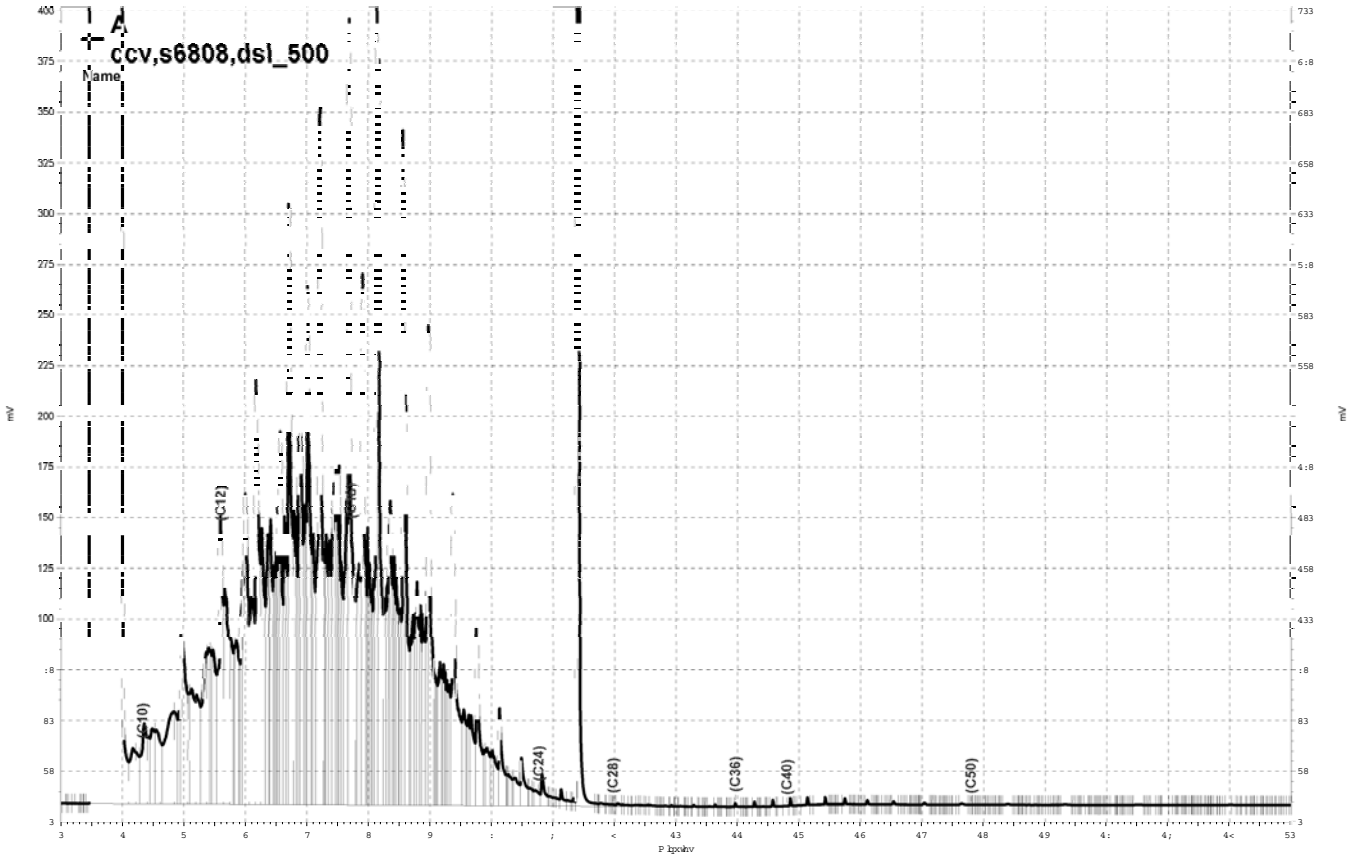
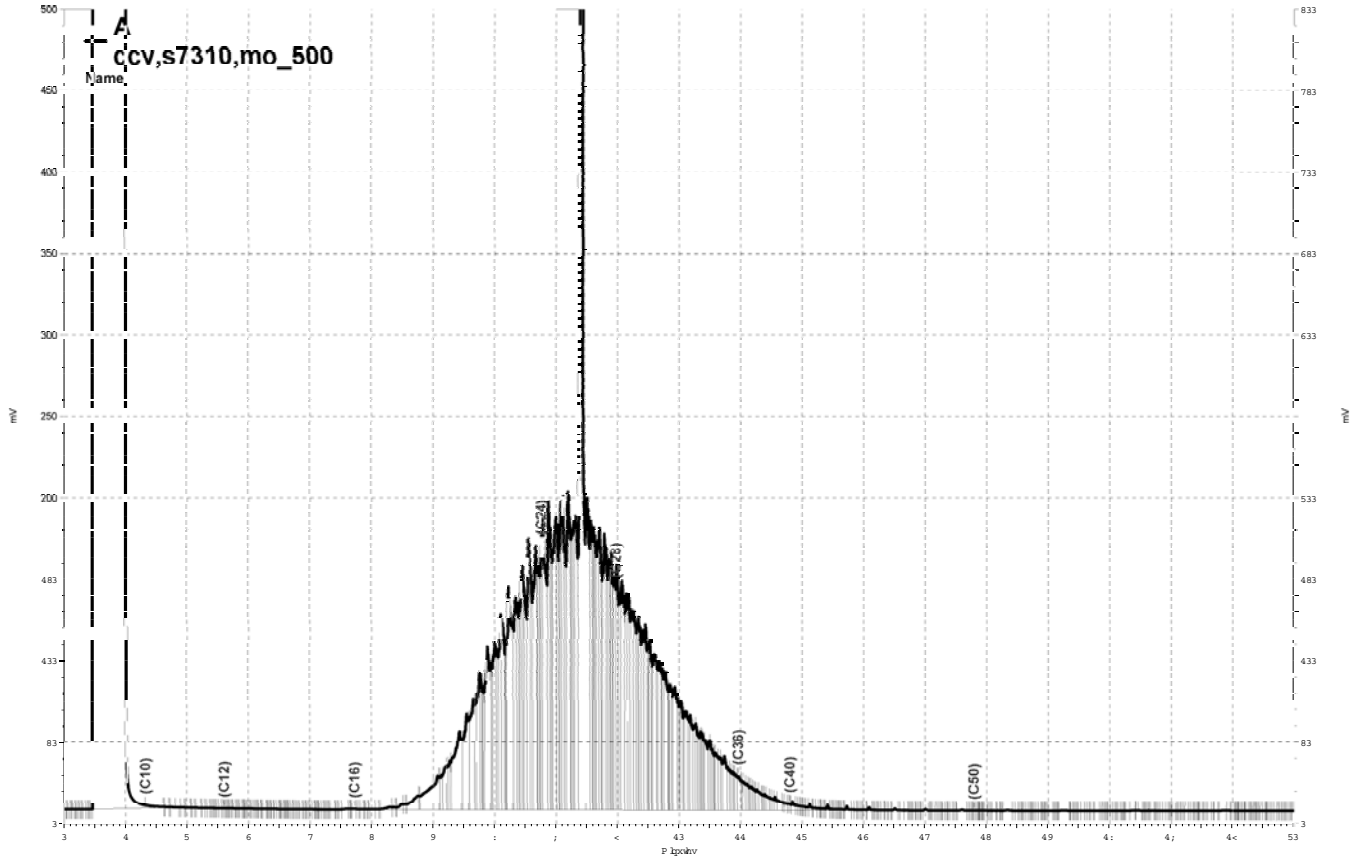



_Olp v_jgulyh_h}fkurp _Surmfw_JF59_Gdwd_638e344/E




_Olp v_jgulyh_h}fkurp _Surmnfwv_J F44D_Gdwd_5;4d337/D




_Olp v_jgulyh_h}fkurp _Surmhfwv_J F44D_Gdwd_5;4d369/D

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-GW-33' | Batch#: | 130175 |
| Lab ID: | 198049-003 | Sampled: | 10/01/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-GW-33' | Batch#: | 130175 |
| Lab ID: | 198049-003 | Sampled: | 10/01/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 107 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-GW-27.5' | Batch#: | 130175 |
| Lab ID: | 198049-006 | Sampled: | 10/01/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-GW-27.5' | Batch#: | 130175 |
| Lab ID: | 198049-006 | Sampled: | 10/01/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 108 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 104 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-GW-45' | Batch#: | 130175 |
| Lab ID: | 198049-007 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-GW-45' | Batch#: | 130175 |
| Lab ID: | 198049-007 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 107 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | TRIP BLANK | Batch#: | 130175 |
| Lab ID: | 198049-008 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | TRIP BLANK | Batch#: | 130175 |
| Lab ID: | 198049-008 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 107 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 130175 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409020

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 26.27 | 105 | 80-133 |
| Benzene | 25.00 | 24.55 | 98 | 80-120 |
| Trichloroethene | 25.00 | 26.68 | 107 | 80-120 |
| Toluene | 25.00 | 25.32 | 101 | 80-122 |
| Chlorobenzene | 25.00 | 25.45 | 102 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 95 | 80-122 |
| 1,2-Dichloroethane-d4 | 104 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 100 | 80-120 |

Type: BSD Lab ID: QC409021

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 24.12 | 96 | 80-133 | 9 | 20 |
| Benzene | 25.00 | 23.29 | 93 | 80-120 | 5 | 20 |
| Trichloroethene | 25.00 | 25.29 | 101 | 80-120 | 5 | 20 |
| Toluene | 25.00 | 23.58 | 94 | 80-122 | 7 | 20 |
| Chlorobenzene | 25.00 | 24.63 | 99 | 80-120 | 3 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 96 | 80-122 |
| 1,2-Dichloroethane-d4 | 103 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 99 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409022 | Batch#: | 130175 |
| Matrix: | Water | Analyzed: | 10/04/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409022 | Batch#: | 130175 |
| Matrix: | Water | Analyzed: | 10/04/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 98 | 80-122 |
| 1,2-Dichloroethane-d4 | 106 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 104 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-SS-42' | Diln Fac: | 0.8929 |
| Lab ID: | 198049-001 | Batch#: | 130136 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 8.9 |
| Chloromethane | ND | 8.9 |
| Vinyl Chloride | ND | 8.9 |
| Bromomethane | ND | 8.9 |
| Chloroethane | ND | 8.9 |
| Trichlorofluoromethane | ND | 4.5 |
| Acetone | ND | 22 |
| Freon 113 | ND | 4.5 |
| 1,1-Dichloroethene | ND | 4.5 |
| Methylene Chloride | ND | 18 |
| Carbon Disulfide | ND | 4.5 |
| MTBE | ND | 4.5 |
| trans-1,2-Dichloroethene | ND | 4.5 |
| Vinyl Acetate | ND | 45 |
| 1,1-Dichloroethane | ND | 4.5 |
| 2-Butanone | ND | 8.9 |
| cis-1,2-Dichloroethene | ND | 4.5 |
| 2,2-Dichloropropane | ND | 4.5 |
| Chloroform | ND | 4.5 |
| Bromochloromethane | ND | 4.5 |
| 1,1,1-Trichloroethane | ND | 4.5 |
| 1,1-Dichloropropene | ND | 4.5 |
| Carbon Tetrachloride | ND | 4.5 |
| 1,2-Dichloroethane | ND | 4.5 |
| Benzene | ND | 4.5 |
| Trichloroethene | ND | 4.5 |
| 1,2-Dichloropropane | ND | 4.5 |
| Bromodichloromethane | ND | 4.5 |
| Dibromomethane | ND | 4.5 |
| 4-Methyl-2-Pentanone | ND | 8.9 |
| cis-1,3-Dichloropropene | ND | 4.5 |
| Toluene | ND | 4.5 |
| trans-1,3-Dichloropropene | ND | 4.5 |
| 1,1,2-Trichloroethane | ND | 4.5 |
| 2-Hexanone | ND | 8.9 |
| 1,3-Dichloropropane | ND | 4.5 |
| Tetrachloroethene | ND | 4.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-SS-42' | Diln Fac: | 0.8929 |
| Lab ID: | 198049-001 | Batch#: | 130136 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.5 |
| 1,2-Dibromoethane | ND | 4.5 |
| Chlorobenzene | ND | 4.5 |
| 1,1,1,2-Tetrachloroethane | ND | 4.5 |
| Ethylbenzene | ND | 4.5 |
| m,p-Xylenes | ND | 4.5 |
| o-Xylene | ND | 4.5 |
| Styrene | ND | 4.5 |
| Bromoform | ND | 4.5 |
| Isopropylbenzene | ND | 4.5 |
| 1,1,2,2-Tetrachloroethane | ND | 4.5 |
| 1,2,3-Trichloropropane | ND | 4.5 |
| Propylbenzene | ND | 4.5 |
| Bromobenzene | ND | 4.5 |
| 1,3,5-Trimethylbenzene | ND | 4.5 |
| 2-Chlorotoluene | ND | 4.5 |
| 4-Chlorotoluene | ND | 4.5 |
| tert-Butylbenzene | ND | 4.5 |
| 1,2,4-Trimethylbenzene | ND | 4.5 |
| sec-Butylbenzene | ND | 4.5 |
| para-Isopropyl Toluene | ND | 4.5 |
| 1,3-Dichlorobenzene | ND | 4.5 |
| 1,4-Dichlorobenzene | ND | 4.5 |
| n-Butylbenzene | ND | 4.5 |
| 1,2-Dichlorobenzene | ND | 4.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.5 |
| 1,2,4-Trichlorobenzene | ND | 4.5 |
| Hexachlorobutadiene | ND | 4.5 |
| Naphthalene | ND | 4.5 |
| 1,2,3-Trichlorobenzene | ND | 4.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 93 | 80-124 |
| 1,2-Dichloroethane-d4 | 91 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 103 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-SS-0.0' | Diln Fac: | 0.9091 |
| Lab ID: | 198049-002 | Batch#: | 130134 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.1 |
| Chloromethane | ND | 9.1 |
| Vinyl Chloride | ND | 9.1 |
| Bromomethane | ND | 9.1 |
| Chloroethane | ND | 9.1 |
| Trichlorofluoromethane | ND | 4.5 |
| Acetone | ND | 23 |
| Freon 113 | ND | 4.5 |
| 1,1-Dichloroethene | ND | 4.5 |
| Methylene Chloride | ND | 18 |
| Carbon Disulfide | ND | 4.5 |
| MTBE | ND | 4.5 |
| trans-1,2-Dichloroethene | ND | 4.5 |
| Vinyl Acetate | ND | 45 |
| 1,1-Dichloroethane | ND | 4.5 |
| 2-Butanone | ND | 9.1 |
| cis-1,2-Dichloroethene | ND | 4.5 |
| 2,2-Dichloropropane | ND | 4.5 |
| Chloroform | ND | 4.5 |
| Bromochloromethane | ND | 4.5 |
| 1,1,1-Trichloroethane | ND | 4.5 |
| 1,1-Dichloropropene | ND | 4.5 |
| Carbon Tetrachloride | ND | 4.5 |
| 1,2-Dichloroethane | ND | 4.5 |
| Benzene | ND | 4.5 |
| Trichloroethene | ND | 4.5 |
| 1,2-Dichloropropane | ND | 4.5 |
| Bromodichloromethane | ND | 4.5 |
| Dibromomethane | ND | 4.5 |
| 4-Methyl-2-Pentanone | ND | 9.1 |
| cis-1,3-Dichloropropene | ND | 4.5 |
| Toluene | ND | 4.5 |
| trans-1,3-Dichloropropene | ND | 4.5 |
| 1,1,2-Trichloroethane | ND | 4.5 |
| 2-Hexanone | ND | 9.1 |
| 1,3-Dichloropropane | ND | 4.5 |
| Tetrachloroethene | ND | 4.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-12-SS-0.0' | Diln Fac: | 0.9091 |
| Lab ID: | 198049-002 | Batch#: | 130134 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.5 |
| 1,2-Dibromoethane | ND | 4.5 |
| Chlorobenzene | ND | 4.5 |
| 1,1,1,2-Tetrachloroethane | ND | 4.5 |
| Ethylbenzene | ND | 4.5 |
| m,p-Xylenes | ND | 4.5 |
| o-Xylene | ND | 4.5 |
| Styrene | ND | 4.5 |
| Bromoform | ND | 4.5 |
| Isopropylbenzene | ND | 4.5 |
| 1,1,2,2-Tetrachloroethane | ND | 4.5 |
| 1,2,3-Trichloropropane | ND | 4.5 |
| Propylbenzene | ND | 4.5 |
| Bromobenzene | ND | 4.5 |
| 1,3,5-Trimethylbenzene | ND | 4.5 |
| 2-Chlorotoluene | ND | 4.5 |
| 4-Chlorotoluene | ND | 4.5 |
| tert-Butylbenzene | ND | 4.5 |
| 1,2,4-Trimethylbenzene | ND | 4.5 |
| sec-Butylbenzene | ND | 4.5 |
| para-Isopropyl Toluene | ND | 4.5 |
| 1,3-Dichlorobenzene | ND | 4.5 |
| 1,4-Dichlorobenzene | ND | 4.5 |
| n-Butylbenzene | ND | 4.5 |
| 1,2-Dichlorobenzene | ND | 4.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.5 |
| 1,2,4-Trichlorobenzene | ND | 4.5 |
| Hexachlorobutadiene | ND | 4.5 |
| Naphthalene | ND | 4.5 |
| 1,2,3-Trichlorobenzene | ND | 4.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 106 | 80-124 |
| 1,2-Dichloroethane-d4 | 102 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 104 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-SS-0.0' | Diln Fac: | 0.9259 |
| Lab ID: | 198049-004 | Batch#: | 130134 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.3 |
| Chloromethane | ND | 9.3 |
| Vinyl Chloride | ND | 9.3 |
| Bromomethane | ND | 9.3 |
| Chloroethane | ND | 9.3 |
| Trichlorofluoromethane | ND | 4.6 |
| Acetone | ND | 23 |
| Freon 113 | ND | 4.6 |
| 1,1-Dichloroethene | ND | 4.6 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.6 |
| MTBE | ND | 4.6 |
| trans-1,2-Dichloroethene | ND | 4.6 |
| Vinyl Acetate | ND | 46 |
| 1,1-Dichloroethane | ND | 4.6 |
| 2-Butanone | ND | 9.3 |
| cis-1,2-Dichloroethene | ND | 4.6 |
| 2,2-Dichloropropane | ND | 4.6 |
| Chloroform | ND | 4.6 |
| Bromochloromethane | ND | 4.6 |
| 1,1,1-Trichloroethane | ND | 4.6 |
| 1,1-Dichloropropene | ND | 4.6 |
| Carbon Tetrachloride | ND | 4.6 |
| 1,2-Dichloroethane | ND | 4.6 |
| Benzene | ND | 4.6 |
| Trichloroethene | ND | 4.6 |
| 1,2-Dichloropropane | ND | 4.6 |
| Bromodichloromethane | ND | 4.6 |
| Dibromomethane | ND | 4.6 |
| 4-Methyl-2-Pentanone | ND | 9.3 |
| cis-1,3-Dichloropropene | ND | 4.6 |
| Toluene | ND | 4.6 |
| trans-1,3-Dichloropropene | ND | 4.6 |
| 1,1,2-Trichloroethane | ND | 4.6 |
| 2-Hexanone | ND | 9.3 |
| 1,3-Dichloropropane | ND | 4.6 |
| Tetrachloroethene | ND | 4.6 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-SS-0.0' | Diln Fac: | 0.9259 |
| Lab ID: | 198049-004 | Batch#: | 130134 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.6 |
| 1,2-Dibromoethane | ND | 4.6 |
| Chlorobenzene | ND | 4.6 |
| 1,1,1,2-Tetrachloroethane | ND | 4.6 |
| Ethylbenzene | ND | 4.6 |
| m,p-Xylenes | ND | 4.6 |
| o-Xylene | ND | 4.6 |
| Styrene | ND | 4.6 |
| Bromoform | ND | 4.6 |
| Isopropylbenzene | ND | 4.6 |
| 1,1,2,2-Tetrachloroethane | ND | 4.6 |
| 1,2,3-Trichloropropane | ND | 4.6 |
| Propylbenzene | ND | 4.6 |
| Bromobenzene | ND | 4.6 |
| 1,3,5-Trimethylbenzene | ND | 4.6 |
| 2-Chlorotoluene | ND | 4.6 |
| 4-Chlorotoluene | ND | 4.6 |
| tert-Butylbenzene | ND | 4.6 |
| 1,2,4-Trimethylbenzene | ND | 4.6 |
| sec-Butylbenzene | ND | 4.6 |
| para-Isopropyl Toluene | ND | 4.6 |
| 1,3-Dichlorobenzene | ND | 4.6 |
| 1,4-Dichlorobenzene | ND | 4.6 |
| n-Butylbenzene | ND | 4.6 |
| 1,2-Dichlorobenzene | ND | 4.6 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.6 |
| 1,2,4-Trichlorobenzene | ND | 4.6 |
| Hexachlorobutadiene | ND | 4.6 |
| Naphthalene | ND | 4.6 |
| 1,2,3-Trichlorobenzene | ND | 4.6 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 110 | 80-124 |
| 1,2-Dichloroethane-d4 | 105 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 104 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-SS-45' | Diln Fac: | 0.9434 |
| Lab ID: | 198049-005 | Batch#: | 130136 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.4 |
| Chloromethane | ND | 9.4 |
| Vinyl Chloride | ND | 9.4 |
| Bromomethane | ND | 9.4 |
| Chloroethane | ND | 9.4 |
| Trichlorofluoromethane | ND | 4.7 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.7 |
| 1,1-Dichloroethene | ND | 4.7 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.7 |
| MTBE | ND | 4.7 |
| trans-1,2-Dichloroethene | ND | 4.7 |
| Vinyl Acetate | ND | 47 |
| 1,1-Dichloroethane | ND | 4.7 |
| 2-Butanone | ND | 9.4 |
| cis-1,2-Dichloroethene | ND | 4.7 |
| 2,2-Dichloropropane | ND | 4.7 |
| Chloroform | ND | 4.7 |
| Bromochloromethane | ND | 4.7 |
| 1,1,1-Trichloroethane | ND | 4.7 |
| 1,1-Dichloropropene | ND | 4.7 |
| Carbon Tetrachloride | ND | 4.7 |
| 1,2-Dichloroethane | ND | 4.7 |
| Benzene | ND | 4.7 |
| Trichloroethene | ND | 4.7 |
| 1,2-Dichloropropane | ND | 4.7 |
| Bromodichloromethane | ND | 4.7 |
| Dibromomethane | ND | 4.7 |
| 4-Methyl-2-Pentanone | ND | 9.4 |
| cis-1,3-Dichloropropene | ND | 4.7 |
| Toluene | ND | 4.7 |
| trans-1,3-Dichloropropene | ND | 4.7 |
| 1,1,2-Trichloroethane | ND | 4.7 |
| 2-Hexanone | ND | 9.4 |
| 1,3-Dichloropropane | ND | 4.7 |
| Tetrachloroethene | ND | 4.7 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-SS-45' | Diln Fac: | 0.9434 |
| Lab ID: | 198049-005 | Batch#: | 130136 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.7 |
| 1,2-Dibromoethane | ND | 4.7 |
| Chlorobenzene | ND | 4.7 |
| 1,1,1,2-Tetrachloroethane | ND | 4.7 |
| Ethylbenzene | ND | 4.7 |
| m,p-Xylenes | ND | 4.7 |
| o-Xylene | ND | 4.7 |
| Styrene | ND | 4.7 |
| Bromoform | ND | 4.7 |
| Isopropylbenzene | ND | 4.7 |
| 1,1,2,2-Tetrachloroethane | ND | 4.7 |
| 1,2,3-Trichloropropane | ND | 4.7 |
| Propylbenzene | ND | 4.7 |
| Bromobenzene | ND | 4.7 |
| 1,3,5-Trimethylbenzene | ND | 4.7 |
| 2-Chlorotoluene | ND | 4.7 |
| 4-Chlorotoluene | ND | 4.7 |
| tert-Butylbenzene | ND | 4.7 |
| 1,2,4-Trimethylbenzene | ND | 4.7 |
| sec-Butylbenzene | ND | 4.7 |
| para-Isopropyl Toluene | ND | 4.7 |
| 1,3-Dichlorobenzene | ND | 4.7 |
| 1,4-Dichlorobenzene | ND | 4.7 |
| n-Butylbenzene | ND | 4.7 |
| 1,2-Dichlorobenzene | ND | 4.7 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.7 |
| 1,2,4-Trichlorobenzene | ND | 4.7 |
| Hexachlorobutadiene | ND | 4.7 |
| Naphthalene | ND | 4.7 |
| 1,2,3-Trichlorobenzene | ND | 4.7 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 92 | 80-124 |
| 1,2-Dichloroethane-d4 | 94 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 92 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408833 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130134 |
| Units: | ug/Kg | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408833 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130134 |
| Units: | ug/Kg | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 107 | 80-124 |
| 1,2-Dichloroethane-d4 | 104 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 99 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC408834 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130134 |
| Units: | ug/Kg | Analyzed: | 10/03/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 24.87 | 99 | 74-131 |
| Benzene | 25.00 | 25.32 | 101 | 77-121 |
| Trichloroethene | 25.00 | 25.37 | 101 | 77-121 |
| Toluene | 25.00 | 24.84 | 99 | 79-122 |
| Chlorobenzene | 25.00 | 24.23 | 97 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 101 | 80-124 |
| 1,2-Dichloroethane-d4 | 99 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 100 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | ug/Kg | Batch#: | 130136 |
| Basis: | as received | Analyzed: | 10/03/07 |

Type: BS Lab ID: QC408844

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 23.52 | 94 | 74-131 |
| Benzene | 25.00 | 26.34 | 105 | 77-121 |
| Trichloroethene | 25.00 | 27.49 | 110 | 77-121 |
| Toluene | 25.00 | 26.36 | 105 | 79-122 |
| Chlorobenzene | 25.00 | 25.06 | 100 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 97 | 80-124 |
| 1,2-Dichloroethane-d4 | 94 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 95 | 80-122 |

Type: BSD Lab ID: QC408845

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 21.96 | 88 | 74-131 | 7 | 20 |
| Benzene | 25.00 | 25.72 | 103 | 77-121 | 2 | 20 |
| Trichloroethene | 25.00 | 28.26 | 113 | 77-121 | 3 | 20 |
| Toluene | 25.00 | 26.50 | 106 | 79-122 | 1 | 20 |
| Chlorobenzene | 25.00 | 25.24 | 101 | 80-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 96 | 80-124 |
| 1,2-Dichloroethane-d4 | 92 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 93 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408846 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130136 |
| Units: | ug/Kg | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC408846 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130136 |
| Units: | ug/Kg | Analyzed: | 10/03/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 89 | 80-124 |
| 1,2-Dichloroethane-d4 | 88 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 94 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-SS-45' | Diln Fac: | 0.9434 |
| MSS Lab ID: | 198049-005 | Batch#: | 130136 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

Type: MS Lab ID: QC408915

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.4568 | 47.17 | 41.48 | 88 | 61-145 |
| Benzene | <0.6685 | 47.17 | 44.03 | 93 | 57-123 |
| Trichloroethene | <0.7018 | 47.17 | 47.92 | 102 | 52-141 |
| Toluene | <0.4930 | 47.17 | 45.17 | 96 | 53-126 |
| Chlorobenzene | <0.5639 | 47.17 | 42.09 | 89 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 95 | 80-124 |
| 1,2-Dichloroethane-d4 | 84 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 91 | 80-122 |

Type: MSD Lab ID: QC408916

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 47.17 | 38.79 | 82 | 61-145 | 7 | 26 |
| Benzene | 47.17 | 39.40 | 84 | 57-123 | 11 | 25 |
| Trichloroethene | 47.17 | 42.70 | 91 | 52-141 | 12 | 26 |
| Toluene | 47.17 | 41.21 | 87 | 53-126 | 9 | 27 |
| Chlorobenzene | 47.17 | 36.20 | 77 | 49-121 | 15 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 97 | 80-124 |
| 1,2-Dichloroethane-d4 | 89 | 79-136 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 97 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-10-SS-0.0' | Diln Fac: | 0.9259 |
| MSS Lab ID: | 198049-004 | Batch#: | 130134 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/03/07 |

Type: MS Lab ID: QC408954

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.3308 | 46.30 | 42.28 | 91 | 61-145 |
| Benzene | <0.4265 | 46.30 | 36.48 | 79 | 57-123 |
| Trichloroethene | <0.2546 | 46.30 | 33.29 | 72 | 52-141 |
| Toluene | <0.4615 | 46.30 | 30.75 | 66 | 53-126 |
| Chlorobenzene | <0.2978 | 46.30 | 26.00 | 56 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 103 | 80-124 |
| 1,2-Dichloroethane-d4 | 101 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 104 | 80-122 |

Type: MSD Lab ID: QC408955

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 46.30 | 33.43 | 72 | 61-145 | 23 | 26 |
| Benzene | 46.30 | 27.54 | 59 | 57-123 | 28 * | 25 |
| Trichloroethene | 46.30 | 25.14 | 54 | 52-141 | 28 * | 26 |
| Toluene | 46.30 | 23.40 | 51 * | 53-126 | 27 | 27 |
| Chlorobenzene | 46.30 | 19.88 | 43 * | 49-121 | 27 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 106 | 80-124 |
| 1,2-Dichloroethane-d4 | 103 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 104 | 80-122 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-GW-33' | Batch#: | 130279 |
| Lab ID: | 198049-003 | Sampled: | 10/01/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 0.05 |
| beta-BHC | ND | 0.05 |
| gamma-BHC | ND | 0.05 |
| delta-BHC | ND | 0.05 |
| Heptachlor | ND | 0.05 |
| Aldrin | ND | 0.05 |
| Heptachlor epoxide | ND | 0.05 |
| Endosulfan I | ND | 0.05 |
| Dieldrin | ND | 0.1 |
| 4,4'-DDE | ND | 0.1 |
| Endrin | ND | 0.1 |
| Endosulfan II | ND | 0.1 |
| Endosulfan sulfate | ND | 0.1 |
| 4,4'-DDD | ND | 0.1 |
| Endrin aldehyde | ND | 0.1 |
| 4,4'-DDT | ND # | 0.1 |
| alpha-Chlordane | ND | 0.05 |
| gamma-Chlordane | ND | 0.05 |
| Methoxychlor | ND | 0.5 |
| Toxaphene | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 81 | 43-120 |
| Decachlorobiphenyl | 67 | 39-135 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409446 | Batch#: | 130279 |
| Matrix: | Water | Prepared: | 10/07/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 0.05 |
| beta-BHC | ND | 0.05 |
| gamma-BHC | ND | 0.05 |
| delta-BHC | ND | 0.05 |
| Heptachlor | ND | 0.05 |
| Aldrin | ND | 0.05 |
| Heptachlor epoxide | ND | 0.05 |
| Endosulfan I | ND | 0.05 |
| Dieldrin | ND | 0.1 |
| 4,4'-DDE | ND | 0.1 |
| Endrin | ND | 0.1 |
| Endosulfan II | ND | 0.1 |
| Endosulfan sulfate | ND | 0.1 |
| 4,4'-DDD | ND | 0.1 |
| Endrin aldehyde | ND | 0.1 |
| 4,4'-DDT | ND | 0.1 |
| alpha-Chlordane | ND | 0.05 |
| gamma-Chlordane | ND | 0.05 |
| Methoxychlor | ND | 0.5 |
| Toxaphene | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 79 | 43-120 |
| Decachlorobiphenyl | 59 | 39-135 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409447 | Batch#: | 130279 |
| Matrix: | Water | Prepared: | 10/07/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| gamma-BHC | 0.2000 | 0.1571 | 79 | 64-126 |
| Heptachlor | 0.2000 | 0.1434 | 72 | 50-124 |
| Aldrin | 0.2000 | 0.1380 | 69 | 48-123 |
| Dieldrin | 0.4000 | 0.3100 | 78 | 59-131 |
| Endrin | 0.4000 | 0.3722 | 93 | 54-129 |
| 4,4'-DDT | 0.4000 | 0.3534 | 88 | 39-140 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 70 | 43-120 |
| Decachlorobiphenyl | 44 | 39-135 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130279 |
| MSS Lab ID: | 198061-003 | Sampled: | 10/03/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/12/07 |

Type: MS Lab ID: QC409448

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| gamma-BHC | <0.005430 | 0.1905 | 0.1701 | 89 | 68-120 |
| Heptachlor | <0.005230 | 0.1905 | 0.1618 | 85 | 56-120 |
| Aldrin | <0.005225 | 0.1905 | 0.1513 | 79 | 61-120 |
| Dieldrin | <0.01031 | 0.3810 | 0.3229 # | 85 | 59-121 |
| Endrin | <0.01092 | 0.3810 | 0.3454 | 91 | 65-120 |
| 4,4'-DDT | <0.01445 | 0.3810 | 0.2898 # b | 76 | 42-126 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 81 | 43-120 |
| Decachlorobiphenyl | 48 | 39-135 |

Type: MSD Lab ID: QC409449

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| gamma-BHC | 0.1905 | 0.1588 | 83 | 68-120 | 7 | 30 |
| Heptachlor | 0.1905 | 0.1587 | 83 | 56-120 | 2 | 33 |
| Aldrin | 0.1905 | 0.1508 | 79 | 61-120 | 0 | 30 |
| Dieldrin | 0.3810 | 0.3388 # | 89 | 59-121 | 5 | 32 |
| Endrin | 0.3810 | 0.3611 | 95 | 65-120 | 4 | 36 |
| 4,4'-DDT | 0.3810 | 0.3216 # b | 84 | 42-126 | 10 | 40 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 77 | 43-120 |
| Decachlorobiphenyl | 55 | 39-135 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0' | Batch#: | 130274 |
| Lab ID: | 198049-002 | Sampled: | 10/01/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | 7.6 | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 84 | 54-120 |
| Decachlorobiphenyl | 115 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-10-SS-0.0' | Batch#: | 130274 |
| Lab ID: | 198049-004 | Sampled: | 10/01/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 75 | 54-120 |
| Decachlorobiphenyl | 100 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409432 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 58 | 54-120 |
| Decachlorobiphenyl | 57 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409433 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| gamma-BHC | 13.23 | 13.69 | 104 | 44-120 |
| Heptachlor | 13.23 | 10.56 | 80 | 44-120 |
| Aldrin | 13.23 | 10.41 | 79 | 47-120 |
| Dieldrin | 26.46 | 30.57 | 116 | 50-120 |
| Endrin | 26.46 | 30.91 | 117 | 27-128 |
| 4,4'-DDT | 26.46 | 33.21 | 126 | 42-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 101 | 54-120 |
| Decachlorobiphenyl | 79 | 49-142 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0' | Batch#: | 130274 |
| MSS Lab ID: | 198049-002 | Sampled: | 10/01/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3620B
Lab ID: QC409434

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| gamma-BHC | <0.3690 | 13.28 | 9.105 | 69 | 45-122 |
| Heptachlor | <0.4798 | 13.28 | 9.355 | 70 | 49-125 |
| Aldrin | <0.3153 | 13.28 | 9.232 | 70 | 48-120 |
| Dieldrin | <0.9915 | 26.56 | 19.07 | 72 | 50-121 |
| Endrin | <1.176 | 26.56 | 18.43 | 69 | 42-123 |
| 4,4'-DDT | <1.267 | 26.56 | 22.21 # | 84 | 29-135 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 74 | 54-120 |
| Decachlorobiphenyl | 73 | 49-142 |

Type: MSD Cleanup Method: EPA 3620B
Lab ID: QC409435

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| gamma-BHC | 13.31 | 10.67 | 80 | 45-122 | 16 | 40 |
| Heptachlor | 13.31 | 11.13 | 84 | 49-125 | 17 | 42 |
| Aldrin | 13.31 | 10.67 | 80 | 48-120 | 14 | 37 |
| Dieldrin | 26.62 | 22.92 | 86 | 50-121 | 18 | 34 |
| Endrin | 26.62 | 22.52 | 85 | 42-123 | 20 | 39 |
| 4,4'-DDT | 26.62 | 23.64 # | 89 | 29-135 | 6 | 51 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 82 | 54-120 |
| Decachlorobiphenyl | 84 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | B-12-GW-33' | Sampled: | 10/01/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/11/07 |
| Batch#: | 130281 | | |

Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198049-003

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 0.50 |
| Aroclor-1221 | ND | 1.0 |
| Aroclor-1232 | ND | 0.50 |
| Aroclor-1242 | ND | 0.50 |
| Aroclor-1248 | ND | 0.50 |
| Aroclor-1254 | ND | 0.50 |
| Aroclor-1260 | ND | 0.50 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 73 | 54-128 |
| Decachlorobiphenyl | 49 | 25-122 |

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409453

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 0.50 |
| Aroclor-1221 | ND | 1.0 |
| Aroclor-1232 | ND | 0.50 |
| Aroclor-1242 | ND | 0.50 |
| Aroclor-1248 | ND | 0.50 |
| Aroclor-1254 | ND | 0.50 |
| Aroclor-1260 | ND | 0.50 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 110 | 54-128 |
| Decachlorobiphenyl | 79 | 25-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Matrix: | Water | Batch#: | 130281 |
| Units: | ug/L | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/11/07 |

Type: BS Cleanup Method: EPA 3665A
Lab ID: QC409454

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Aroclor-1016 | 5.000 | 6.108 | 122 | 71-140 |
| Aroclor-1260 | 5.000 | 6.128 | 123 | 68-150 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 111 | 54-128 |
| Decachlorobiphenyl | 68 | 25-122 |

Type: BSD Cleanup Method: EPA 3665A
Lab ID: QC409455

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Aroclor-1016 | 5.000 | 5.548 | 111 | 71-140 | 10 | 21 |
| Aroclor-1260 | 5.000 | 5.494 | 110 | 68-150 | 11 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 116 | 54-128 |
| Decachlorobiphenyl | 92 | 25-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/08/07 |
| Batch#: | 130274 | | |

Field ID: B-12-SS-0.0' Lab ID: 198049-002
Type: SAMPLE Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 114 | 66-140 |
| Decachlorobiphenyl | 111 | 51-152 |

Field ID: B-10-SS-0.0' Lab ID: 198049-004
Type: SAMPLE Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 125 | 66-140 |
| Decachlorobiphenyl | 126 | 51-152 |

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409432

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 94 | 66-140 |
| Decachlorobiphenyl | 105 | 51-152 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409436 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/08/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3665A

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Aroclor-1016 | 164.1 | 195.3 | 119 | 69-142 |
| Aroclor-1260 | 164.1 | 191.7 | 117 | 69-155 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 99 | 66-140 |
| Decachlorobiphenyl | 110 | 51-152 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130274 |
| MSS Lab ID: | 198070-005 | Sampled: | 10/02/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC409437

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Aroclor-1016 | <2.656 | 166.2 | 186.7 | 112 | 62-139 |
| Aroclor-1260 | <2.695 | 166.2 | 176.7 | 106 | 54-143 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 102 | 66-140 |
| Decachlorobiphenyl | 107 | 51-152 |

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC409438

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Aroclor-1016 | 166.2 | 197.8 | 119 | 62-139 | 6 | 33 |
| Aroclor-1260 | 166.2 | 193.3 | 116 | 54-143 | 9 | 34 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 102 | 66-140 |
| Decachlorobiphenyl | 106 | 51-152 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-12-SS-0.0' | Basis: | as received |
| Lab ID: | 198049-002 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | mg/Kg | Received: | 10/03/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 0.85 | 0.50 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Arsenic | 6.8 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Barium | 73 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.33 | 0.10 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Chromium | 63 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Cobalt | 17 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Copper | 24 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Lead | 33 | 0.20 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.19 | 0.020 | 130233 | 10/05/07 | 10/05/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Nickel | 83 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.5 | 0.50 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Vanadium | 40 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Zinc | 54 | 1.0 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-10-SS-0.0' | Basis: | as received |
| Lab ID: | 198049-004 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/01/07 |
| Units: | mg/Kg | Received: | 10/03/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 0.57 | 0.50 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Arsenic | 4.9 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Barium | 110 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.37 | 0.10 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Cadmium | 0.95 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Chromium | 71 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Cobalt | 15 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Copper | 16 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Lead | 15 | 0.22 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.28 | 0.020 | 130233 | 10/05/07 | 10/05/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Nickel | 72 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.5 | 0.50 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Vanadium | 49 | 0.25 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |
| Zinc | 340 | 1.0 | 130163 | 10/03/07 | 10/04/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC408958 | Batch#: | 130163 |
| Matrix: | Soil | Prepared: | 10/03/07 |
| Units: | mg/Kg | Analyzed: | 10/04/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | ND | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.23 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 130163 |
| Units: | mg/Kg | Prepared: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC408959

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 89.84 | 90 | 80-120 |
| Arsenic | 50.00 | 46.30 | 93 | 80-120 |
| Barium | 100.0 | 93.18 | 93 | 80-120 |
| Beryllium | 2.500 | 2.581 | 103 | 80-120 |
| Cadmium | 10.00 | 9.464 | 95 | 80-120 |
| Chromium | 100.0 | 90.54 | 91 | 80-120 |
| Cobalt | 25.00 | 22.36 | 89 | 80-120 |
| Copper | 12.50 | 11.18 | 89 | 80-120 |
| Lead | 100.0 | 89.81 | 90 | 80-120 |
| Molybdenum | 20.00 | 19.07 | 95 | 80-120 |
| Nickel | 25.00 | 22.67 | 91 | 80-120 |
| Selenium | 50.00 | 45.65 | 91 | 80-120 |
| Silver | 10.00 | 8.798 | 88 | 80-120 |
| Thallium | 50.00 | 44.84 | 90 | 80-120 |
| Vanadium | 25.00 | 22.68 | 91 | 80-120 |
| Zinc | 25.00 | 23.16 | 93 | 80-120 |

Type: BSD Lab ID: QC408960

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 97.01 | 97 | 80-120 | 8 | 20 |
| Arsenic | 50.00 | 49.44 | 99 | 80-120 | 7 | 20 |
| Barium | 100.0 | 100.3 | 100 | 80-120 | 7 | 20 |
| Beryllium | 2.500 | 2.797 | 112 | 80-120 | 8 | 20 |
| Cadmium | 10.00 | 10.16 | 102 | 80-120 | 7 | 20 |
| Chromium | 100.0 | 97.72 | 98 | 80-120 | 8 | 20 |
| Cobalt | 25.00 | 24.06 | 96 | 80-120 | 7 | 20 |
| Copper | 12.50 | 12.09 | 97 | 80-120 | 8 | 20 |
| Lead | 100.0 | 98.03 | 98 | 80-120 | 9 | 20 |
| Molybdenum | 20.00 | 20.44 | 102 | 80-120 | 7 | 20 |
| Nickel | 25.00 | 24.43 | 98 | 80-120 | 7 | 20 |
| Selenium | 50.00 | 48.51 | 97 | 80-120 | 6 | 20 |
| Silver | 10.00 | 9.519 | 95 | 80-120 | 8 | 20 |
| Thallium | 50.00 | 47.71 | 95 | 80-120 | 6 | 20 |
| Vanadium | 25.00 | 24.57 | 98 | 80-120 | 8 | 20 |
| Zinc | 25.00 | 24.99 | 100 | 80-120 | 8 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130163 |
| MSS Lab ID: | 197858-001 | Sampled: | 09/25/07 |
| Matrix: | Soil | Received: | 09/25/07 |
| Units: | mg/Kg | Prepared: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC408961

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 1.684 | 90.09 | 33.45 | 35 | 1-122 |
| Arsenic | 4.564 | 45.05 | 45.74 | 91 | 72-120 |
| Barium | 74.89 | 90.09 | 162.7 | 97 | 49-139 |
| Beryllium | 0.2614 | 2.252 | 2.493 | 99 | 80-120 |
| Cadmium | 0.01386 | 9.009 | 7.800 | 86 | 74-120 |
| Chromium | 122.6 | 90.09 | 188.1 | 73 | 65-120 |
| Cobalt | 18.09 | 22.52 | 37.95 | 88 | 60-120 |
| Copper | 37.49 | 11.26 | 53.55 | 143 | 47-146 |
| Lead | 20.85 | 90.09 | 95.97 | 83 | 53-123 |
| Molybdenum | <0.02165 | 18.02 | 15.40 | 85 | 66-120 |
| Nickel | 237.4 | 22.52 | 266.7 | 130 NM | 43-142 |
| Selenium | 1.641 | 45.05 | 41.01 | 87 | 71-120 |
| Silver | 0.2256 | 9.009 | 8.444 | 91 | 66-120 |
| Thallium | <0.03334 | 45.05 | 34.30 | 76 | 62-120 |
| Vanadium | 34.95 | 22.52 | 53.45 | 82 | 52-139 |
| Zinc | 72.51 | 22.52 | 97.30 | 110 | 42-147 |

Type: MSD Lab ID: QC408962

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 99.01 | 37.22 | 36 | 1-122 | 1 | 30 |
| Arsenic | 49.50 | 48.47 | 89 | 72-120 | 3 | 20 |
| Barium | 99.01 | 166.6 | 93 | 49-139 | 3 | 23 |
| Beryllium | 2.475 | 2.689 | 98 | 80-120 | 1 | 20 |
| Cadmium | 9.901 | 8.523 | 86 | 74-120 | 1 | 20 |
| Chromium | 99.01 | 187.0 | 65 | 65-120 | 5 | 20 |
| Cobalt | 24.75 | 40.59 | 91 | 60-120 | 1 | 24 |
| Copper | 12.38 | 53.87 | 132 | 47-146 | 2 | 21 |
| Lead | 99.01 | 98.93 | 79 | 53-123 | 5 | 28 |
| Molybdenum | 19.80 | 16.77 | 85 | 66-120 | 1 | 20 |
| Nickel | 24.75 | 275.5 | 154 NM | 43-142 | 2 | 26 |
| Selenium | 49.50 | 43.61 | 85 | 71-120 | 3 | 20 |
| Silver | 9.901 | 9.030 | 89 | 66-120 | 3 | 20 |
| Thallium | 49.50 | 37.90 | 77 | 62-120 | 1 | 20 |
| Vanadium | 24.75 | 59.39 | 99 | 52-139 | 7 | 20 |
| Zinc | 24.75 | 121.4 | 197 * | 42-147 | 20 | 27 |

*= Value outside of QC limits; see narrative
NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409274 | Batch#: | 130233 |
| Matrix: | Soil | Prepared: | 10/05/07 |
| Units: | mg/Kg | Analyzed: | 10/05/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130233 |
| Units: | mg/Kg | Prepared: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409275 | 0.5000 | 0.5480 | 110 | 80-120 | | |
| BSD | QC409276 | 0.5000 | 0.5340 | 107 | 80-120 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130233 |
| MSS Lab ID: | 198062-001 | Sampled: | 10/03/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | Prepared: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409278 | 0.01765 | 0.4545 | 0.5164 | 110 | 70-143 | | |
| MSD | QC409279 | | 0.4386 | 0.4974 | 109 | 70-143 | 0 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-12-GW-33' | Sampled: | 10/01/07 |
| Lab ID: | 198049-003 | Received: | 10/03/07 |
| Matrix: | Filtrate | Prepared: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL | Batch# | Prep | Analysis |
|---|---|---|---|---|---|
| Antimony | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Barium | 160 | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130186 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.4 | 130186 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130181 | METHOD | EPA 7470A |
| Molybdenum | 23 | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130186 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-10-GW-27.5' | Sampled: | 10/01/07 |
| Lab ID: | 198049-006 | Received: | 10/03/07 |
| Matrix: | Filtrate | Prepared: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL | Batch# | Prep | Analysis |
|---|---|---|---|---|---|
| Antimony | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Barium | 85 | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130186 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.4 | 130186 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130181 | METHOD | EPA 7470A |
| Molybdenum | 10 | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Nickel | 12 | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130186 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-10-GW-45' | Sampled: | 10/02/07 |
| Lab ID: | 198049-007 | Received: | 10/03/07 |
| Matrix: | Filtrate | Prepared: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL | Batch# | Prep | Analysis |
|---|---|---|---|---|---|
| Antimony | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Barium | 210 | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130186 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.4 | 130186 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130181 | METHOD | EPA 7470A |
| Molybdenum | 8.3 | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130186 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130186 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130186 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130181 |
| Lab ID: | QC409045 | Prepared: | 10/04/07 |
| Matrix: | Water | Analyzed: | 10/04/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130181 |
| Matrix: | Water | Prepared: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409046 | 5.000 | 5.310 | 106 | 80-120 | | |
| BSD | QC409047 | 5.000 | 5.260 | 105 | 80-120 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130181 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 09/27/07 |
| MSS Lab ID: | 197934-009 | Received: | 09/27/07 |
| Matrix: | Filtrate | Prepared: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409049 | <0.04502 | 5.000 | 5.260 | 105 | 79-125 | | |
| MSD | QC409050 | | 5.000 | 5.170 | 103 | 79-125 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409069 | Batch#: | 130186 |
| Matrix: | Water | Prepared: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/04/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 5.0 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.4 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130186 |
| Units: | ug/L | Prepared: | 10/04/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/04/07 |

Type: BS Lab ID: QC409070

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 439.1 | 88 | 80-120 |
| Arsenic | 100.0 | 92.45 | 92 | 80-120 |
| Barium | 2,000 | 1,828 | 91 | 80-120 |
| Beryllium | 50.00 | 54.71 | 109 | 80-120 |
| Cadmium | 50.00 | 47.01 | 94 | 80-120 |
| Chromium | 200.0 | 183.8 | 92 | 80-120 |
| Cobalt | 500.0 | 442.4 | 88 | 80-120 |
| Copper | 250.0 | 228.0 | 91 | 80-120 |
| Lead | 100.0 | 89.13 | 89 | 80-120 |
| Molybdenum | 400.0 | 377.9 | 94 | 80-120 |
| Nickel | 500.0 | 450.6 | 90 | 80-120 |
| Selenium | 100.0 | 89.79 | 90 | 80-120 |
| Silver | 50.00 | 46.13 | 92 | 80-120 |
| Thallium | 100.0 | 90.80 | 91 | 80-120 |
| Vanadium | 500.0 | 468.4 | 94 | 80-120 |
| Zinc | 500.0 | 470.8 | 94 | 80-120 |

Type: BSD Lab ID: QC409071

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 458.8 | 92 | 80-120 | 4 | 20 |
| Arsenic | 100.0 | 96.06 | 96 | 80-120 | 4 | 20 |
| Barium | 2,000 | 1,903 | 95 | 80-120 | 4 | 20 |
| Beryllium | 50.00 | 56.93 | 114 | 80-120 | 4 | 20 |
| Cadmium | 50.00 | 48.50 | 97 | 80-120 | 3 | 20 |
| Chromium | 200.0 | 190.5 | 95 | 80-120 | 4 | 20 |
| Cobalt | 500.0 | 459.6 | 92 | 80-120 | 4 | 20 |
| Copper | 250.0 | 238.3 | 95 | 80-120 | 4 | 20 |
| Lead | 100.0 | 92.12 | 92 | 80-120 | 3 | 20 |
| Molybdenum | 400.0 | 392.3 | 98 | 80-120 | 4 | 20 |
| Nickel | 500.0 | 473.4 | 95 | 80-120 | 5 | 20 |
| Selenium | 100.0 | 93.23 | 93 | 80-120 | 4 | 20 |
| Silver | 50.00 | 48.21 | 96 | 80-120 | 4 | 20 |
| Thallium | 100.0 | 94.69 | 95 | 80-120 | 4 | 20 |
| Vanadium | 500.0 | 490.7 | 98 | 80-120 | 5 | 20 |
| Zinc | 500.0 | 492.4 | 98 | 80-120 | 4 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130186 |
| MSS Lab ID: | 198047-002 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Prepared: | 10/04/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/04/07 |

Type: MS Lab ID: QC409072

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 7.130 | 500.0 | 469.9 | 93 | 80-120 |
| Arsenic | <1.387 | 100.0 | 97.99 | 98 | 80-127 |
| Barium | 65.57 | 2,000 | 2,022 | 98 | 80-120 |
| Beryllium | 0.2382 | 50.00 | 57.61 | 115 | 80-120 |
| Cadmium | <0.3555 | 50.00 | 49.09 | 98 | 80-120 |
| Chromium | 4.728 | 200.0 | 197.3 | 96 | 80-120 |
| Cobalt | <0.3112 | 500.0 | 454.8 | 91 | 80-120 |
| Copper | 3.587 | 250.0 | 241.0 | 95 | 80-120 |
| Lead | <1.150 | 100.0 | 91.61 | 92 | 76-120 |
| Molybdenum | 1.761 | 400.0 | 395.7 | 98 | 80-120 |
| Nickel | 0.7375 | 500.0 | 461.1 | 92 | 80-120 |
| Selenium | <1.986 | 100.0 | 96.41 | 96 | 80-128 |
| Silver | <0.7500 | 50.00 | 48.73 | 97 | 73-122 |
| Thallium | <1.131 | 100.0 | 93.72 | 94 | 78-120 |
| Vanadium | 17.92 | 500.0 | 514.7 | 99 | 80-120 |
| Zinc | 6.129 | 500.0 | 495.1 | 98 | 80-123 |

Type: MSD Lab ID: QC409073

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 471.0 | 93 | 80-120 | 0 | 20 |
| Arsenic | 100.0 | 98.71 | 99 | 80-127 | 1 | 20 |
| Barium | 2,000 | 2,031 | 98 | 80-120 | 0 | 20 |
| Beryllium | 50.00 | 57.95 | 115 | 80-120 | 1 | 20 |
| Cadmium | 50.00 | 48.77 | 98 | 80-120 | 1 | 20 |
| Chromium | 200.0 | 196.5 | 96 | 80-120 | 0 | 20 |
| Cobalt | 500.0 | 457.2 | 91 | 80-120 | 1 | 20 |
| Copper | 250.0 | 242.4 | 96 | 80-120 | 1 | 20 |
| Lead | 100.0 | 89.30 | 89 | 76-120 | 3 | 20 |
| Molybdenum | 400.0 | 395.3 | 98 | 80-120 | 0 | 20 |
| Nickel | 500.0 | 464.1 | 93 | 80-120 | 1 | 20 |
| Selenium | 100.0 | 95.50 | 95 | 80-128 | 1 | 20 |
| Silver | 50.00 | 49.21 | 98 | 73-122 | 1 | 20 |
| Thallium | 100.0 | 94.68 | 95 | 78-120 | 1 | 20 |
| Vanadium | 500.0 | 517.4 | 100 | 80-120 | 1 | 20 |
| Zinc | 500.0 | 498.9 | 99 | 80-123 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Batch#: | 130142 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | mg/L | | |

| Field ID | Type | Lab ID | Result | RL | Diln Fac | Sampled | Analyzed |
|---|---|---|---|---|---|---|---|
| B-12-GW-33' | SAMPLE | 198049-003 | 0.15 | 0.05 | 1.000 | 10/01/07 11:08 | 10/03/07 14:29 |
| B-10-GW-27.5' | SAMPLE | 198049-006 | 5.4 | 0.10 | 2.000 | 10/01/07 16:30 | 10/03/07 14:12 |
| B-10-GW-45' | SAMPLE | 198049-007 | 0.13 | 0.05 | 1.000 | 10/02/07 10:30 | 10/03/07 14:47 |
| | BLANK | QC408878 | ND | 0.05 | 1.000 | | 10/03/07 12:59 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | B-12-GW-33' | Batch#: | 130142 |
| MSS Lab ID: | 198049-003 | Sampled: | 10/01/07 11:08 |
| Matrix: | Water | Received: | 10/03/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC408879 | | 1.000 | 0.9887 | 99 | 80-120 | | | 1.000 | 10/03/07 13:16 |
| BSD | QC408880 | | 1.000 | 0.9999 | 100 | 80-120 | 1 | 20 | 1.000 | 10/03/07 13:34 |
| MS | QC408952 | 0.1491 | 2.500 | 2.824 | 107 | 80-120 | | | 5.000 | 10/03/07 18:06 |
| MSD | QC408953 | | 2.500 | 2.445 | 92 | 80-120 | 14 | 20 | 5.000 | 10/03/07 18:23 |

RPD= Relative Percent Difference

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# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130304 |
| Units: | mg/Kg | Received: | 10/03/07 |
| Basis: | as received | | |

| Field ID | Type | Lab ID | Result | RL | Sampled | Analyzed |
|---|---|---|---|---|---|---|
| B-12-SS-42' | SAMPLE | 198049-001 | ND | 0.5 | 10/01/07 11:00 | 10/08/07 14:19 |
| B-12-SS-0.0' | SAMPLE | 198049-002 | 2.3 | 0.5 | 10/01/07 09:00 | 10/08/07 13:59 |
| B-10-SS-45' | SAMPLE | 198049-005 | 0.7 | 0.5 | 10/01/07 08:30 | 10/08/07 14:40 |
| | BLANK | QC409544 | ND | 0.5 | | 10/08/07 12:58 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198049 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Field ID: | B-12-SS-0.0' | Batch#: | 130304 |
| MSS Lab ID: | 198049-002 | Sampled: | 10/01/07 09:00 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409545 | | 10.00 | 10.34 | 103 | 80-120 | | | 1.000 | 10/08/07 13:15 |
| BSD | QC409546 | | 10.00 | 9.983 | 100 | 80-120 | 3 | 20 | 1.000 | 10/08/07 13:33 |
| MS | QC409587 | 2.349 | 5.100 | 6.705 | 85 | 50-120 | | | 1.020 | 10/08/07 16:52 |
| MSD | QC409588 | | 5.100 | 6.956 | 90 | 50-120 | 4 | 30 | 1.020 | 10/08/07 17:10 |

RPD= Relative Percent Difference

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2323 5th Street Berkeley, Ca 94710
510-204-2225

198049

# Chain of Custody Record

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/1/07 | 1827-15-E |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS 9X3164 | 1 of 2 COCs |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | | Job No. 379-1827-15-02 |
| Emeryville, CA 94608 | Calendar (C) or Work Days (W) 5 days | | | SDG No. |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | | |
| Project Name: Cloverdale Project | ☐ 1 week | | | |
| Site: Cloverdale, Ca | ☐ 2 days | | | |
| C&T-WO-07-002 | ☐ 1 day | | | |

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B-12-55-42' | 10/1/07 | 11:00 | poly | SO | 1 | ✓ | | ✓ | ✓ | ✓ | | | |
| 2 | B-12-55-0.0' | 10/1/07 | 9:00 | poly | SO | 1 | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| 3 | B-12-GW-33' | 10/1/07 | 11:08 | VOA | GW | 3 | ✓ | | | | | | | |
| | ↓ | ↓ | ↓ | VOA | GW | 3 | | | | ✓ | | | | |
| | | | | 1L amb | GW | 2 | | | ✓ | | | | | |
| | | | | 250 ml poly | GW | 1 | ✓ | ✓ | | | | | | |
| | | | | 250 ml poly | GW | 1 | | | | | ✓ | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:

| | Company: | Date/Time: | | Company: | Date/Time: |
|---|---|---|---|---|---|
| Relinquished by: Robert K. Q. | Weiss Associates | 10/2/07, 13:60 | Received by: | CT | 10-3-07 1115 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

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510-204-2225

198049

# Chain of Custody Record

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/2/07 |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS 9X3169 |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | |
| Project Name: Cloverdale Project | ☐ 1 week | | |
| Site: Cloverdale, Ca | ☐ 2 days | | |
| C&T-WO-07-002 | ☐ 1 day | | |

1827-15 - E
2 of 2 COCs
Job No. 379-1827-15-02
SDG No.

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filtered Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | B-10-SS-0.0' | 10/1/07 | 9:30 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| 5 | B-10-SS-45' | 10/2/07 | 08:30 | poly | SO | 1 | | ✓ | | ✓ | ✓ | ✓ | | | |
| | | | | | | | | | | | | | | | |
| 6 | B-10-GW-27.5' | 10/1/07 | 16:30 | VOA | GW | 3 | | ✓ | | | | | | | |
| | | | | VOA | GW | 3 | | | | | ✓ | | | | |
| | | | | 1L amber | GW | 2 | | | | ✓ | | | | | |
| | | | | 750 ml poly | GW | 1 | ✓ | | ✓ | | | | | | |
| | | | | 250 ml poly | GW | 1 | | | | | | ✓ | | | |
| 7 | B-10-GW-45' | 10/2/07 | 10:30 | VOA | GW | 3 | | ✓ | | | | | | | |
| | | | | VOA | GW | 3 | | | | | ✓ | | | | |
| | | | | 1L amber | GW | 2 | | | | ✓ | | | | | |
| | | | | 750 ml poly | GW | 1 | ✓ | | ✓ | | | | | | |
| | | | | 250 ml poly | GW | 1 | | | | | | ✓ | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Weiss Associates | 10/2/07, 13:00 | [signature] | C&T | 10-3-07 1115 |
| | | | | | |
| | | | | | |

**Subject:** Re: 379-1827-15-02 - C&T Login Summary (198049)
**From:** "Joyce E. Adams" <jea@weiss.com>
**Date:** Wed, 03 Oct 2007 15:51:03 -0700
**To:** "Anne Kathain" <Anne@ctberk.com>

Hi Anne,
Thanks for the info. Please run the trip blank.

Also how are the first results coming along. Is it possible to get preliminary data without an increase charge. Please advise.

Thank you,
Joyce

Joyce Adams
Sr. Project Geologist, P.G.
Weiss Associates
5801 Christie Ave. Suite 600
Emeryville, CA 94608

Ph. 510-450-6162
Fax 510-547-5043

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"Anne Kathain" <Anne@ctberk.com> 10/3/2007 3:38:12 pm >>>

The TRIP BLANK was not listed on the COC, please confirm analysis
C&T Login Summary for 198049

Project:379-1827-15-02
Site:Cloverdale Project
Lab Login #:198049
Report Due:10/10/07
PO#:
C&T Proj Mgr:Anne Kathain

Report To:Weiss Associates

350 East Middlefield Rd

Mountain View, CA 94043

ATTN: Joyce Adams

(650) 968-7000

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-1-SS-0.0' | 198088-001 |
| B-1-SS-36' | 198088-002 |
| B-1-GW-24' | 198088-003 |
| TRIP BLANK | 198088-004 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/30/2007
Project Manager

Signature: _____ Date: 10/30/2007
Operations Manager

NELAP # 01107CA

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# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198088** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/04/07** |
| Samples Received: | **10/04/07** |

This hardcopy data package contains sample and QC results for two soil samples and two water samples, requested for the above referenced project on 10/04/07. The samples were received intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the LCS/MS/MSD for batch 130251. No other analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
No analytical problems were encountered.

**Pesticides (EPA 8081A):**
No analytical problems were encountered.

**Polychlorinated Biphenyls (PCBs) (EPA 8082):**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
Low recovery was observed for mercury in the MS for batch 130306; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198088** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/04/07** |
| Samples Received: | **10/04/07** |

**Ion Chromatography (EPA 300.0) Soil:**

No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**

Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-1-GW-24' | Batch#: | 130251 |
| Matrix: | Water | Sampled: | 10/02/07 |
| Units: | ug/L | Received: | 10/04/07 |
| Diln Fac: | 1.000 | | |

Type: SAMPLE Analyzed: 10/06/07
Lab ID: 198088-003

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 123 | 73-134 |
| Bromofluorobenzene (FID) | 125 | 77-140 |

Type: BLANK Analyzed: 10/05/07
Lab ID: QC409333

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 104 | 73-134 |
| Bromofluorobenzene (FID) | 99 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409335 | Batch#: | 130251 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 988.1 | 99 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 139 * | 73-134 |
| Bromofluorobenzene (FID) | 139 | 77-140 |

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130251 |
| MSS Lab ID: | 198112-004 | Sampled: | 10/03/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409336

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 18.77 | 2,000 | 1,926 | 95 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 153 * | 73-134 |
| Bromofluorobenzene (FID) | 148 * | 77-140 |

Type: MSD Lab ID: QC409337

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,962 | 97 | 72-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 160 * | 73-134 |
| Bromofluorobenzene (FID) | 160 * | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | mg/Kg | Batch#: | 130246 |
| Basis: | as received | Received: | 10/04/07 |

Field ID: B-1-SS-0.0' Sampled: 10/02/07
Type: SAMPLE Analyzed: 10/06/07
Lab ID: 198088-001

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.97 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 86 | 71-132 |
| Bromofluorobenzene (FID) | 98 | 69-145 |

Field ID: B-1-SS-36' Sampled: 10/03/07
Type: SAMPLE Analyzed: 10/06/07
Lab ID: 198088-002

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.1 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 90 | 71-132 |
| Bromofluorobenzene (FID) | 98 | 69-145 |

Type: BLANK Analyzed: 10/05/07
Lab ID: QC409318

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 88 | 71-132 |
| Bromofluorobenzene (FID) | 95 | 69-145 |

ND= Not Detected
RL= Reporting Limit

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC409320 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130246 |
| Units: | mg/Kg | Analyzed: | 10/05/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 5.000 | 5.059 | 101 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 99 | 69-145 |

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 197959-002 | Batch#: | 130246 |
| Matrix: | Soil | Sampled: | 09/28/07 |
| Units: | mg/Kg | Received: | 09/28/07 |
| Basis: | as received | Analyzed: | 10/06/07 |

Type: MS Lab ID: QC409321

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 0.2565 | 10.10 | 7.144 | 68 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 98 | 69-145 |

Type: MSD Lab ID: QC409322

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 10.10 | 6.202 | 59 | 43-120 | 14 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 97 | 71-132 |
| Bromofluorobenzene (FID) | 97 | 69-145 |

RPD= Relative Percent Difference

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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-1-GW-24' | Batch#: | 130305 |
| Matrix: | Water | Sampled: | 10/02/07 |
| Units: | ug/L | Received: | 10/04/07 |
| Diln Fac: | 1.000 | Prepared: | 10/08/07 |

Type: SAMPLE Analyzed: 10/10/07
Lab ID: 198088-003

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | 53 Y | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 87 | 61-133 |

Type: BLANK Analyzed: 10/09/07
Lab ID: QC409547

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 95 | 61-133 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130305 |
| Units: | ug/L | Prepared: | 10/08/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/09/07 |

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC409548

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 1,872 | 75 | 58-128 |

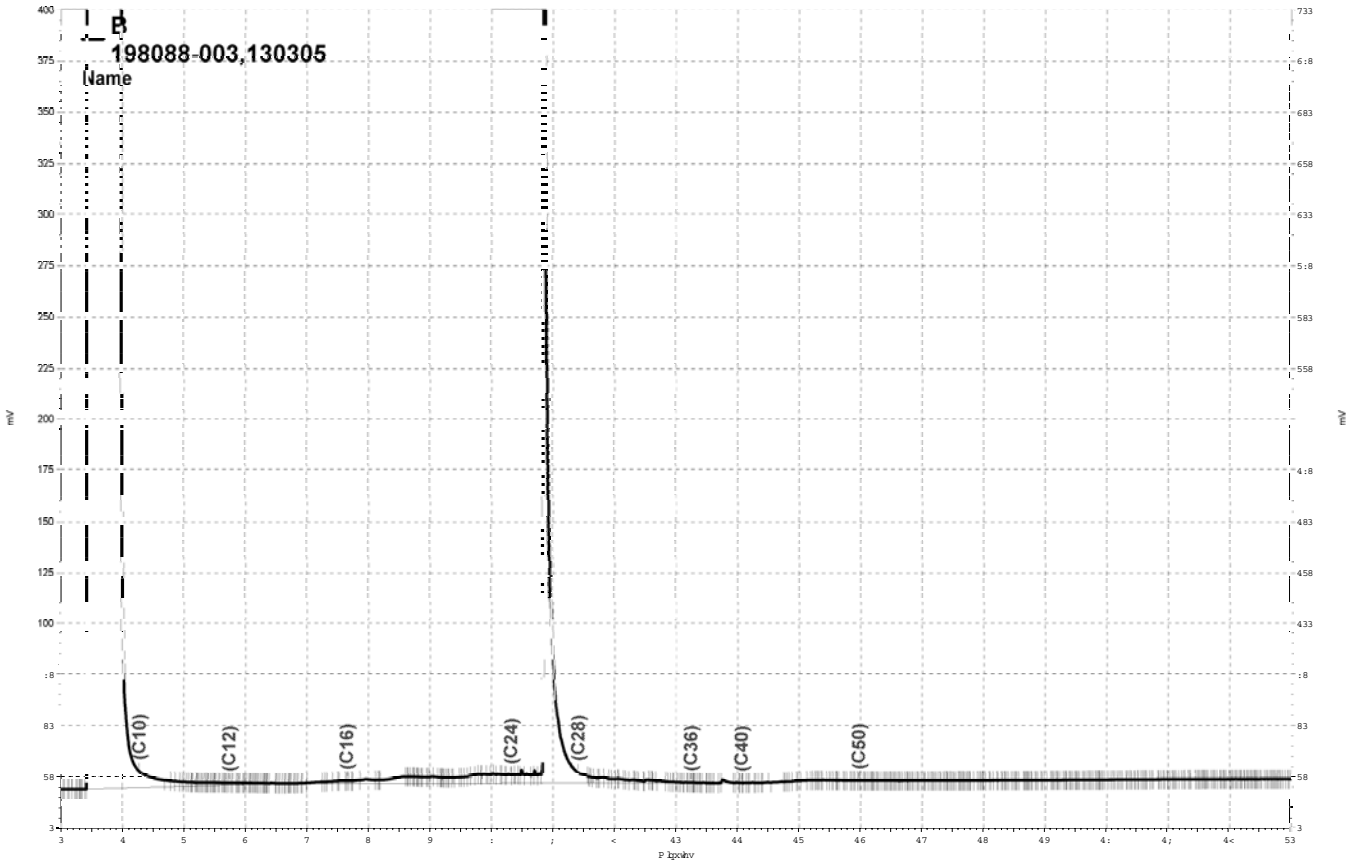
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 85 | 61-133 |

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC409549

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,070 | 83 | 58-128 | 10 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 92 | 61-133 |

RPD= Relative Percent Difference

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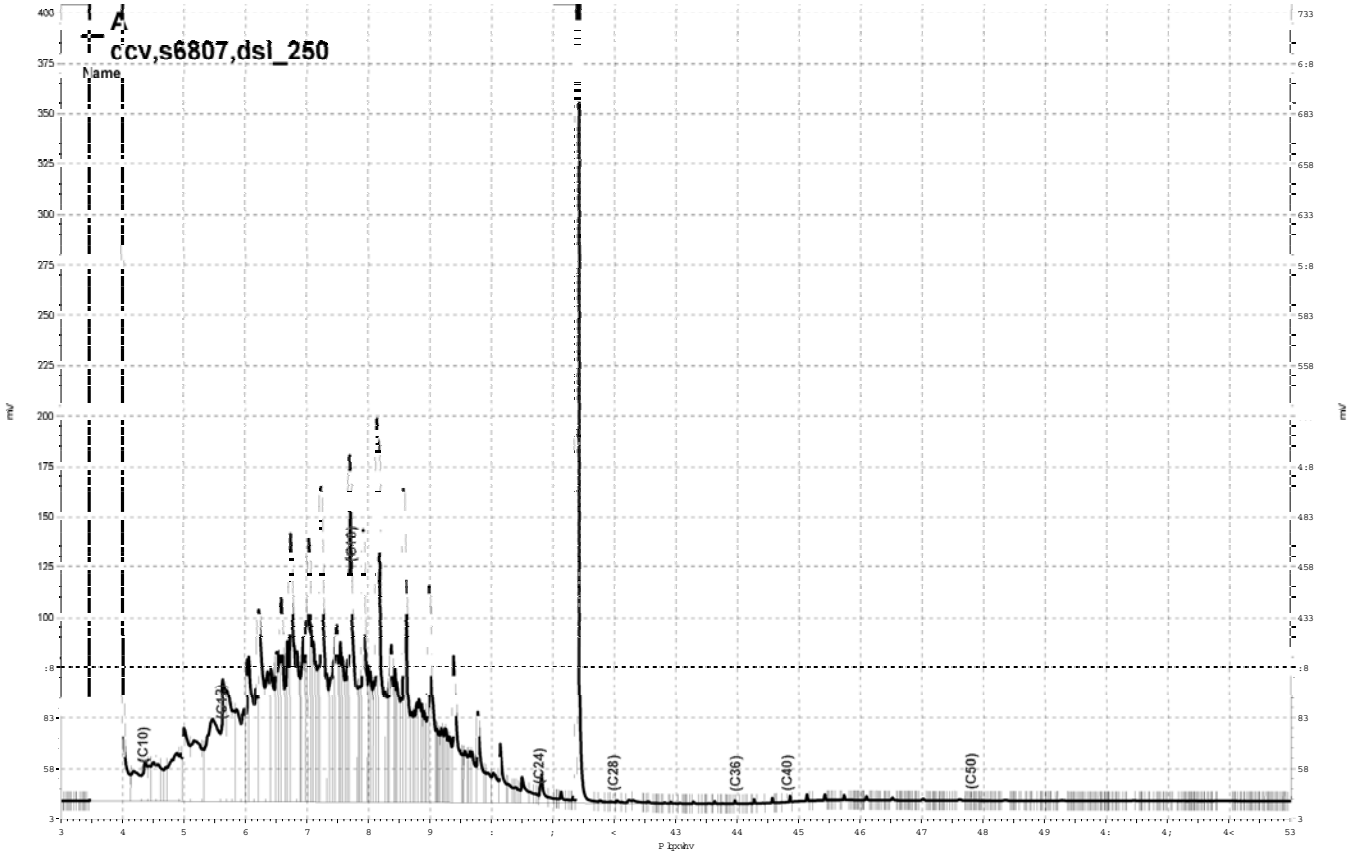


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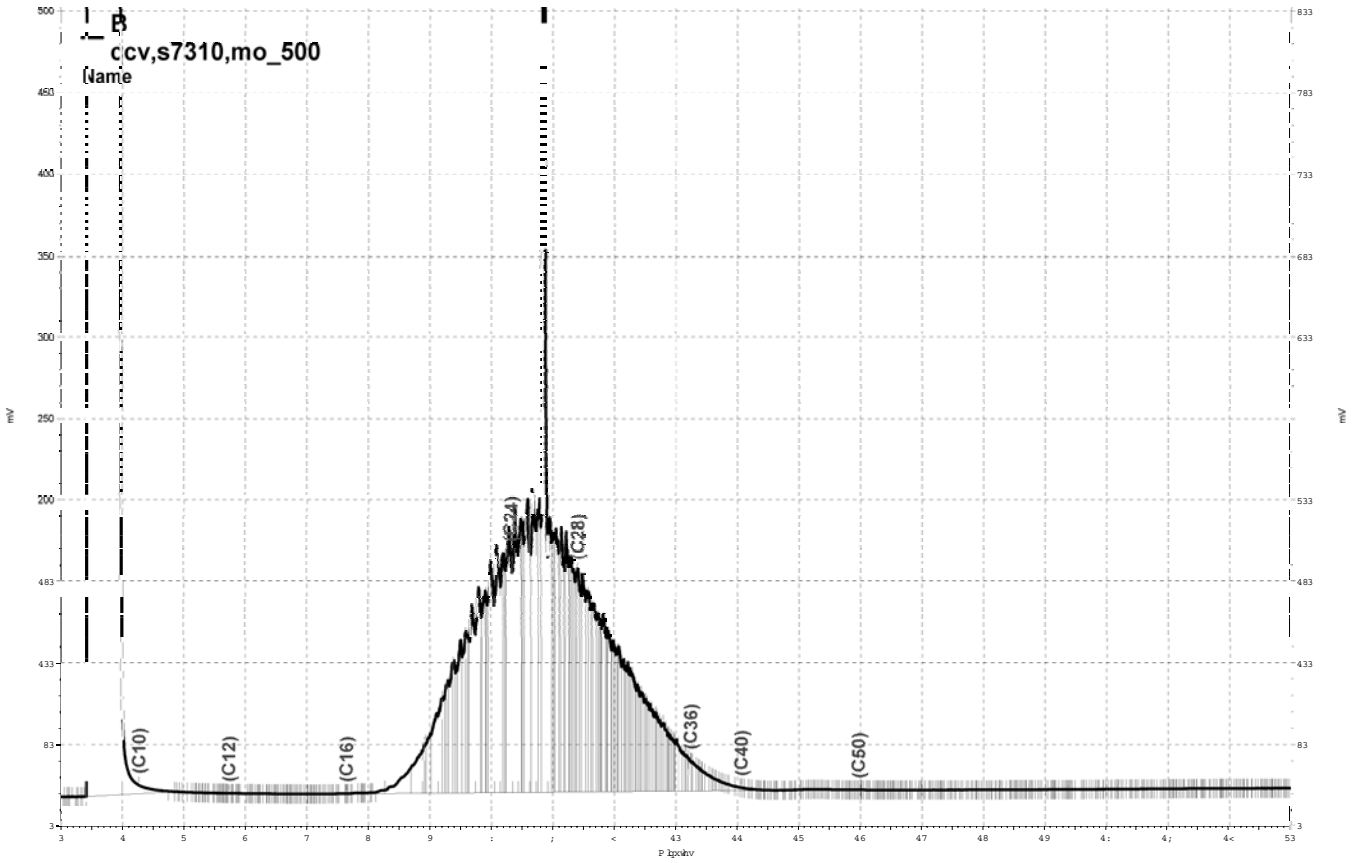


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Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | mg/Kg | Received: | 10/04/07 |
| Basis: | as received | Prepared: | 10/11/07 |

Field ID: B-1-SS-0.0' Batch#: 130417
Type: SAMPLE Sampled: 10/02/07
Lab ID: 198088-001 Cleanup Method: EPA 3630C

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 34 Y | 1.0 | 10/11/07 |
| Diesel C10-C24 (SGCU) | 16 Y | 1.0 | 11/01/07 |
| Motor Oil C24-C36 | 100 | 5.0 | 10/11/07 |
| Motor Oil C24-C36 (SGCU) | 89 | 5.0 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 100 | 46-128 | 10/11/07 |
| Hexacosane (SGCU) | 87 | 46-128 | 11/01/07 |

Field ID: B-1-SS-36' Batch#: 130444
Type: SAMPLE Sampled: 10/03/07
Lab ID: 198088-002 Analyzed: 10/15/07

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 17 Y | 1.0 |
| Motor Oil C24-C36 | 53 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 89 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | mg/Kg | Received: | 10/04/07 |
| Basis: | as received | Prepared: | 10/11/07 |

Type: BLANK
Lab ID: QC409994
Batch#: 130417

Analyzed: 10/11/07
Cleanup Method: EPA 3630C

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Diesel C10-C24 (SGCU) | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |
| Motor Oil C24-C36 (SGCU) | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 96 | 46-128 |
| Hexacosane (SGCU) | 78 | 46-128 |

Type: BLANK
Lab ID: QC410132

Batch#: 130444
Analyzed: 10/15/07

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 92 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409995 | Batch#: | 130417 |
| Matrix: | Soil | Prepared: | 10/11/07 |
| Units: | mg/Kg | Analyzed: | 10/11/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.53 | 42.88 | 87 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 82 | 46-128 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-1-SS-0.0' | Diln Fac: | 1.000 |
| MSS Lab ID: | 198088-001 | Batch#: | 130417 |
| Matrix: | Soil | Sampled: | 10/02/07 |
| Units: | mg/Kg | Received: | 10/04/07 |
| Basis: | as received | Prepared: | 10/11/07 |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC409996

| Analyte | MSS Result | Spiked | Result | %REC | Limits | Analyzed |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 34.47 | 50.38 | 86.91 | 104 | 31-150 | 10/11/07 |
| Diesel C10-C24 (SGCU) | 16.36 | 50.38 | 57.68 | 82 | 31-150 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 106 | 46-128 | 10/11/07 |
| Hexacosane (SGCU) | 85 | 46-128 | 11/02/07 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC409997

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|
| Diesel C10-C24 | 50.14 | 81.61 | 94 | 31-150 | 6 | 42 | 10/11/07 |
| Diesel C10-C24 (SGCU) | 50.14 | 60.47 | 88 | 31-150 | 5 | 42 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 103 | 46-128 | 10/11/07 |
| Hexacosane (SGCU) | 90 | 46-128 | 11/02/07 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410133 | Batch#: | 130444 |
| Matrix: | Soil | Prepared: | 10/11/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.83 | 42.51 | 85 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 89 | 46-128 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130444 |
| MSS Lab ID: | 197998-001 | Sampled: | 10/01/07 |
| Matrix: | Soil | Received: | 10/01/07 |
| Units: | mg/Kg | Prepared: | 10/11/07 |
| Basis: | as received | Analyzed: | 10/14/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410134

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 1.750 | 49.94 | 41.72 | 80 | 31-150 |

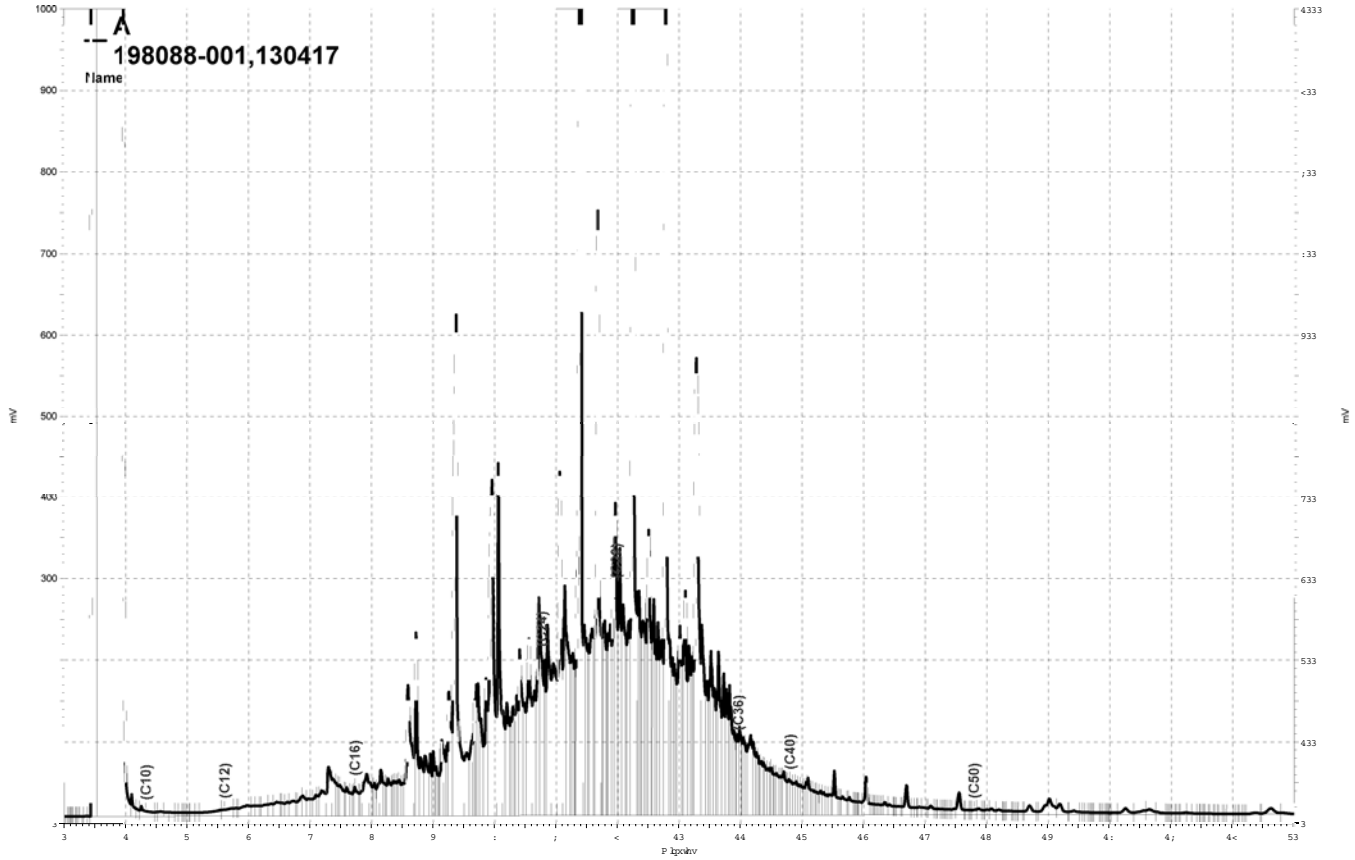
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 90 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410135

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.84 | 47.34 | 91 | 31-150 | 13 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 98 | 46-128 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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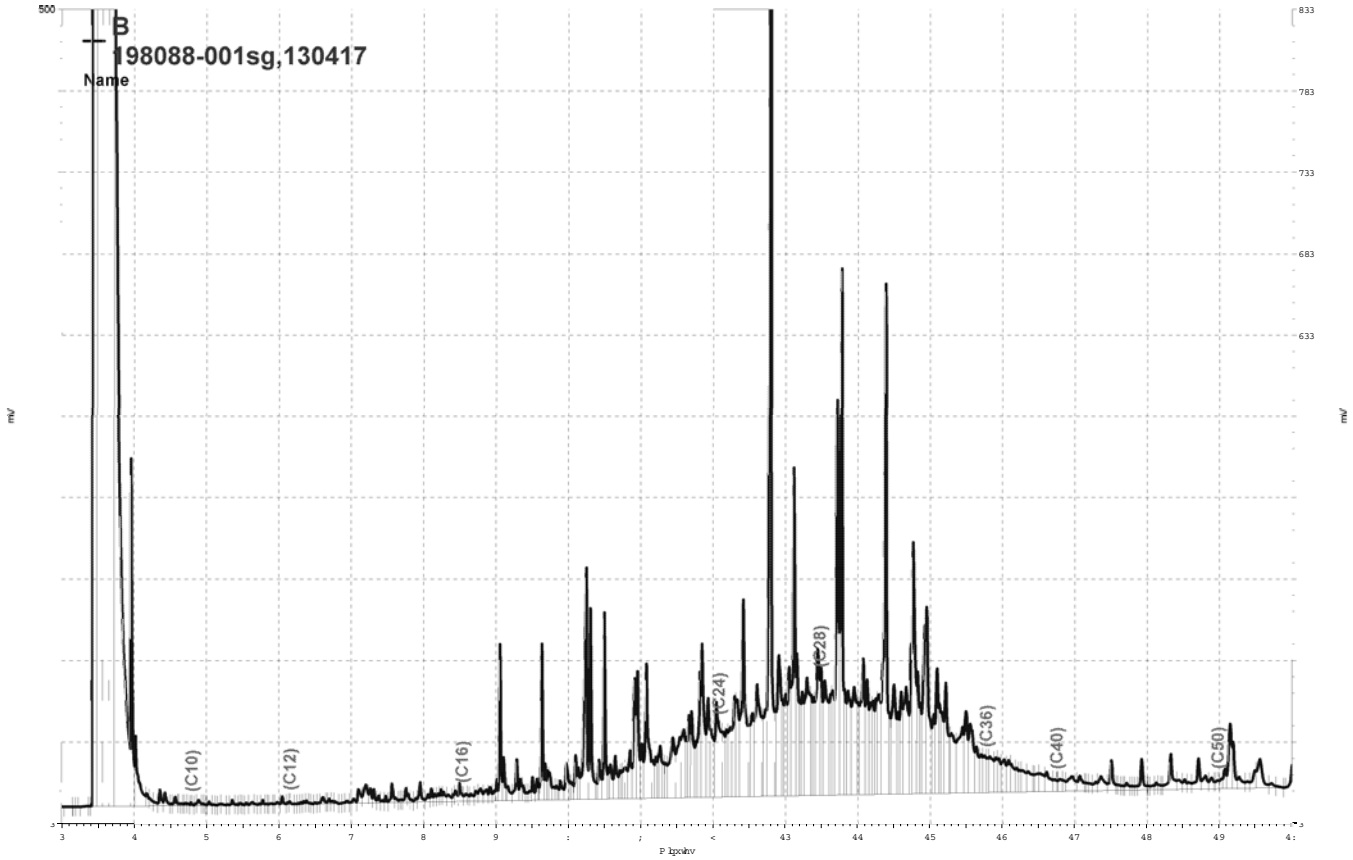


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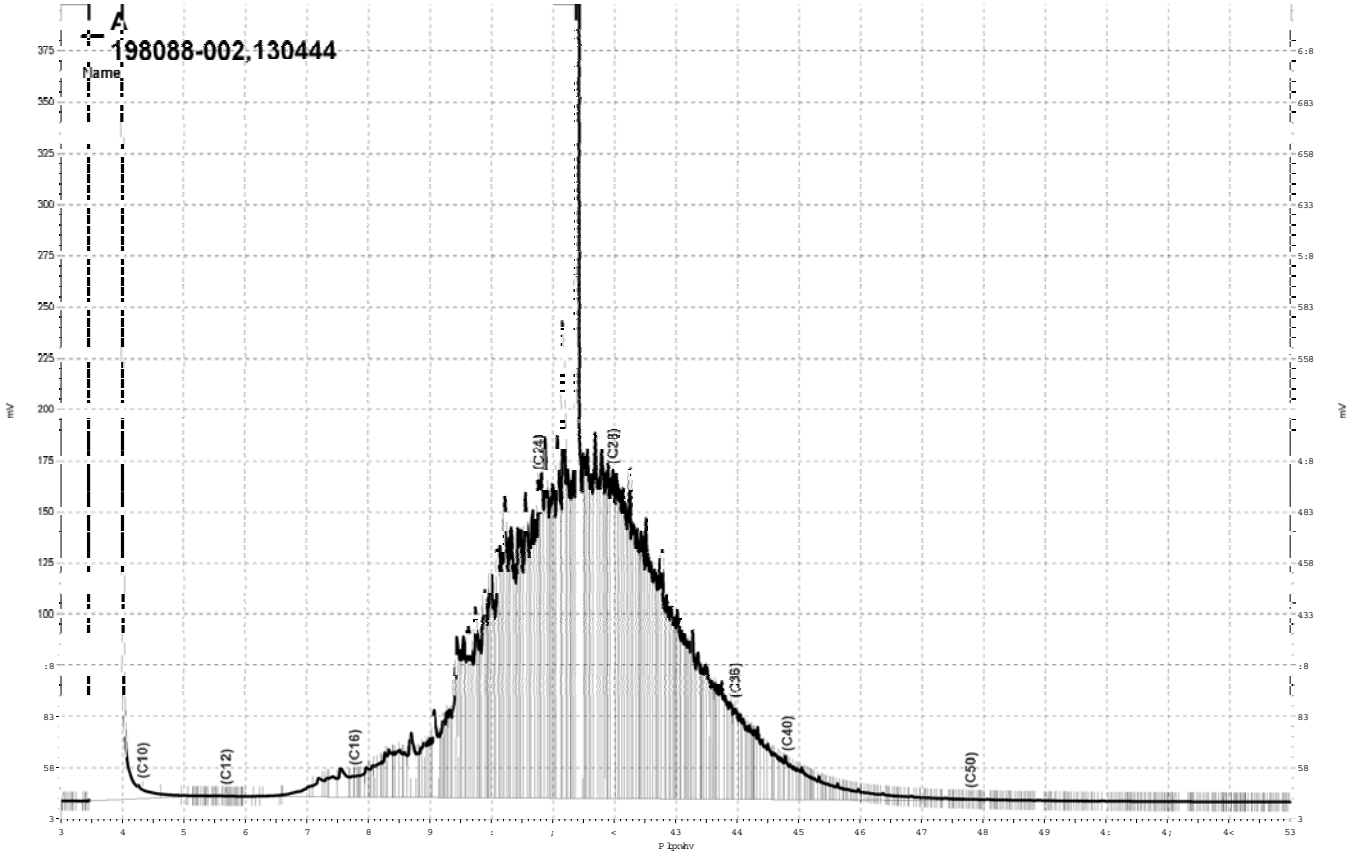


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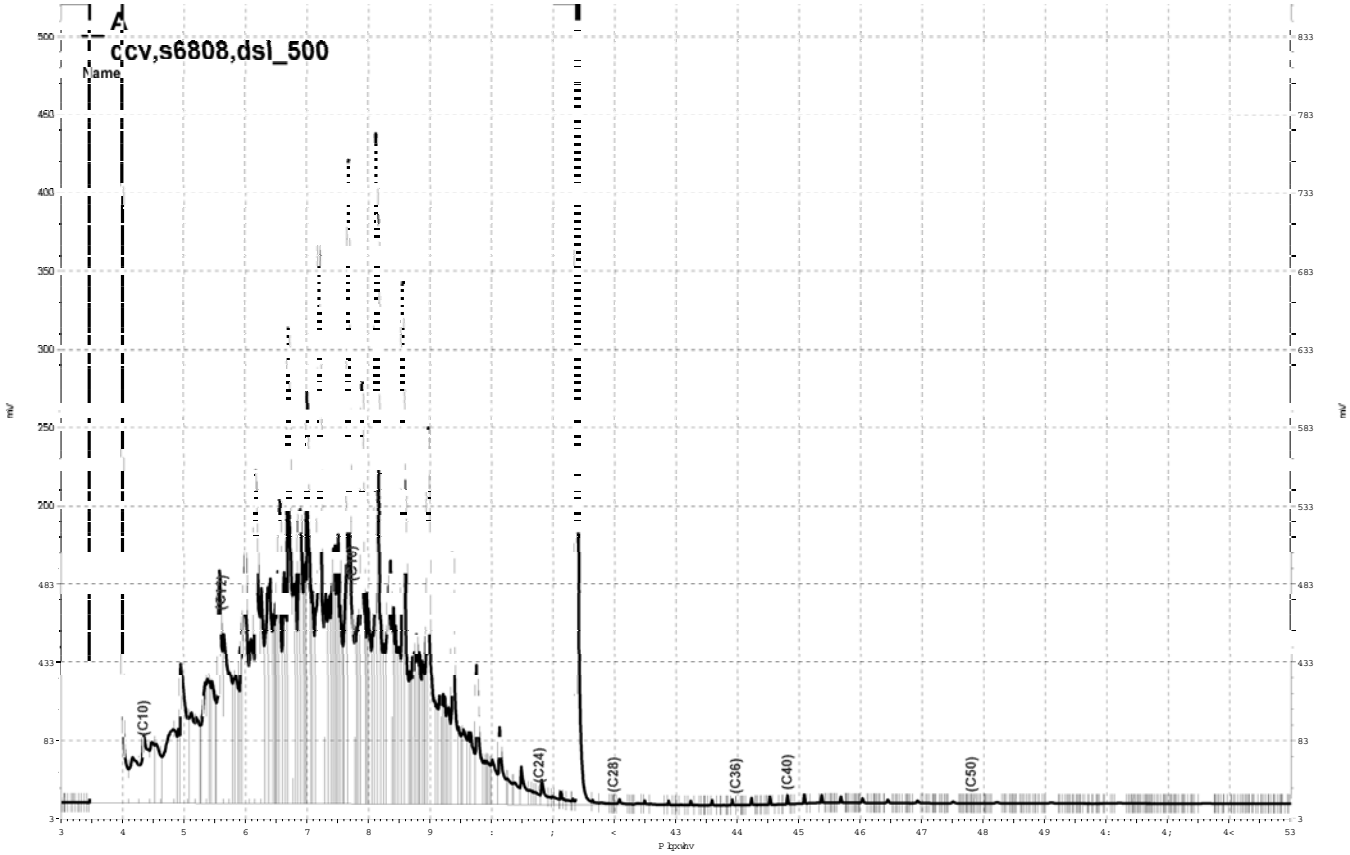


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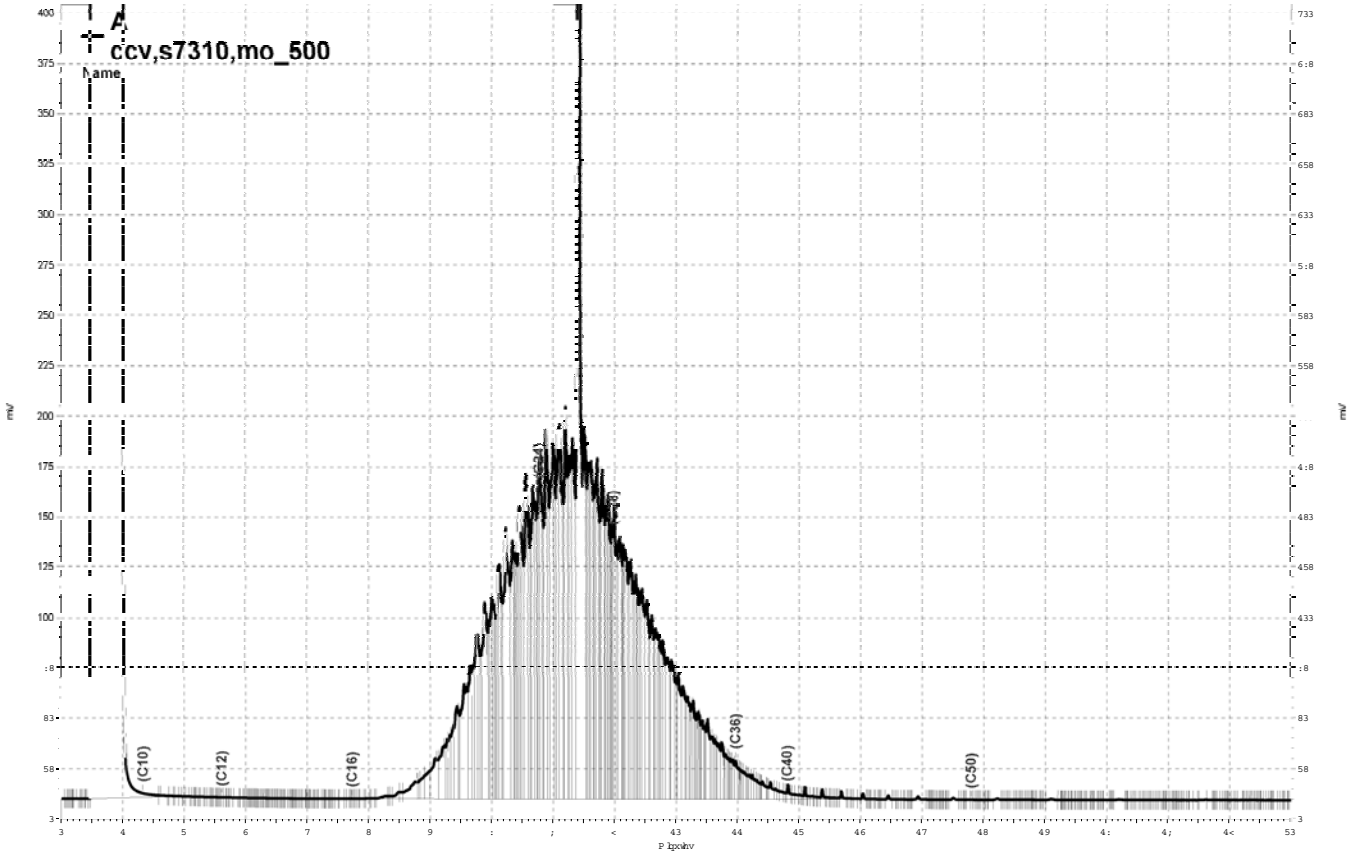


_Olp v jgulyh_h}fkurp_SurmfwvJF44D_Gdwd_5;7d338/D

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-1-GW-24' | Batch#: | 130225 |
| Lab ID: | 198088-003 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-1-GW-24' | Batch#: | 130225 |
| Lab ID: | 198088-003 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 107 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 107 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | TRIP BLANK | Batch#: | 130226 |
| Lab ID: | 198088-004 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | TRIP BLANK | Batch#: | 130226 |
| Lab ID: | 198088-004 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 114 | 80-122 |
| 1,2-Dichloroethane-d4 | 117 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 114 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409232 | Batch#: | 130225 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 29.26 | 117 | 80-133 |
| Benzene | 25.00 | 24.81 | 99 | 80-120 |
| Trichloroethene | 25.00 | 25.26 | 101 | 80-120 |
| Toluene | 25.00 | 24.96 | 100 | 80-122 |
| Chlorobenzene | 25.00 | 25.69 | 103 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 108 | 80-122 |
| 1,2-Dichloroethane-d4 | 102 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409233 | Batch#: | 130225 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409233 | Batch#: | 130225 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 98 | 80-122 |
| 1,2-Dichloroethane-d4 | 105 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409234 | Batch#: | 130225 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409234 | Batch#: | 130225 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 106 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 130226 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409235

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 29.66 | 119 | 80-133 |
| Benzene | 25.00 | 27.37 | 109 | 80-120 |
| Trichloroethene | 25.00 | 29.06 | 116 | 80-120 |
| Toluene | 25.00 | 28.23 | 113 | 80-122 |
| Chlorobenzene | 25.00 | 26.23 | 105 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 99 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 96 | 80-120 |

Type: BSD Lab ID: QC409236

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 28.37 | 113 | 80-133 | 4 | 20 |
| Benzene | 25.00 | 26.37 | 105 | 80-120 | 4 | 20 |
| Trichloroethene | 25.00 | 27.70 | 111 | 80-120 | 5 | 20 |
| Toluene | 25.00 | 27.16 | 109 | 80-122 | 4 | 20 |
| Chlorobenzene | 25.00 | 25.65 | 103 | 80-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 101 | 80-122 |
| 1,2-Dichloroethane-d4 | 96 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 95 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409237 | Batch#: | 130226 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409237 | Batch#: | 130226 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 100 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 107 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 197922-009 | Batch#: | 130225 |
| Matrix: | Water | Sampled: | 09/25/07 |
| Units: | ug/L | Received: | 09/27/07 |

Type: MS Analyzed: 10/05/07
Lab ID: QC409263

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.1169 | 25.00 | 27.71 | 111 | 80-141 |
| Benzene | <0.06286 | 25.00 | 24.61 | 98 | 80-123 |
| Trichloroethene | 0.1816 | 25.00 | 24.83 | 99 | 73-129 |
| Toluene | <0.1220 | 25.00 | 24.16 | 97 | 80-124 |
| Chlorobenzene | <0.1069 | 25.00 | 24.26 | 97 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 107 | 80-122 |
| 1,2-Dichloroethane-d4 | 113 | 74-137 |
| Toluene-d8 | 104 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

Type: MSD Analyzed: 10/06/07
Lab ID: QC409264

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 28.86 | 115 | 80-141 | 4 | 20 |
| Benzene | 25.00 | 25.34 | 101 | 80-123 | 3 | 20 |
| Trichloroethene | 25.00 | 25.53 | 101 | 73-129 | 3 | 20 |
| Toluene | 25.00 | 25.02 | 100 | 80-124 | 3 | 20 |
| Chlorobenzene | 25.00 | 24.68 | 99 | 80-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 104 | 80-122 |
| 1,2-Dichloroethane-d4 | 113 | 74-137 |
| Toluene-d8 | 104 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130226 |
| MSS Lab ID: | 198112-003 | Sampled: | 10/03/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409269

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.07091 | 25.00 | 30.22 | 121 | 80-141 |
| Benzene | 0.2054 | 25.00 | 29.03 | 115 | 80-123 |
| Trichloroethene | 0.3157 | 25.00 | 31.26 | 124 | 73-129 |
| Toluene | 0.1827 | 25.00 | 29.37 | 117 | 80-124 |
| Chlorobenzene | <0.03402 | 25.00 | 26.07 | 104 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 114 | 80-122 |
| 1,2-Dichloroethane-d4 | 120 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 96 | 80-120 |

Type: MSD Lab ID: QC409270

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 29.70 | 119 | 80-141 | 2 | 20 |
| Benzene | 25.00 | 27.85 | 111 | 80-123 | 4 | 20 |
| Trichloroethene | 25.00 | 29.97 | 119 | 73-129 | 4 | 20 |
| Toluene | 25.00 | 28.03 | 111 | 80-124 | 5 | 20 |
| Chlorobenzene | 25.00 | 25.61 | 102 | 80-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 110 | 80-122 |
| 1,2-Dichloroethane-d4 | 112 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 93 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-1-SS-0.0' | Diln Fac: | 0.9804 |
| Lab ID: | 198088-001 | Batch#: | 130182 |
| Matrix: | Soil | Sampled: | 10/02/07 |
| Units: | ug/Kg | Received: | 10/04/07 |
| Basis: | as received | Analyzed: | 10/04/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.8 |
| Chloromethane | ND | 9.8 |
| Vinyl Chloride | ND | 9.8 |
| Bromomethane | ND | 9.8 |
| Chloroethane | ND | 9.8 |
| Trichlorofluoromethane | ND | 4.9 |
| Acetone | ND | 25 |
| Freon 113 | ND | 4.9 |
| 1,1-Dichloroethene | ND | 4.9 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 4.9 |
| MTBE | ND | 4.9 |
| trans-1,2-Dichloroethene | ND | 4.9 |
| Vinyl Acetate | ND | 49 |
| 1,1-Dichloroethane | ND | 4.9 |
| 2-Butanone | ND | 9.8 |
| cis-1,2-Dichloroethene | ND | 4.9 |
| 2,2-Dichloropropane | ND | 4.9 |
| Chloroform | ND | 4.9 |
| Bromochloromethane | ND | 4.9 |
| 1,1,1-Trichloroethane | ND | 4.9 |
| 1,1-Dichloropropene | ND | 4.9 |
| Carbon Tetrachloride | ND | 4.9 |
| 1,2-Dichloroethane | ND | 4.9 |
| Benzene | ND | 4.9 |
| Trichloroethene | ND | 4.9 |
| 1,2-Dichloropropane | ND | 4.9 |
| Bromodichloromethane | ND | 4.9 |
| Dibromomethane | ND | 4.9 |
| 4-Methyl-2-Pentanone | ND | 9.8 |
| cis-1,3-Dichloropropene | ND | 4.9 |
| Toluene | ND | 4.9 |
| trans-1,3-Dichloropropene | ND | 4.9 |
| 1,1,2-Trichloroethane | ND | 4.9 |
| 2-Hexanone | ND | 9.8 |
| 1,3-Dichloropropane | ND | 4.9 |
| Tetrachloroethene | ND | 4.9 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-1-SS-0.0' | Diln Fac: | 0.9804 |
| Lab ID: | 198088-001 | Batch#: | 130182 |
| Matrix: | Soil | Sampled: | 10/02/07 |
| Units: | ug/Kg | Received: | 10/04/07 |
| Basis: | as received | Analyzed: | 10/04/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.9 |
| 1,2-Dibromoethane | ND | 4.9 |
| Chlorobenzene | ND | 4.9 |
| 1,1,1,2-Tetrachloroethane | ND | 4.9 |
| Ethylbenzene | ND | 4.9 |
| m,p-Xylenes | ND | 4.9 |
| o-Xylene | ND | 4.9 |
| Styrene | ND | 4.9 |
| Bromoform | ND | 4.9 |
| Isopropylbenzene | ND | 4.9 |
| 1,1,2,2-Tetrachloroethane | ND | 4.9 |
| 1,2,3-Trichloropropane | ND | 4.9 |
| Propylbenzene | ND | 4.9 |
| Bromobenzene | ND | 4.9 |
| 1,3,5-Trimethylbenzene | ND | 4.9 |
| 2-Chlorotoluene | ND | 4.9 |
| 4-Chlorotoluene | ND | 4.9 |
| tert-Butylbenzene | ND | 4.9 |
| 1,2,4-Trimethylbenzene | ND | 4.9 |
| sec-Butylbenzene | ND | 4.9 |
| para-Isopropyl Toluene | ND | 4.9 |
| 1,3-Dichlorobenzene | ND | 4.9 |
| 1,4-Dichlorobenzene | ND | 4.9 |
| n-Butylbenzene | ND | 4.9 |
| 1,2-Dichlorobenzene | ND | 4.9 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.9 |
| 1,2,4-Trichlorobenzene | ND | 4.9 |
| Hexachlorobutadiene | ND | 4.9 |
| Naphthalene | ND | 4.9 |
| 1,2,3-Trichlorobenzene | ND | 4.9 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 91 | 80-124 |
| 1,2-Dichloroethane-d4 | 93 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 90 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-1-SS-36' | Diln Fac: | 0.9615 |
| Lab ID: | 198088-002 | Batch#: | 130182 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | ug/Kg | Received: | 10/04/07 |
| Basis: | as received | Analyzed: | 10/04/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.6 |
| Chloromethane | ND | 9.6 |
| Vinyl Chloride | ND | 9.6 |
| Bromomethane | ND | 9.6 |
| Chloroethane | ND | 9.6 |
| Trichlorofluoromethane | ND | 4.8 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.8 |
| 1,1-Dichloroethene | ND | 4.8 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.8 |
| MTBE | ND | 4.8 |
| trans-1,2-Dichloroethene | ND | 4.8 |
| Vinyl Acetate | ND | 48 |
| 1,1-Dichloroethane | ND | 4.8 |
| 2-Butanone | ND | 9.6 |
| cis-1,2-Dichloroethene | ND | 4.8 |
| 2,2-Dichloropropane | ND | 4.8 |
| Chloroform | ND | 4.8 |
| Bromochloromethane | ND | 4.8 |
| 1,1,1-Trichloroethane | ND | 4.8 |
| 1,1-Dichloropropene | ND | 4.8 |
| Carbon Tetrachloride | ND | 4.8 |
| 1,2-Dichloroethane | ND | 4.8 |
| Benzene | ND | 4.8 |
| Trichloroethene | ND | 4.8 |
| 1,2-Dichloropropane | ND | 4.8 |
| Bromodichloromethane | ND | 4.8 |
| Dibromomethane | ND | 4.8 |
| 4-Methyl-2-Pentanone | ND | 9.6 |
| cis-1,3-Dichloropropene | ND | 4.8 |
| Toluene | ND | 4.8 |
| trans-1,3-Dichloropropene | ND | 4.8 |
| 1,1,2-Trichloroethane | ND | 4.8 |
| 2-Hexanone | ND | 9.6 |
| 1,3-Dichloropropane | ND | 4.8 |
| Tetrachloroethene | ND | 4.8 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-1-SS-36' | Diln Fac: | 0.9615 |
| Lab ID: | 198088-002 | Batch#: | 130182 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | ug/Kg | Received: | 10/04/07 |
| Basis: | as received | Analyzed: | 10/04/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.8 |
| 1,2-Dibromoethane | ND | 4.8 |
| Chlorobenzene | ND | 4.8 |
| 1,1,1,2-Tetrachloroethane | ND | 4.8 |
| Ethylbenzene | ND | 4.8 |
| m,p-Xylenes | ND | 4.8 |
| o-Xylene | ND | 4.8 |
| Styrene | ND | 4.8 |
| Bromoform | ND | 4.8 |
| Isopropylbenzene | ND | 4.8 |
| 1,1,2,2-Tetrachloroethane | ND | 4.8 |
| 1,2,3-Trichloropropane | ND | 4.8 |
| Propylbenzene | ND | 4.8 |
| Bromobenzene | ND | 4.8 |
| 1,3,5-Trimethylbenzene | ND | 4.8 |
| 2-Chlorotoluene | ND | 4.8 |
| 4-Chlorotoluene | ND | 4.8 |
| tert-Butylbenzene | ND | 4.8 |
| 1,2,4-Trimethylbenzene | ND | 4.8 |
| sec-Butylbenzene | ND | 4.8 |
| para-Isopropyl Toluene | ND | 4.8 |
| 1,3-Dichlorobenzene | ND | 4.8 |
| 1,4-Dichlorobenzene | ND | 4.8 |
| n-Butylbenzene | ND | 4.8 |
| 1,2-Dichlorobenzene | ND | 4.8 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.8 |
| 1,2,4-Trichlorobenzene | ND | 4.8 |
| Hexachlorobutadiene | ND | 4.8 |
| Naphthalene | ND | 4.8 |
| 1,2,3-Trichlorobenzene | ND | 4.8 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 92 | 80-124 |
| 1,2-Dichloroethane-d4 | 88 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 91 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | ug/Kg | Batch#: | 130182 |
| Basis: | as received | Analyzed: | 10/04/07 |

Type: BS Lab ID: QC409051

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 23.74 | 95 | 74-131 |
| Benzene | 25.00 | 25.82 | 103 | 77-121 |
| Trichloroethene | 25.00 | 26.70 | 107 | 77-121 |
| Toluene | 25.00 | 26.36 | 105 | 79-122 |
| Chlorobenzene | 25.00 | 25.38 | 102 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 87 | 80-124 |
| 1,2-Dichloroethane-d4 | 86 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 91 | 80-122 |

Type: BSD Lab ID: QC409052

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 20.51 | 82 | 74-131 | 15 | 20 |
| Benzene | 25.00 | 25.03 | 100 | 77-121 | 3 | 20 |
| Trichloroethene | 25.00 | 27.13 | 109 | 77-121 | 2 | 20 |
| Toluene | 25.00 | 26.37 | 105 | 79-122 | 0 | 20 |
| Chlorobenzene | 25.00 | 24.25 | 97 | 80-120 | 5 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 85 | 80-124 |
| 1,2-Dichloroethane-d4 | 87 | 79-136 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 88 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC409053 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130182 |
| Units: | ug/Kg | Analyzed: | 10/04/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC409053 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130182 |
| Units: | ug/Kg | Analyzed: | 10/04/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 87 | 80-124 |
| 1,2-Dichloroethane-d4 | 85 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 92 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 0.9259 |
| MSS Lab ID: | 198082-007 | Batch#: | 130182 |
| Matrix: | Soil | Sampled: | 10/02/07 |
| Units: | ug/Kg | Received: | 10/03/07 |
| Basis: | as received | Analyzed: | 10/04/07 |

Type: MS Lab ID: QC409115

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.4483 | 46.30 | 40.67 | 88 | 61-145 |
| Benzene | <0.6561 | 46.30 | 43.10 | 93 | 57-123 |
| Trichloroethene | <0.6888 | 46.30 | 48.43 | 105 | 52-141 |
| Toluene | <0.4839 | 46.30 | 44.15 | 95 | 53-126 |
| Chlorobenzene | <0.5534 | 46.30 | 41.78 | 90 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 96 | 80-124 |
| 1,2-Dichloroethane-d4 | 87 | 79-136 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 89 | 80-122 |

Type: MSD Lab ID: QC409116

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 46.30 | 41.79 | 90 | 61-145 | 3 | 26 |
| Benzene | 46.30 | 44.06 | 95 | 57-123 | 2 | 25 |
| Trichloroethene | 46.30 | 49.06 | 106 | 52-141 | 1 | 26 |
| Toluene | 46.30 | 45.35 | 98 | 53-126 | 3 | 27 |
| Chlorobenzene | 46.30 | 40.52 | 88 | 49-121 | 3 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 93 | 80-124 |
| 1,2-Dichloroethane-d4 | 91 | 79-136 |
| Toluene-d8 | 104 | 80-120 |
| Bromofluorobenzene | 89 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-1-SS-0.0' | Batch#: | 130274 |
| Lab ID: | 198088-001 | Sampled: | 10/02/07 |
| Matrix: | Soil | Received: | 10/04/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | 17 | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | 5.7 | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | 94 | 3.3 |
| alpha-Chlordane | 6.1 C | 1.7 |
| gamma-Chlordane | 15 C | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 79 | 54-120 |
| Decachlorobiphenyl | 91 | 49-142 |

C= Presence confirmed, but RPD between columns exceeds 40%
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409432 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 58 | 54-120 |
| Decachlorobiphenyl | 57 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409433 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| gamma-BHC | 13.23 | 13.69 | 104 | 44-120 |
| Heptachlor | 13.23 | 10.56 | 80 | 44-120 |
| Aldrin | 13.23 | 10.41 | 79 | 47-120 |
| Dieldrin | 26.46 | 30.57 | 116 | 50-120 |
| Endrin | 26.46 | 30.91 | 117 | 27-128 |
| 4,4'-DDT | 26.46 | 33.21 | 126 | 42-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 101 | 54-120 |
| Decachlorobiphenyl | 79 | 49-142 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0' | Batch#: | 130274 |
| MSS Lab ID: | 198049-002 | Sampled: | 10/01/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3620B
Lab ID: QC409434

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| gamma-BHC | <0.3690 | 13.28 | 9.105 | 69 | 45-122 |
| Heptachlor | <0.4798 | 13.28 | 9.355 | 70 | 49-125 |
| Aldrin | <0.3153 | 13.28 | 9.232 | 70 | 48-120 |
| Dieldrin | <0.9915 | 26.56 | 19.07 | 72 | 50-121 |
| Endrin | <1.176 | 26.56 | 18.43 | 69 | 42-123 |
| 4,4'-DDT | <1.267 | 26.56 | 22.21 # | 84 | 29-135 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 74 | 54-120 |
| Decachlorobiphenyl | 73 | 49-142 |

Type: MSD Cleanup Method: EPA 3620B
Lab ID: QC409435

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| gamma-BHC | 13.31 | 10.67 | 80 | 45-122 | 16 | 40 |
| Heptachlor | 13.31 | 11.13 | 84 | 49-125 | 17 | 42 |
| Aldrin | 13.31 | 10.67 | 80 | 48-120 | 14 | 37 |
| Dieldrin | 26.62 | 22.92 | 86 | 50-121 | 18 | 34 |
| Endrin | 26.62 | 22.52 | 85 | 42-123 | 20 | 39 |
| 4,4'-DDT | 26.62 | 23.64 # | 89 | 29-135 | 6 | 51 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 82 | 54-120 |
| Decachlorobiphenyl | 84 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | B-1-SS-0.0' | Batch#: | 130274 |
| Matrix: | Soil | Sampled: | 10/02/07 |
| Units: | ug/Kg | Received: | 10/04/07 |
| Basis: | as received | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/08/07 |

Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198088-001

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 107 | 66-140 |
| Decachlorobiphenyl | 107 | 51-152 |

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409432

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 94 | 66-140 |
| Decachlorobiphenyl | 105 | 51-152 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409436 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/08/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3665A

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Aroclor-1016 | 164.1 | 195.3 | 119 | 69-142 |
| Aroclor-1260 | 164.1 | 191.7 | 117 | 69-155 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 99 | 66-140 |
| Decachlorobiphenyl | 110 | 51-152 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130274 |
| MSS Lab ID: | 198070-005 | Sampled: | 10/02/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC409437

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Aroclor-1016 | <2.656 | 166.2 | 186.7 | 112 | 62-139 |
| Aroclor-1260 | <2.695 | 166.2 | 176.7 | 106 | 54-143 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 102 | 66-140 |
| Decachlorobiphenyl | 107 | 51-152 |

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC409438

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Aroclor-1016 | 166.2 | 197.8 | 119 | 62-139 | 6 | 33 |
| Aroclor-1260 | 166.2 | 193.3 | 116 | 54-143 | 9 | 34 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 102 | 66-140 |
| Decachlorobiphenyl | 106 | 51-152 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-1-SS-0.0' | Basis: | as received |
| Lab ID: | 198088-001 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/02/07 |
| Units: | mg/Kg | Received: | 10/04/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 1.2 | 0.50 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Arsenic | 7.3 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Barium | 200 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.68 | 0.10 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Chromium | 52 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Cobalt | 20 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Copper | 27 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Lead | 19 | 0.21 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.084 | 0.020 | 130306 | 10/08/07 | 10/08/07 | METHOD | EPA 7471A |
| Molybdenum | 0.31 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Nickel | 89 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.9 | 0.50 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Vanadium | 47 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Zinc | 87 | 1.0 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-1-SS-36' | Basis: | as received |
| Lab ID: | 198088-002 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | mg/Kg | Received: | 10/04/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Arsenic | 8.7 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Barium | 110 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.34 | 0.10 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Chromium | 170 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Cobalt | 29 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Copper | 31 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Lead | 4.4 | 0.23 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.17 | 0.020 | 130306 | 10/08/07 | 10/08/07 | METHOD | EPA 7471A |
| Molybdenum | 0.59 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Nickel | 350 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Selenium | 3.7 | 0.50 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Vanadium | 43 | 0.25 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |
| Zinc | 42 | 1.0 | 130212 | 10/04/07 | 10/05/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409171 | Batch#: | 130212 |
| Matrix: | Soil | Prepared: | 10/04/07 |
| Units: | mg/Kg | Analyzed: | 10/04/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | ND | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.23 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 130212 |
| Units: | mg/Kg | Prepared: | 10/04/07 |
| Basis: | as received | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409172

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 93.96 | 94 | 80-120 |
| Arsenic | 50.00 | 49.52 | 99 | 80-120 |
| Barium | 100.0 | 95.05 | 95 | 80-120 |
| Beryllium | 2.500 | 2.567 | 103 | 80-120 |
| Cadmium | 10.00 | 9.755 | 98 | 80-120 |
| Chromium | 100.0 | 92.21 | 92 | 80-120 |
| Cobalt | 25.00 | 22.50 | 90 | 80-120 |
| Copper | 12.50 | 11.56 | 93 | 80-120 |
| Lead | 100.0 | 91.68 | 92 | 80-120 |
| Molybdenum | 20.00 | 19.47 | 97 | 80-120 |
| Nickel | 25.00 | 23.06 | 92 | 80-120 |
| Selenium | 50.00 | 47.59 | 95 | 80-120 |
| Silver | 10.00 | 9.009 | 90 | 80-120 |
| Thallium | 50.00 | 45.18 | 90 | 80-120 |
| Vanadium | 25.00 | 23.19 | 93 | 80-120 |
| Zinc | 25.00 | 24.58 | 98 | 80-120 |

Type: BSD Lab ID: QC409173

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 93.75 | 94 | 80-120 | 0 | 20 |
| Arsenic | 50.00 | 49.07 | 98 | 80-120 | 1 | 20 |
| Barium | 100.0 | 93.76 | 94 | 80-120 | 1 | 20 |
| Beryllium | 2.500 | 2.538 | 102 | 80-120 | 1 | 20 |
| Cadmium | 10.00 | 9.647 | 96 | 80-120 | 1 | 20 |
| Chromium | 100.0 | 91.42 | 91 | 80-120 | 1 | 20 |
| Cobalt | 25.00 | 22.33 | 89 | 80-120 | 1 | 20 |
| Copper | 12.50 | 11.41 | 91 | 80-120 | 1 | 20 |
| Lead | 100.0 | 90.92 | 91 | 80-120 | 1 | 20 |
| Molybdenum | 20.00 | 19.26 | 96 | 80-120 | 1 | 20 |
| Nickel | 25.00 | 22.99 | 92 | 80-120 | 0 | 20 |
| Selenium | 50.00 | 47.25 | 94 | 80-120 | 1 | 20 |
| Silver | 10.00 | 8.893 | 89 | 80-120 | 1 | 20 |
| Thallium | 50.00 | 44.81 | 90 | 80-120 | 1 | 20 |
| Vanadium | 25.00 | 23.06 | 92 | 80-120 | 1 | 20 |
| Zinc | 25.00 | 24.50 | 98 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130212 |
| MSS Lab ID: | 198070-005 | Sampled: | 10/02/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | Prepared: | 10/04/07 |
| Basis: | as received | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409174

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 2.073 | 100.0 | 54.37 | 52 | 1-122 |
| Arsenic | 3.064 | 50.00 | 52.01 | 98 | 72-120 |
| Barium | 62.53 | 100.0 | 155.5 | 93 | 49-139 |
| Beryllium | 0.2224 | 2.500 | 2.744 | 101 | 80-120 |
| Cadmium | <0.002548 | 10.00 | 9.574 | 96 | 74-120 |
| Chromium | 16.86 | 100.0 | 108.0 | 91 | 65-120 |
| Cobalt | 6.855 | 25.00 | 27.27 | 82 | 60-120 |
| Copper | 5.646 | 12.50 | 17.63 | 96 | 47-146 |
| Lead | 2.656 | 100.0 | 91.26 | 89 | 53-123 |
| Molybdenum | 0.1062 | 20.00 | 18.18 | 90 | 66-120 |
| Nickel | 21.68 | 25.00 | 43.43 | 87 | 43-142 |
| Selenium | 0.8830 | 50.00 | 47.36 | 93 | 71-120 |
| Silver | <0.01748 | 10.00 | 9.065 | 91 | 66-120 |
| Thallium | <0.03302 | 50.00 | 42.44 | 85 | 62-120 |
| Vanadium | 28.18 | 25.00 | 50.42 | 89 | 52-139 |
| Zinc | 23.82 | 25.00 | 48.02 | 97 | 42-147 |

Type: MSD Lab ID: QC409175

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 99.01 | 52.99 | 51 | 1-122 | 2 | 30 |
| Arsenic | 49.50 | 50.35 | 96 | 72-120 | 2 | 20 |
| Barium | 99.01 | 149.5 | 88 | 49-139 | 3 | 23 |
| Beryllium | 2.475 | 2.647 | 98 | 80-120 | 3 | 20 |
| Cadmium | 9.901 | 9.179 | 93 | 74-120 | 3 | 20 |
| Chromium | 99.01 | 104.7 | 89 | 65-120 | 2 | 20 |
| Cobalt | 24.75 | 26.44 | 79 | 60-120 | 2 | 24 |
| Copper | 12.38 | 16.98 | 92 | 47-146 | 3 | 21 |
| Lead | 99.01 | 88.53 | 87 | 53-123 | 2 | 28 |
| Molybdenum | 19.80 | 17.63 | 88 | 66-120 | 2 | 20 |
| Nickel | 24.75 | 42.50 | 84 | 43-142 | 2 | 26 |
| Selenium | 49.50 | 45.82 | 91 | 71-120 | 2 | 20 |
| Silver | 9.901 | 8.672 | 88 | 66-120 | 3 | 20 |
| Thallium | 49.50 | 40.24 | 81 | 62-120 | 4 | 20 |
| Vanadium | 24.75 | 49.75 | 87 | 52-139 | 1 | 20 |
| Zinc | 24.75 | 46.59 | 92 | 42-147 | 3 | 27 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409550 | Batch#: | 130306 |
| Matrix: | Soil | Prepared: | 10/08/07 |
| Units: | mg/Kg | Analyzed: | 10/08/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130306 |
| Units: | mg/Kg | Prepared: | 10/08/07 |
| Basis: | as received | Analyzed: | 10/08/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409551 | 0.5000 | 0.5020 | 100 | 80-120 | | |
| BSD | QC409552 | 0.5000 | 0.5090 | 102 | 80-120 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 2.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130306 |
| MSS Lab ID: | 198150-001 | Sampled: | 10/05/07 |
| Matrix: | Soil | Received: | 10/05/07 |
| Units: | mg/Kg | Prepared: | 10/08/07 |
| Basis: | as received | Analyzed: | 10/08/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409554 | 0.5858 | 0.4630 | 0.8926 | 66 * | 70-143 | | |
| MSD | QC409555 | | 0.4808 | 1.056 | 98 | 70-143 | 15 | 22 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-1-GW-24' | Sampled: | 10/02/07 |
| Lab ID: | 198088-003 | Received: | 10/04/07 |
| Matrix: | Filtrate | Prepared: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL | Batch# | Prep | Analysis |
|---|---|---|---|---|---|
| Antimony | ND | 10 | 130221 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Barium | 610 | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130221 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.4 | 130221 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130230 | METHOD | EPA 7470A |
| Molybdenum | 40 | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130221 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130221 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130221 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130221 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409216 | Batch#: | 130221 |
| Matrix: | Filtrate | Prepared: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 5.0 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.4 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Filtrate | Batch#: | 130221 |
| Units: | ug/L | Prepared: | 10/05/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/05/07 |

Type: BS Lab ID: QC409217

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 511.5 | 102 | 80-120 |
| Arsenic | 100.0 | 106.9 | 107 | 80-120 |
| Barium | 2,000 | 1,930 | 96 | 80-120 |
| Beryllium | 50.00 | 53.87 | 108 | 80-120 |
| Cadmium | 50.00 | 51.89 | 104 | 80-120 |
| Chromium | 200.0 | 195.0 | 98 | 80-120 |
| Cobalt | 500.0 | 472.1 | 94 | 80-120 |
| Copper | 250.0 | 243.0 | 97 | 80-120 |
| Lead | 100.0 | 96.18 | 96 | 80-120 |
| Molybdenum | 400.0 | 397.1 | 99 | 80-120 |
| Nickel | 500.0 | 485.7 | 97 | 80-120 |
| Selenium | 100.0 | 101.2 | 101 | 80-120 |
| Silver | 50.00 | 46.79 | 94 | 80-120 |
| Thallium | 100.0 | 98.30 | 98 | 80-120 |
| Vanadium | 500.0 | 494.6 | 99 | 80-120 |
| Zinc | 500.0 | 513.2 | 103 | 80-120 |

Type: BSD Lab ID: QC409218

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 512.0 | 102 | 80-120 | 0 | 20 |
| Arsenic | 100.0 | 105.0 | 105 | 80-120 | 2 | 20 |
| Barium | 2,000 | 1,920 | 96 | 80-120 | 0 | 20 |
| Beryllium | 50.00 | 53.77 | 108 | 80-120 | 0 | 20 |
| Cadmium | 50.00 | 51.53 | 103 | 80-120 | 1 | 20 |
| Chromium | 200.0 | 194.5 | 97 | 80-120 | 0 | 20 |
| Cobalt | 500.0 | 470.3 | 94 | 80-120 | 0 | 20 |
| Copper | 250.0 | 240.8 | 96 | 80-120 | 1 | 20 |
| Lead | 100.0 | 94.87 | 95 | 80-120 | 1 | 20 |
| Molybdenum | 400.0 | 395.0 | 99 | 80-120 | 1 | 20 |
| Nickel | 500.0 | 485.8 | 97 | 80-120 | 0 | 20 |
| Selenium | 100.0 | 100.5 | 100 | 80-120 | 1 | 20 |
| Silver | 50.00 | 47.19 | 94 | 80-120 | 1 | 20 |
| Thallium | 100.0 | 97.43 | 97 | 80-120 | 1 | 20 |
| Vanadium | 500.0 | 496.2 | 99 | 80-120 | 0 | 20 |
| Zinc | 500.0 | 512.9 | 103 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130221 |
| MSS Lab ID: | 198115-002 | Sampled: | 10/03/07 |
| Matrix: | Filtrate | Received: | 10/04/07 |
| Units: | ug/L | Prepared: | 10/05/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/05/07 |

Type: MS Lab ID: QC409219

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 1.093 | 500.0 | 522.0 | 104 | 80-120 |
| Arsenic | <1.387 | 100.0 | 110.2 | 110 | 80-127 |
| Barium | 195.8 | 2,000 | 2,118 | 96 | 80-120 |
| Beryllium | 0.2716 | 50.00 | 55.20 | 110 | 80-120 |
| Cadmium | <0.3555 | 50.00 | 51.00 | 102 | 80-120 |
| Chromium | 1.684 | 200.0 | 194.4 | 96 | 80-120 |
| Cobalt | 2.049 | 500.0 | 464.0 | 92 | 80-120 |
| Copper | 8.343 | 250.0 | 250.4 | 97 | 80-120 |
| Lead | <1.150 | 100.0 | 95.14 | 95 | 76-120 |
| Molybdenum | 1.887 | 400.0 | 398.5 | 99 | 80-120 |
| Nickel | 4.787 | 500.0 | 473.9 | 94 | 80-120 |
| Selenium | <1.986 | 100.0 | 104.0 | 104 | 80-128 |
| Silver | <0.7500 | 50.00 | 47.88 | 96 | 73-122 |
| Thallium | <1.131 | 100.0 | 95.79 | 96 | 78-120 |
| Vanadium | 3.357 | 500.0 | 504.7 | 100 | 80-120 |
| Zinc | 27.62 | 500.0 | 540.8 | 103 | 80-123 |

Type: MSD Lab ID: QC409220

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 531.5 | 106 | 80-120 | 2 | 20 |
| Arsenic | 100.0 | 112.5 | 113 | 80-127 | 2 | 20 |
| Barium | 2,000 | 2,159 | 98 | 80-120 | 2 | 20 |
| Beryllium | 50.00 | 56.14 | 112 | 80-120 | 2 | 20 |
| Cadmium | 50.00 | 52.11 | 104 | 80-120 | 2 | 20 |
| Chromium | 200.0 | 198.5 | 98 | 80-120 | 2 | 20 |
| Cobalt | 500.0 | 470.8 | 94 | 80-120 | 1 | 20 |
| Copper | 250.0 | 254.3 | 98 | 80-120 | 2 | 20 |
| Lead | 100.0 | 97.28 | 97 | 76-120 | 2 | 20 |
| Molybdenum | 400.0 | 407.6 | 101 | 80-120 | 2 | 20 |
| Nickel | 500.0 | 478.4 | 95 | 80-120 | 1 | 20 |
| Selenium | 100.0 | 107.0 | 107 | 80-128 | 3 | 20 |
| Silver | 50.00 | 49.37 | 99 | 73-122 | 3 | 20 |
| Thallium | 100.0 | 98.12 | 98 | 78-120 | 2 | 20 |
| Vanadium | 500.0 | 511.0 | 102 | 80-120 | 1 | 20 |
| Zinc | 500.0 | 546.7 | 104 | 80-123 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130230 |
| Lab ID: | QC409253 | Prepared: | 10/05/07 |
| Matrix: | Water | Analyzed: | 10/05/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130230 |
| Matrix: | Water | Prepared: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409254 | 5.000 | 5.460 | 109 | 80-120 | | |
| BSD | QC409255 | 5.000 | 5.390 | 108 | 80-120 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130230 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/02/07 |
| MSS Lab ID: | 198043-005 | Received: | 10/02/07 |
| Matrix: | Filtrate | Prepared: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/05/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409260 | <0.04502 | 5.000 | 5.510 | 110 | 79-125 | | |
| MSD | QC409261 | | 5.000 | 5.580 | 112 | 79-125 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-1-GW-24' | Batch#: | 130187 |
| Matrix: | Water | Sampled: | 10/02/07 16:30 |
| Units: | mg/L | Received: | 10/04/07 |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198088-003 | ND | 0.05 | 10/04/07 12:06 |
| BLANK | QC409076 | ND | 0.05 | 10/04/07 11:45 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130187 |
| MSS Lab ID: | 198096-003 | Sampled: | 10/03/07 08:00 |
| Matrix: | Water | Received: | 10/04/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409077 | | 1.000 | 0.9556 | 96 | 80-120 | | | 1.000 | 10/04/07 14:36 |
| BSD | QC409078 | | 1.000 | 0.9764 | 98 | 80-120 | 2 | 20 | 1.000 | 10/04/07 14:54 |
| MS | QC409131 | 12.37 | 10.00 | 23.09 | 107 | 80-120 | | | 20.00 | 10/04/07 15:29 |
| MSD | QC409132 | | 10.00 | 23.05 | 107 | 80-120 | 0 | 20 | 20.00 | 10/04/07 15:46 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-1-SS-36' | Batch#: | 130304 |
| Matrix: | Soil | Sampled: | 10/03/07 08:00 |
| Units: | mg/Kg | Received: | 10/04/07 |
| Basis: | as received | | |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198088-002 | ND | 0.5 | 10/08/07 14:58 |
| BLANK | QC409544 | ND | 0.5 | 10/08/07 12:58 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198088 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Field ID: | B-12-SS-0.0' | Batch#: | 130304 |
| MSS Lab ID: | 198049-002 | Sampled: | 10/01/07 09:00 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409545 | | 10.00 | 10.34 | 103 | 80-120 | | | 1.000 | 10/08/07 13:15 |
| BSD | QC409546 | | 10.00 | 9.983 | 100 | 80-120 | 3 | 20 | 1.000 | 10/08/07 13:33 |
| MS | QC409587 | 2.349 | 5.100 | 6.705 | 85 | 50-120 | | | 1.020 | 10/08/07 16:52 |
| MSD | QC409588 | | 5.100 | 6.956 | 90 | 50-120 | 4 | 30 | 1.020 | 10/08/07 17:10 |

RPD= Relative Percent Difference

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510-204-2225

198088

# Chain of Custody Record

| | | | | |
|---|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/3/07 | 1827-15 - F |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS-9X3169 | 1 of 1 COCs |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | | Job No. 379-1827-15-02 |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | | SDG No. |
| Project Name: Cloverdale Project | ☐ 1 week | | | |
| Site: Cloverdale, Ca | ☐ 2 days | | | |
| C&T-WO-07-002 | ☐ 1 day | | | |

| Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filtered Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pestcides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-1-SS-0.0- | 10/2/07 | 14:00 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| B-1-SS-36- | 10/3/07 | 8:00 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| | | | | | | | | | | | | | | |
| B-1-GW-24- | 10/2/07 | 16:30 | VOA | GW | 3 | | ✓ | | | | | | | |
| ↓ | ↓ | ↓ | VOA | ↓ | 3 | | | | | ✓ | | | | |
| | | | 1L poly | | 2 | | | | ✓ | | | | | |
| | | | 750ml poly | | 1 | ✓ | | ✓ | | | | | | |
| | | | 250 ml poly | | 1 | | | | | | ✓ | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Robert K. [signature] | Weiss Associates | 10/3/07 14:30 | [signature] | C&T | 10/3/07 14:30 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-6-SS-0.0' | 198121-001 |
| B-6-SS-25' | 198121-002 |
| B-6-GW-17' | 198121-003 |
| B-5-SS-0.0' | 198121-004 |
| B-5-SS-46' | 198121-005 |
| B-5-GW-45' | 198121-006 |
| B-4-SS-0.0' | 198121-007 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/29/2007
Project Manager

Signature: _____ Date: 10/29/2007
Operations Manager

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# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198121** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/05/07** |
| Samples Received: | **10/05/07** |

This hardcopy data package contains sample and QC results for five soil samples and two water samples, requested for the above referenced project on 10/05/07. The samples were received cold. Sample B-6-GW-17'(1980121-003) was receieved with a one liter amber broken.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the MSs/MSDs for batch 130357; the parent sample was not a project sample. No other analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
High surrogate recoveries were observed for trifluorotoluene (FID) in the LCS/MSD for batch 130351; the corresponding bromofluorobenzene (FID) surrogate recoveries were within limits. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
Low recoveries were observed for trichloroethene in the MS/MSD for batch 130284; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
Low recoveries were observed for toluene and chlorobenzene in the MS of B-4-SS-0.0' (lab # 198121-007); the LCS was within limits. High RPD was also observed for toluene and chlorobenzene in the MS/MSD of B-4-SS-0.0' (lab # 198121-007); these analytes were not detected at or above the RL in the associated samples. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
High recovery was observed for arsenic in the MS for batch 130292; the parent sample was not a project sample, the associated RPD was within limits, and

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# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198121** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/05/07** |
| Samples Received: | **10/05/07** |

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
this analyte was not detected at or above the RL in the associated samples. No other analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Soil:**
No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130357 |
| Units: | ug/L | Received: | 10/05/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/09/07 |

Field ID: B-6-GW-17' Lab ID: 198121-003
Type: SAMPLE Sampled: 10/04/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 117 | 73-134 |
| Bromofluorobenzene (FID) | 115 | 77-140 |

Field ID: B-5-GW-45' Lab ID: 198121-006
Type: SAMPLE Sampled: 10/03/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 113 | 73-134 |
| Bromofluorobenzene (FID) | 112 | 77-140 |

Type: BLANK Lab ID: QC409759

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 106 | 73-134 |
| Bromofluorobenzene (FID) | 105 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409760 | Batch#: | 130357 |
| Matrix: | Water | Analyzed: | 10/09/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,786 | 89 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 133 | 73-134 |
| Bromofluorobenzene (FID) | 125 | 77-140 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130357 |
| MSS Lab ID: | 198043-005 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/02/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409761

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 21.62 | 2,000 | 1,874 | 93 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 149 * | 73-134 |
| Bromofluorobenzene (FID) | 155 * | 77-140 |

Type: MSD Lab ID: QC409762

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,832 | 91 | 72-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 149 * | 73-134 |
| Bromofluorobenzene (FID) | 154 * | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130357 |
| MSS Lab ID: | 198043-017 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/02/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409763

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 36.63 | 2,000 | 1,823 | 89 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 150 * | 73-134 |
| Bromofluorobenzene (FID) | 156 * | 77-140 |

Type: MSD Lab ID: QC409764

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,853 | 91 | 72-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 155 * | 73-134 |
| Bromofluorobenzene (FID) | 159 * | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130351 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-6-SS-0.0' Lab ID: 198121-001
Type: SAMPLE Sampled: 10/04/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.96 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 87 | 71-132 |
| Bromofluorobenzene (FID) | 77 | 69-145 |

Field ID: B-6-SS-25' Lab ID: 198121-002
Type: SAMPLE Sampled: 10/04/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.96 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 98 | 71-132 |
| Bromofluorobenzene (FID) | 87 | 69-145 |

Field ID: B-5-SS-0.0' Lab ID: 198121-004
Type: SAMPLE Sampled: 10/03/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 96 | 71-132 |
| Bromofluorobenzene (FID) | 85 | 69-145 |

ND= Not Detected
RL= Reporting Limit

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130351 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-5-SS-46' Lab ID: 198121-005
Type: SAMPLE Sampled: 10/03/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.99 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 89 | 69-145 |

Field ID: B-4-SS-0.0' Lab ID: 198121-007
Type: SAMPLE Sampled: 10/03/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.98 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 99 | 71-132 |
| Bromofluorobenzene (FID) | 91 | 69-145 |

Type: BLANK Lab ID: QC409729

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 93 | 71-132 |
| Bromofluorobenzene (FID) | 90 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC409730 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130351 |
| Units: | mg/Kg | Analyzed: | 10/09/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 10.00 | 9.211 | 92 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 141 * | 71-132 |
| Bromofluorobenzene (FID) | 101 | 69-145 |

*= Value outside of QC limits; see narrative

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 198196-003 | Batch#: | 130351 |
| Matrix: | Soil | Sampled: | 10/09/07 |
| Units: | mg/Kg | Received: | 10/09/07 |
| Basis: | as received | Analyzed: | 10/09/07 |

Type: MS Lab ID: QC409731

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | <0.07746 | 9.615 | 6.586 | 68 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 131 | 71-132 |
| Bromofluorobenzene (FID) | 99 | 69-145 |

Type: MSD Lab ID: QC409732

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 9.901 | 6.842 | 69 | 43-120 | 1 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 133 * | 71-132 |
| Bromofluorobenzene (FID) | 101 | 69-145 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130305 |
| Units: | ug/L | Received: | 10/05/07 |
| Diln Fac: | 1.000 | Prepared: | 10/08/07 |

| | | | |
|---|---|---|---|
| Field ID: | B-6-GW-17' | Sampled: | 10/04/07 |
| Type: | SAMPLE | Analyzed: | 10/10/07 |
| Lab ID: | 198121-003 | | |

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | 77 Y | 50 | |
| Motor Oil C24-C36 | 110 J | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 98 | 61-133 |

| | | | |
|---|---|---|---|
| Field ID: | B-5-GW-45' | Sampled: | 10/03/07 |
| Type: | SAMPLE | Cleanup Method: | EPA 3630C |
| Lab ID: | 198121-006 | | |

| Analyte | Result | RL | MDL | Analyzed |
|---|---|---|---|---|
| Diesel C10-C24 | 260 Y | 50 | | 10/10/07 |
| Diesel C10-C24 (SGCU) | 160 Y | 50 | | 11/02/07 |
| Motor Oil C24-C36 | 290 J | 300 | 56 | 10/10/07 |
| Motor Oil C24-C36 (SGCU) | 190 J | 300 | 130 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 90 | 61-133 | 10/10/07 |
| Hexacosane (SGCU) | 81 | 61-133 | 11/02/07 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/09/07 |
| Lab ID: | QC409547 | Cleanup Method: | EPA 3630C |

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Diesel C10-C24 (SGCU) | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 95 | 61-133 |
| Hexacosane (SGCU) | 92 | 61-133 |

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130305 |
| Units: | ug/L | Prepared: | 10/08/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/09/07 |

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC409548

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 1,872 | 75 | 58-128 |

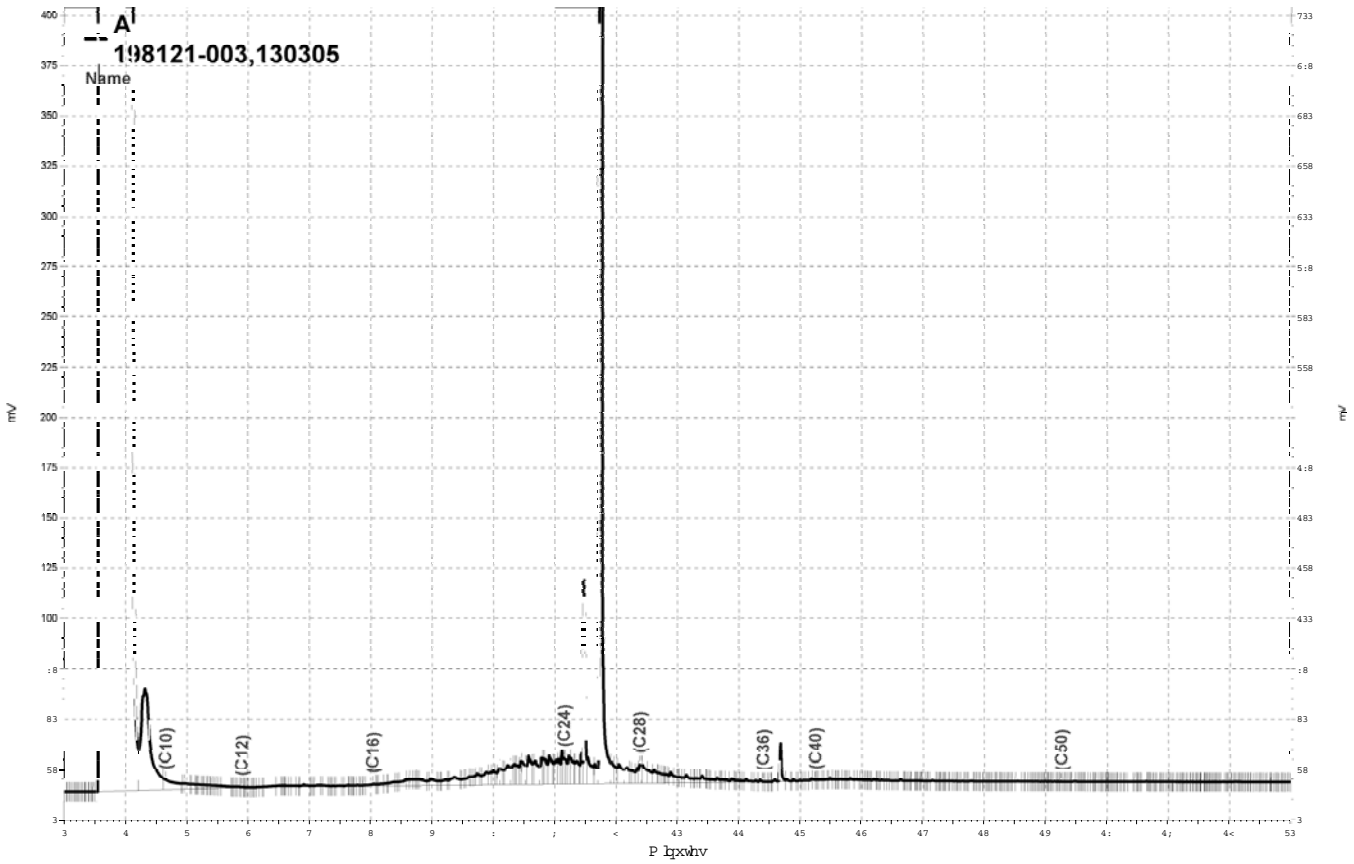
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 85 | 61-133 |

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC409549

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,070 | 83 | 58-128 | 10 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 92 | 61-133 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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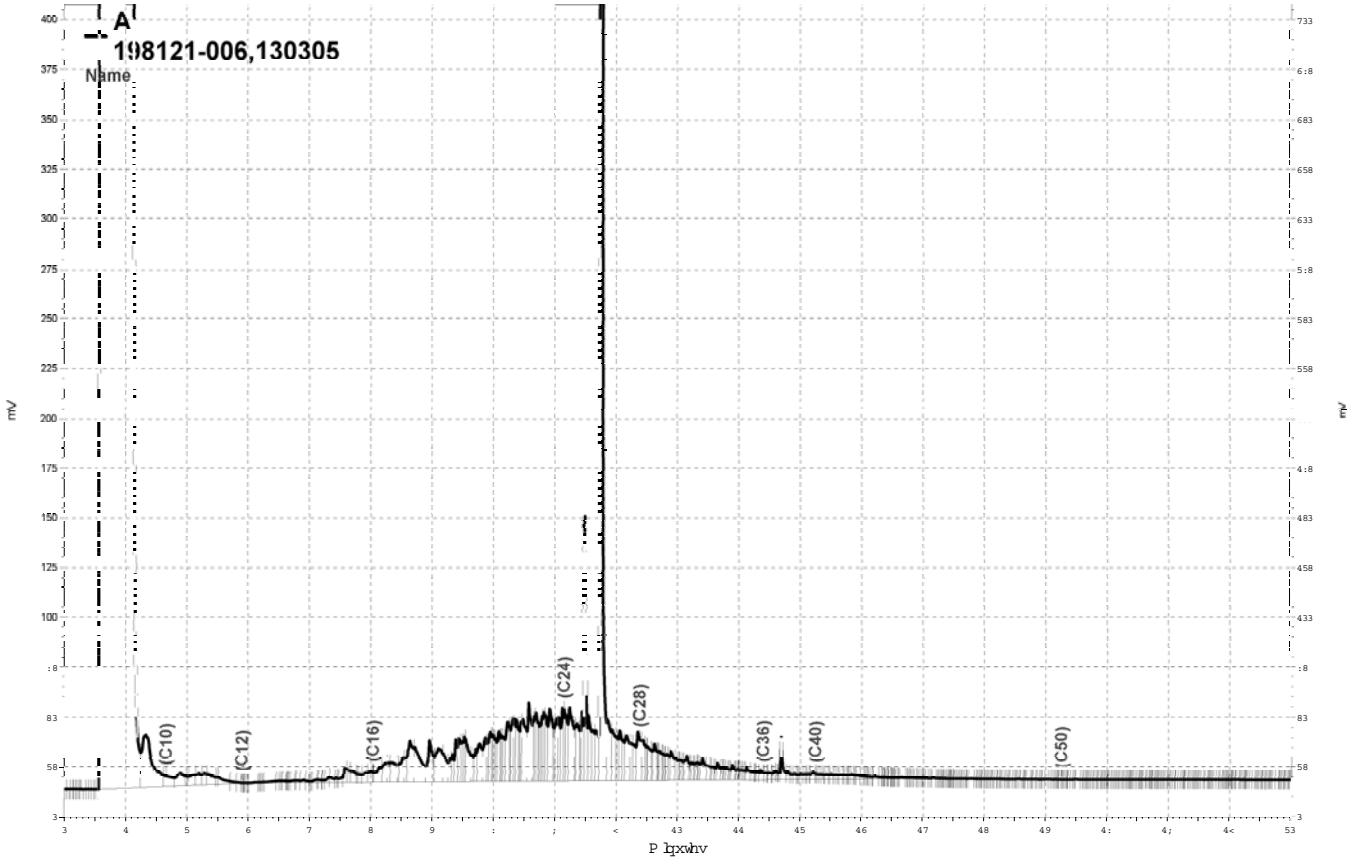


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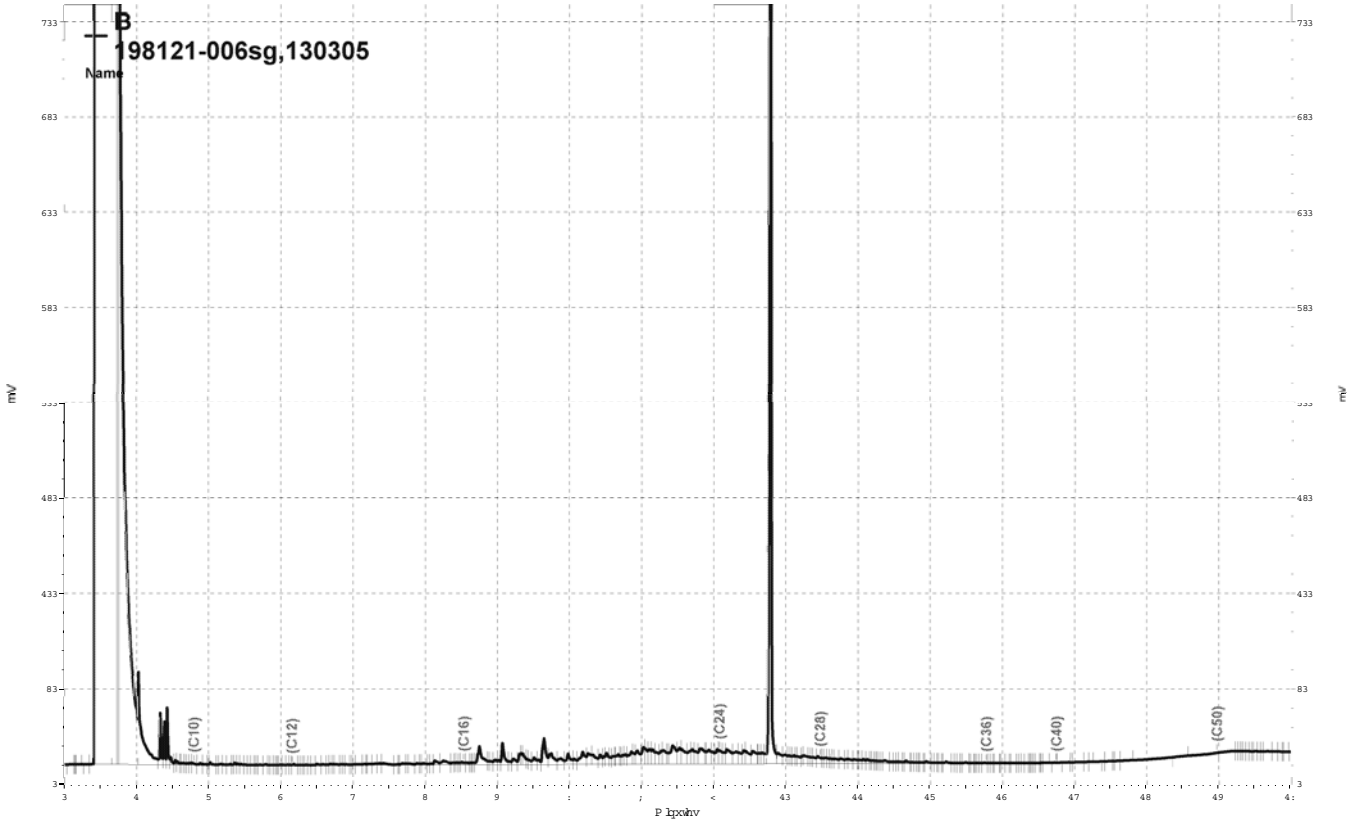


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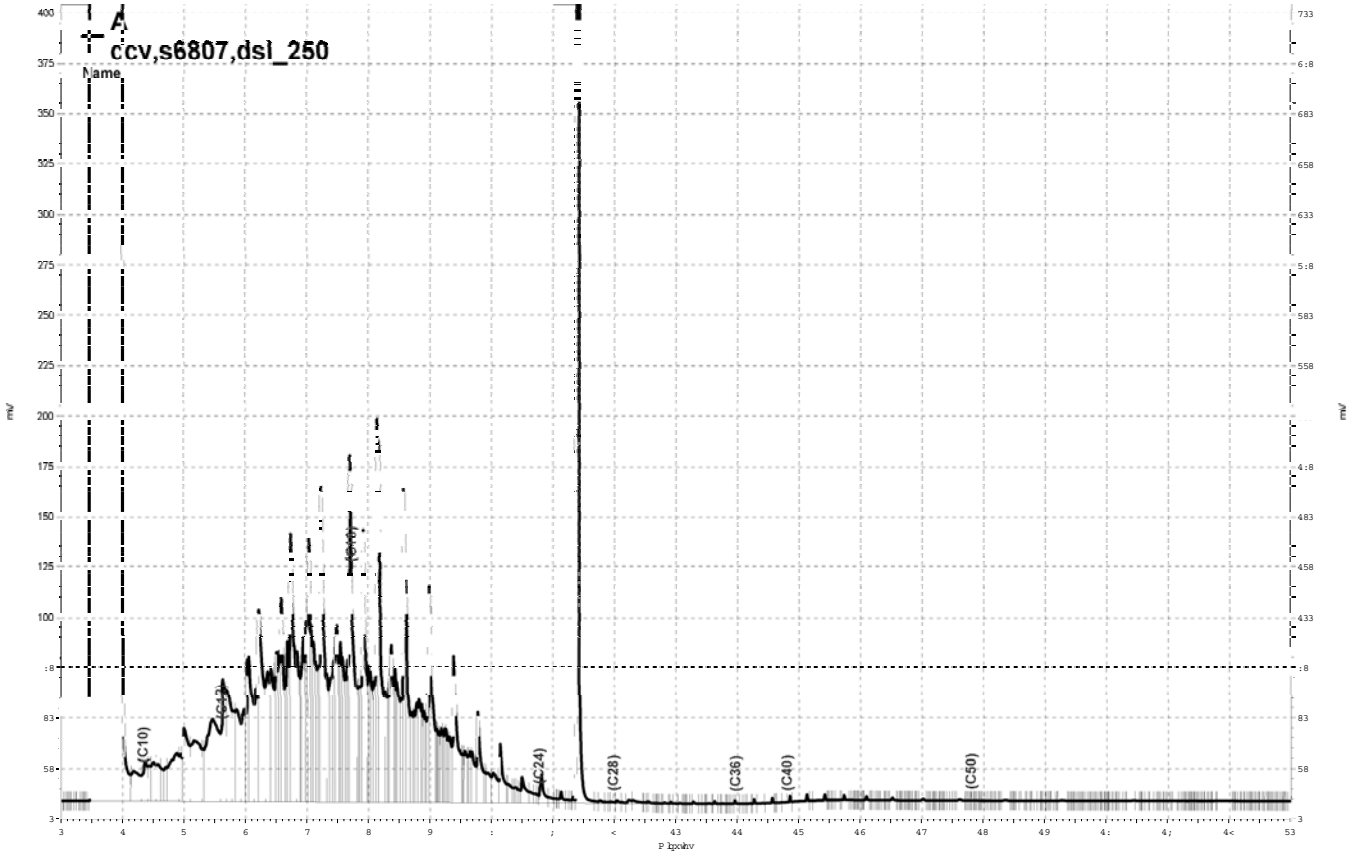


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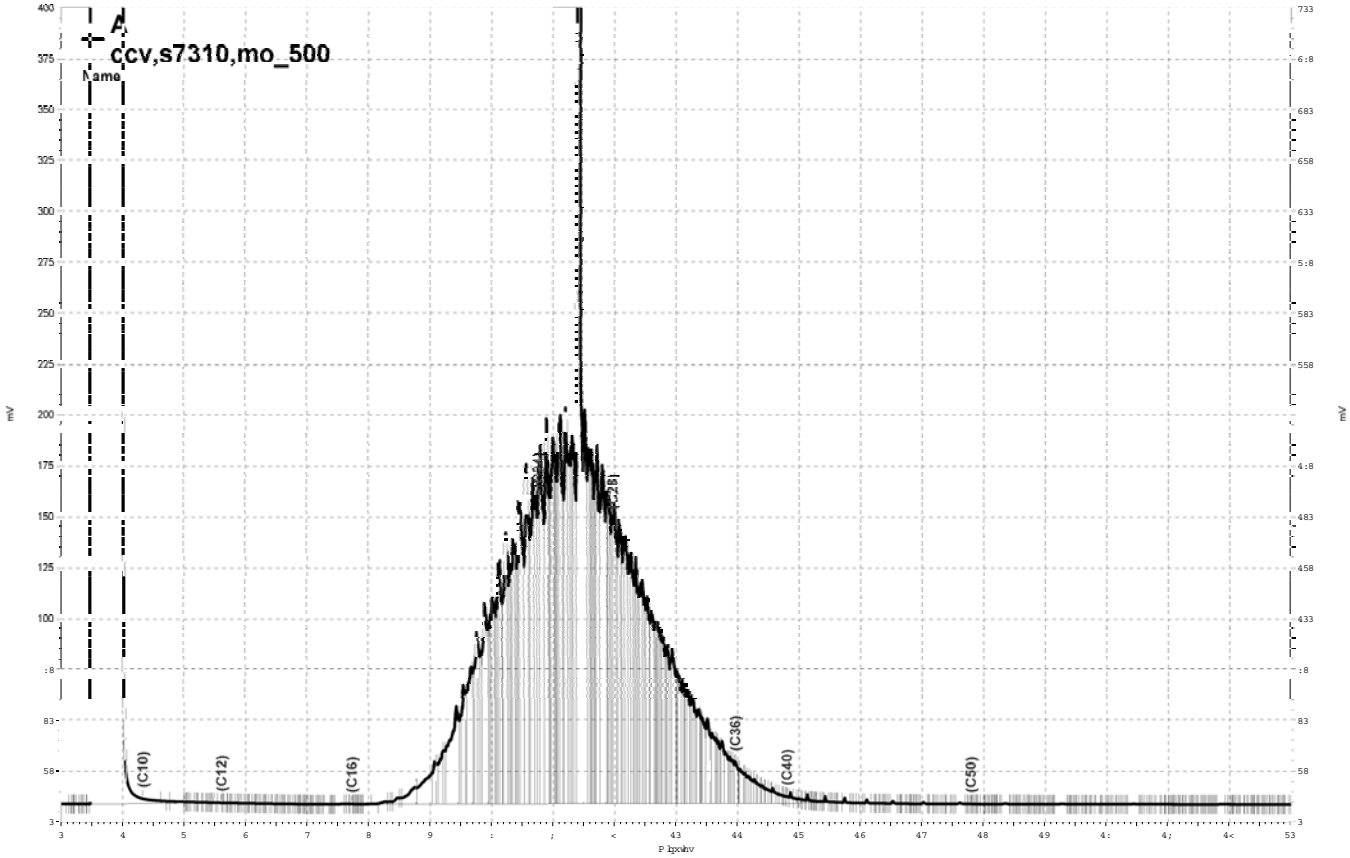


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Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130444 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | Prepared: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-6-SS-0.0' Sampled: 10/04/07
Type: SAMPLE Analyzed: 10/15/07
Lab ID: 198121-001

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 23 Y | 0.99 |
| Motor Oil C24-C36 | 69 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 116 | 46-128 |

Field ID: B-6-SS-25' Sampled: 10/04/07
Type: SAMPLE Analyzed: 10/15/07
Lab ID: 198121-002

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 7.3 Y | 1.0 |
| Motor Oil C24-C36 | 8.3 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 82 | 46-128 |

Field ID: B-5-SS-0.0' Sampled: 10/03/07
Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 198121-004

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 26 Y | 1.0 | 10/15/07 |
| Diesel C10-C24 (SGCU) | 11 Y | 1.0 | 11/02/07 |
| Motor Oil C24-C36 | 110 | 5.0 | 10/15/07 |
| Motor Oil C24-C36 (SGCU) | 85 | 5.0 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 88 | 46-128 | 10/15/07 |
| Hexacosane (SGCU) | 73 | 46-128 | 11/02/07 |

Field ID: B-5-SS-46' Sampled: 10/03/07
Type: SAMPLE Analyzed: 10/15/07
Lab ID: 198121-005

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 3.7 Y | 1.0 |
| Motor Oil C24-C36 | 7.4 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 60 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130444 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | Prepared: | 10/11/07 |
| Diln Fac: | 1.000 | | |

| | | | |
|---|---|---|---|
| Field ID: | B-4-SS-0.0' | Sampled: | 10/03/07 |
| Type: | SAMPLE | Cleanup Method: | EPA 3630C |
| Lab ID: | 198121-007 | | |

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 21 Y | 0.99 | 10/15/07 |
| Diesel C10-C24 (SGCU) | 6.1 Y | 0.99 | 11/02/07 |
| Motor Oil C24-C36 | 100 | 5.0 | 10/15/07 |
| Motor Oil C24-C36 (SGCU) | 44 Y | 5.0 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 68 | 46-128 | 10/15/07 |
| Hexacosane (SGCU) | 57 | 46-128 | 11/02/07 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/15/07 |
| Lab ID: | QC410132 | Cleanup Method: | EPA 3630C |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Diesel C10-C24 (SGCU) | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |
| Motor Oil C24-C36 (SGCU) | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 92 | 46-128 |
| Hexacosane (SGCU) | 99 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410133 | Batch#: | 130444 |
| Matrix: | Soil | Prepared: | 10/11/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.83 | 42.51 | 85 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 89 | 46-128 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130444 |
| MSS Lab ID: | 197998-001 | Sampled: | 10/01/07 |
| Matrix: | Soil | Received: | 10/01/07 |
| Units: | mg/Kg | Prepared: | 10/11/07 |
| Basis: | as received | Analyzed: | 10/14/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410134

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 1.750 | 49.94 | 41.72 | 80 | 31-150 |

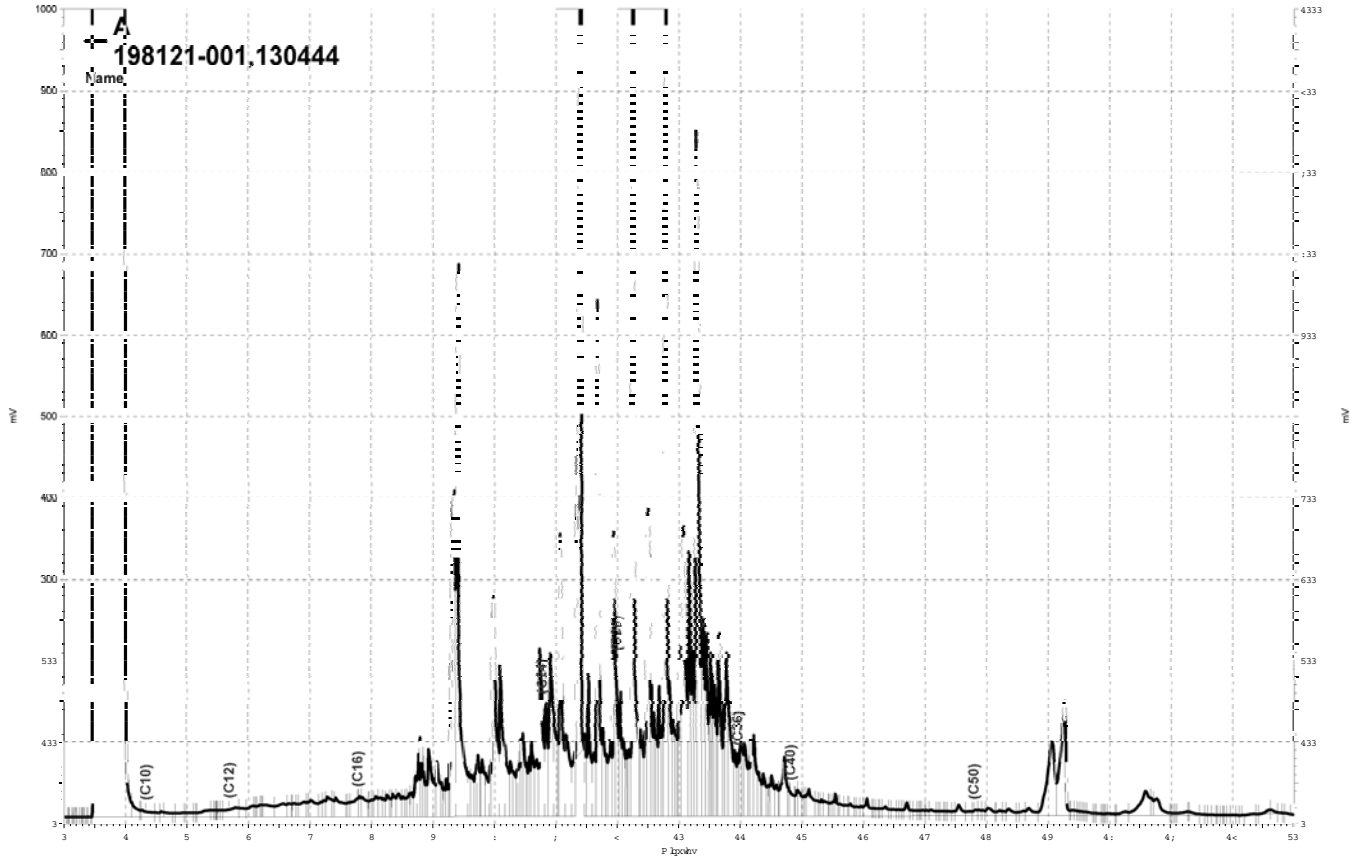
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 90 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410135

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.84 | 47.34 | 91 | 31-150 | 13 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 98 | 46-128 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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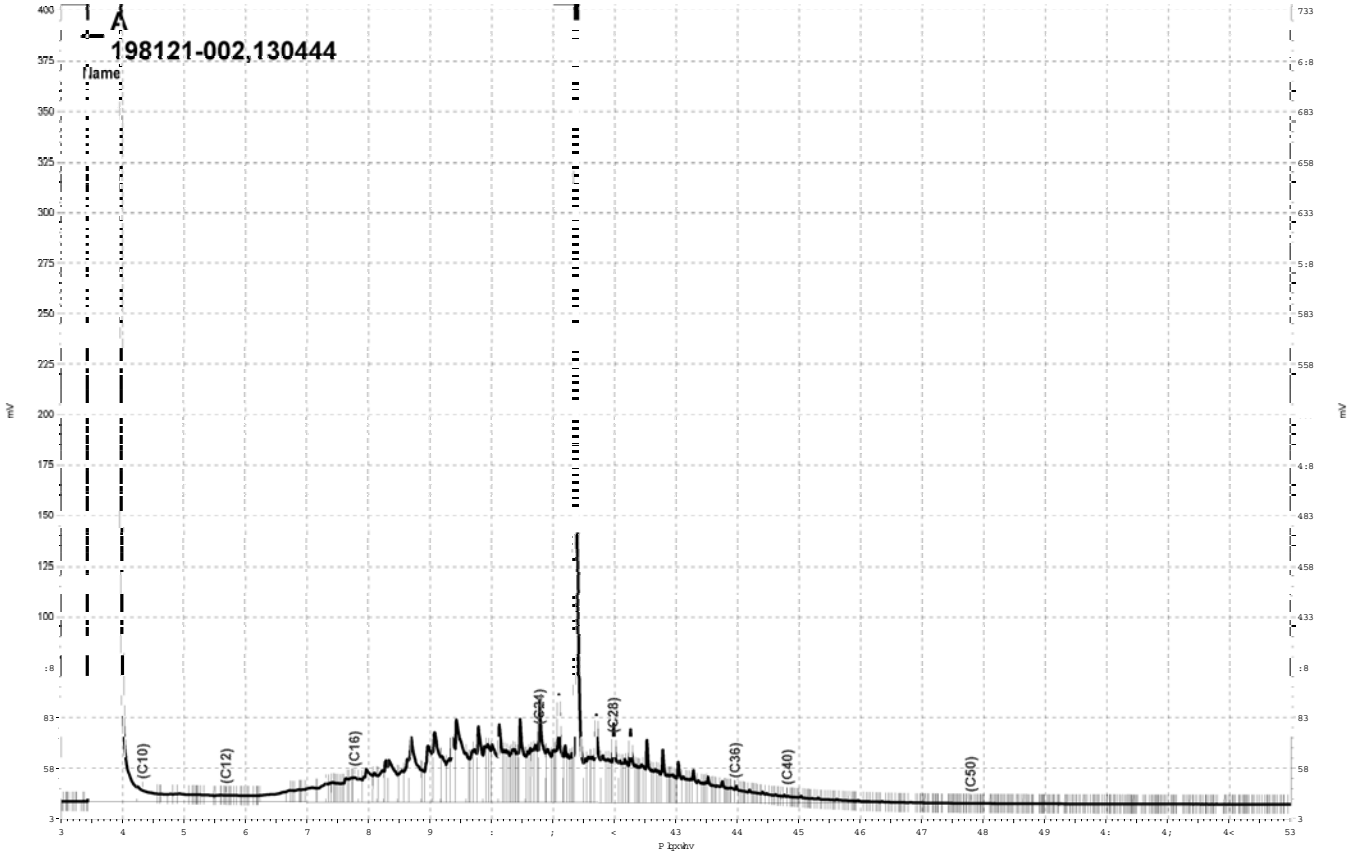


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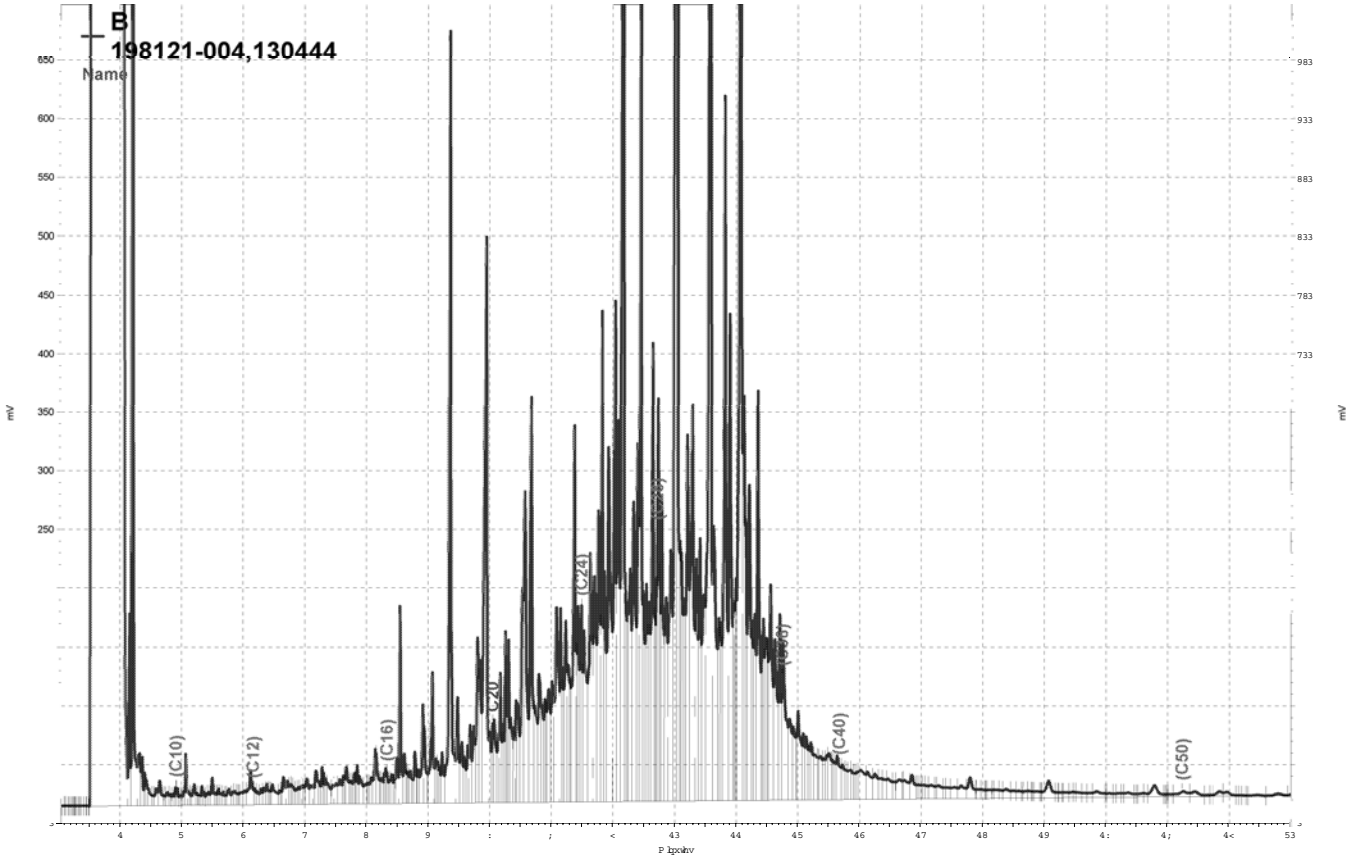


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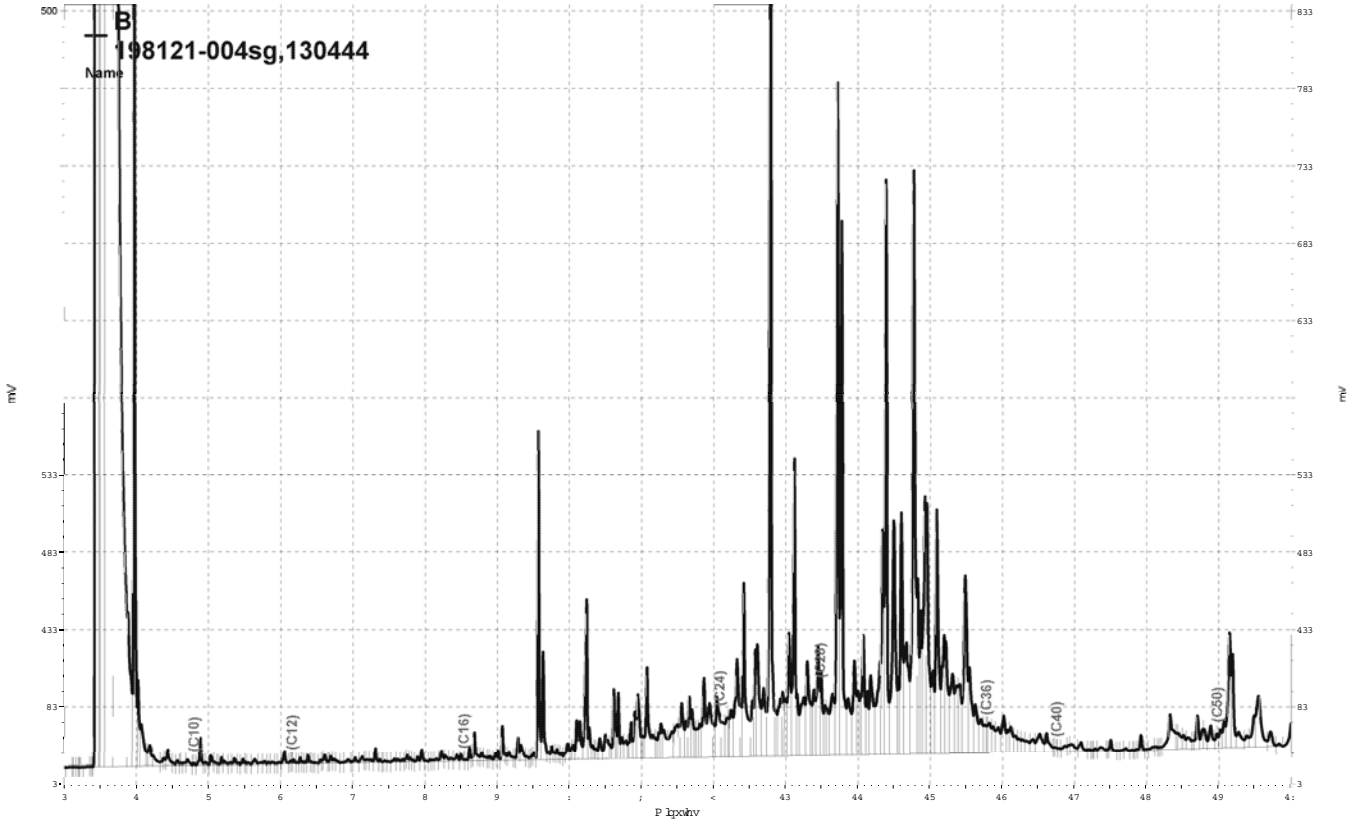


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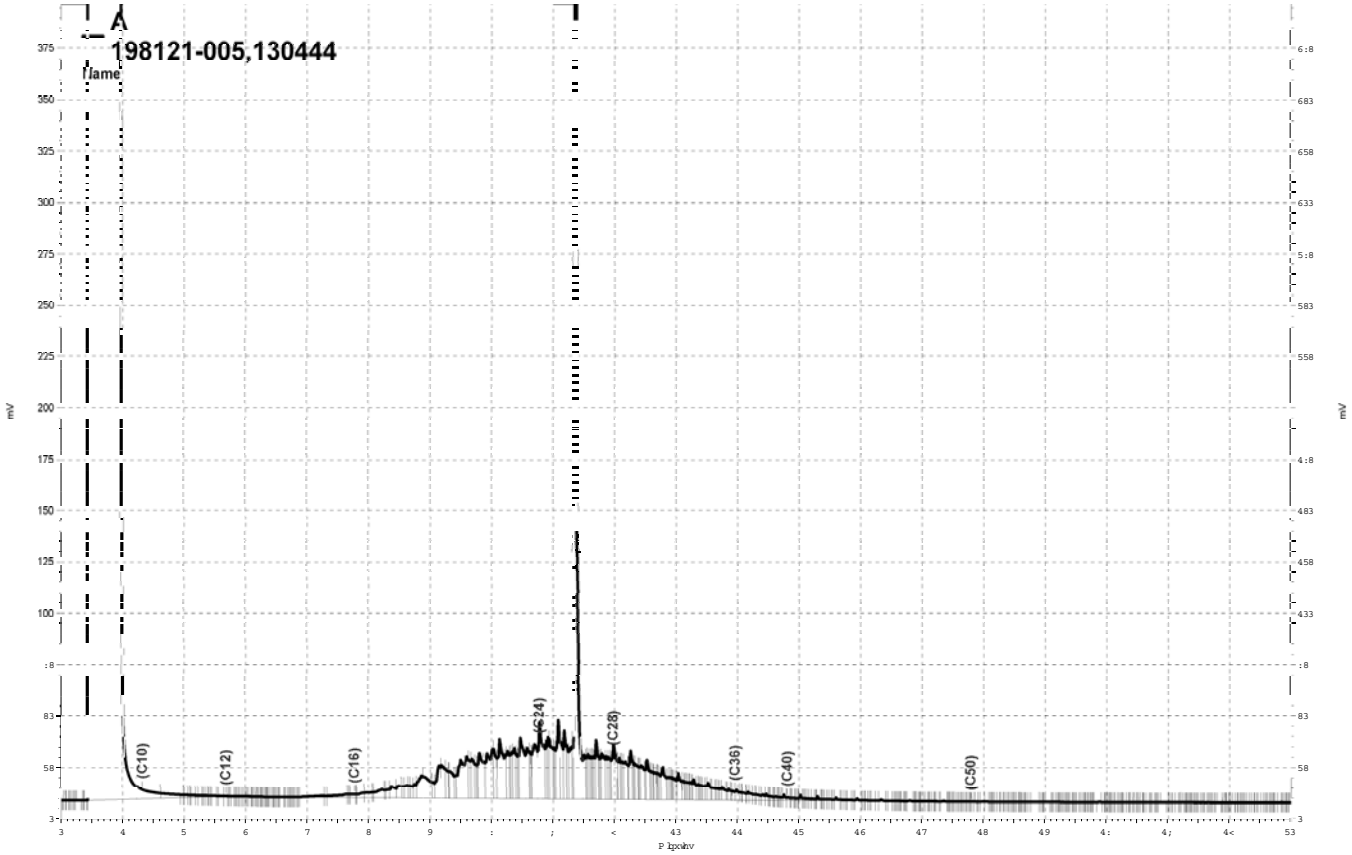


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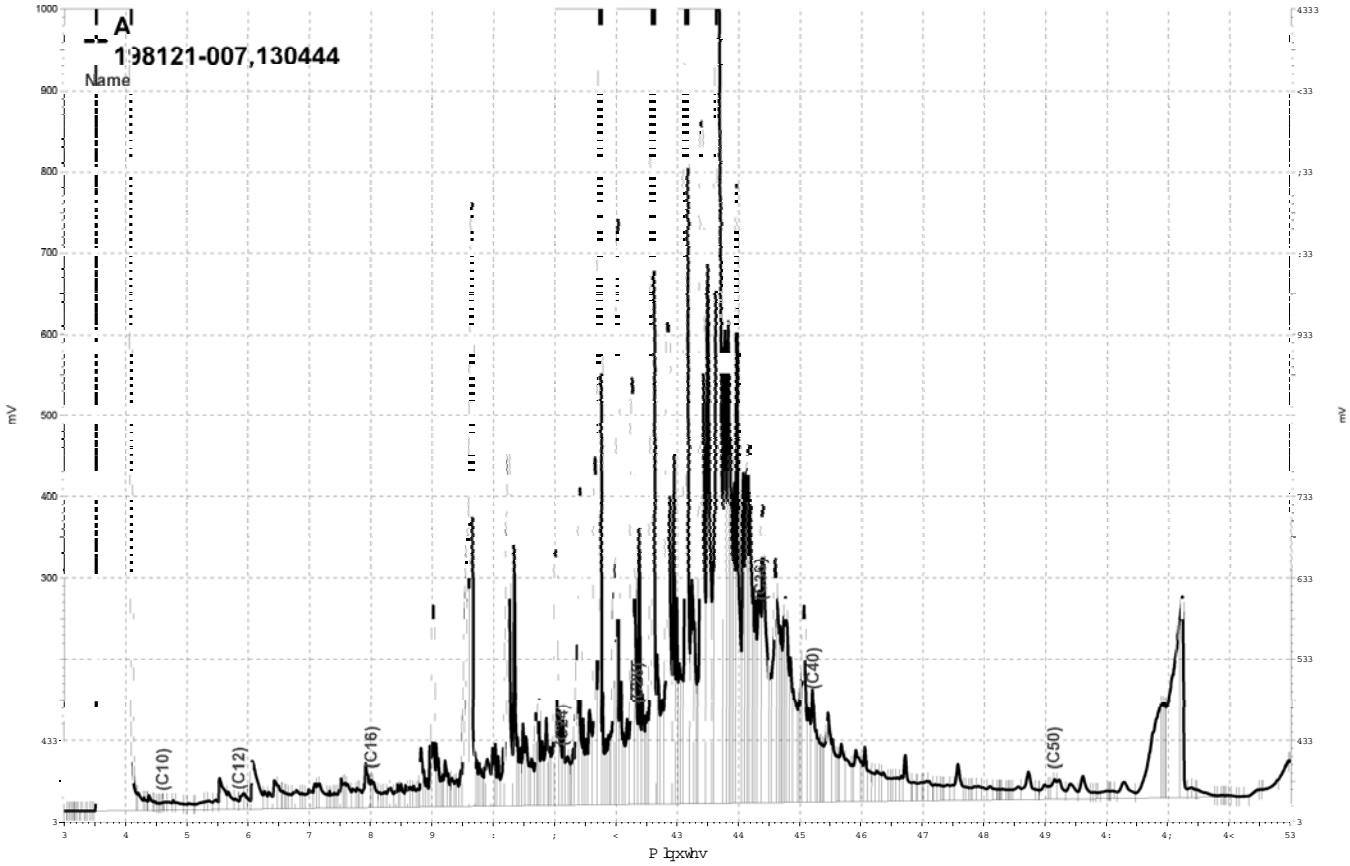


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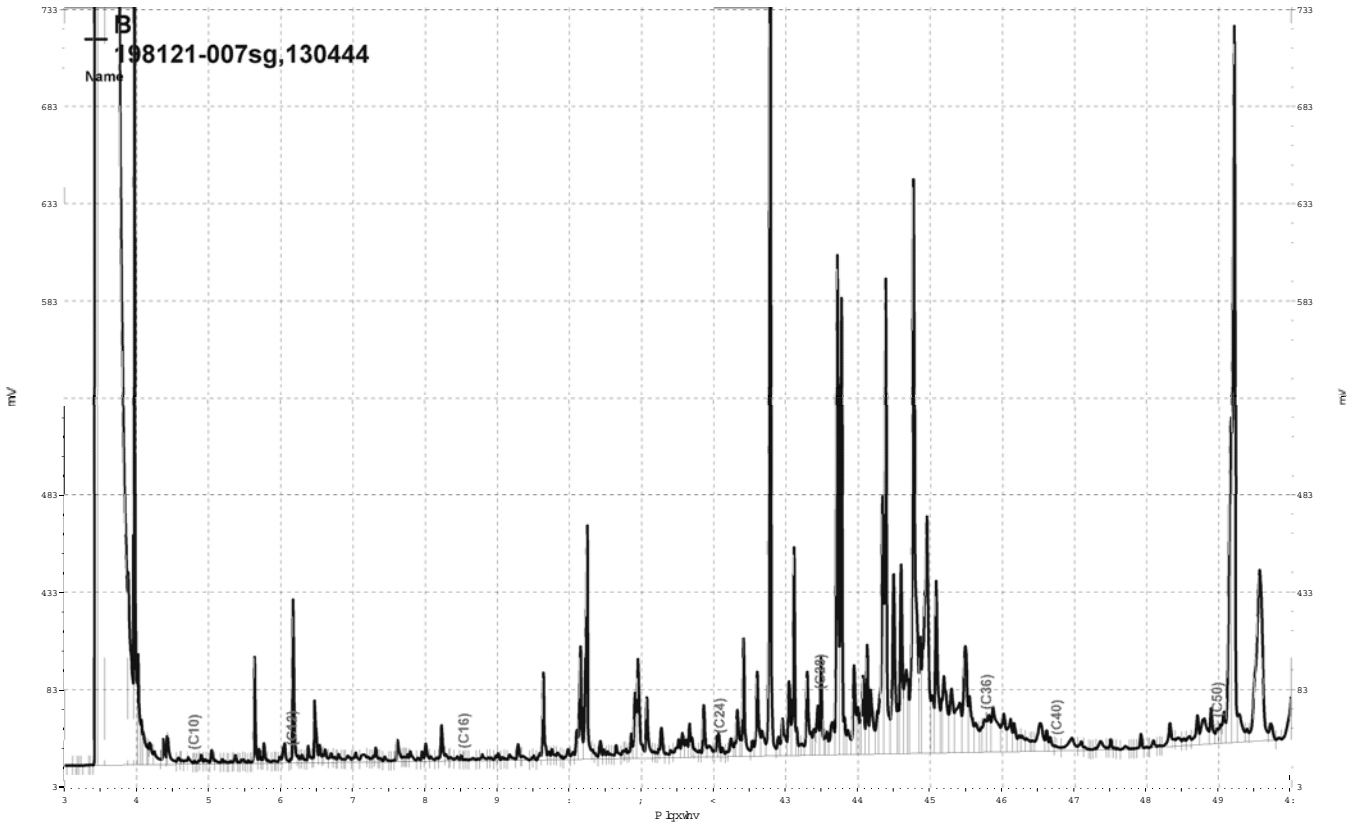


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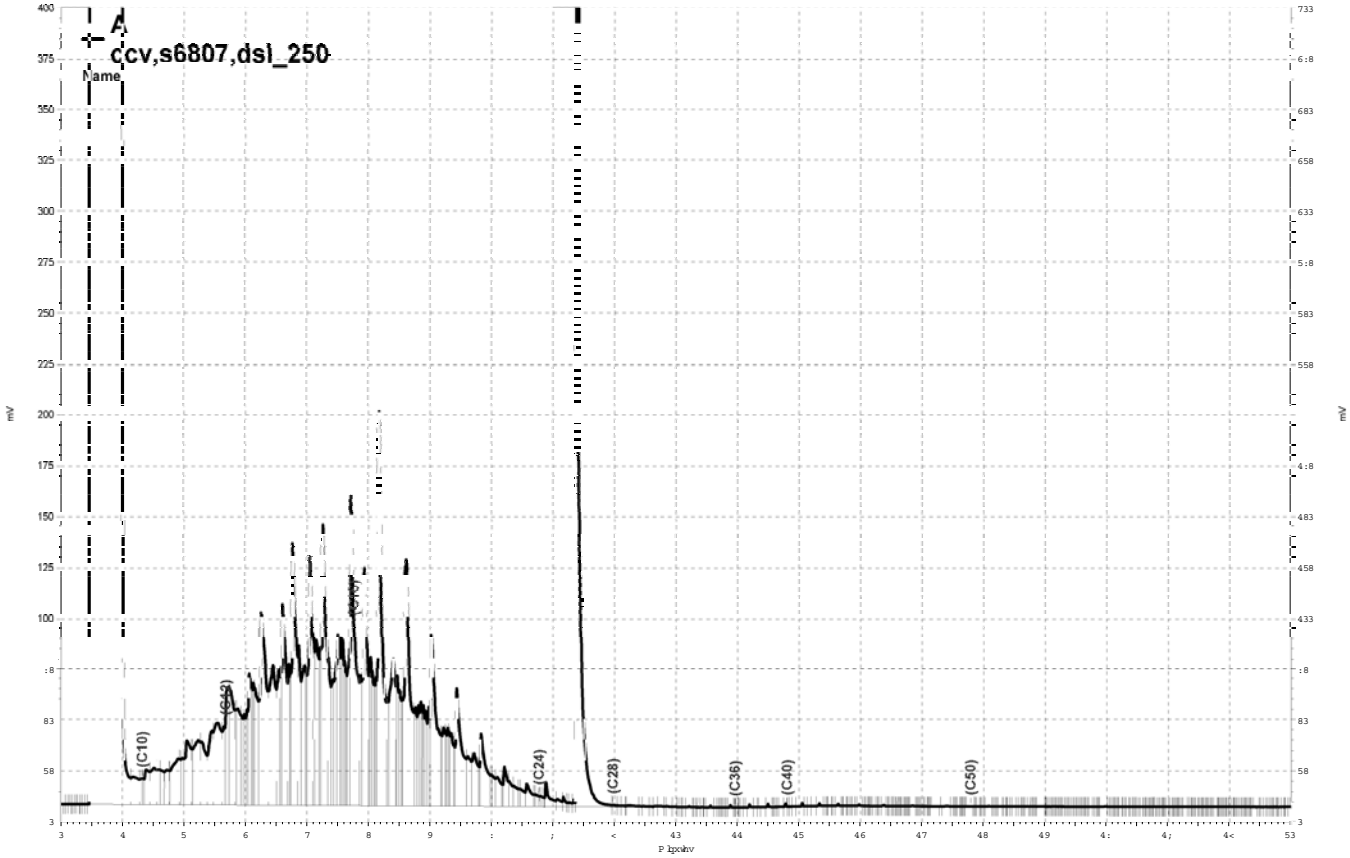


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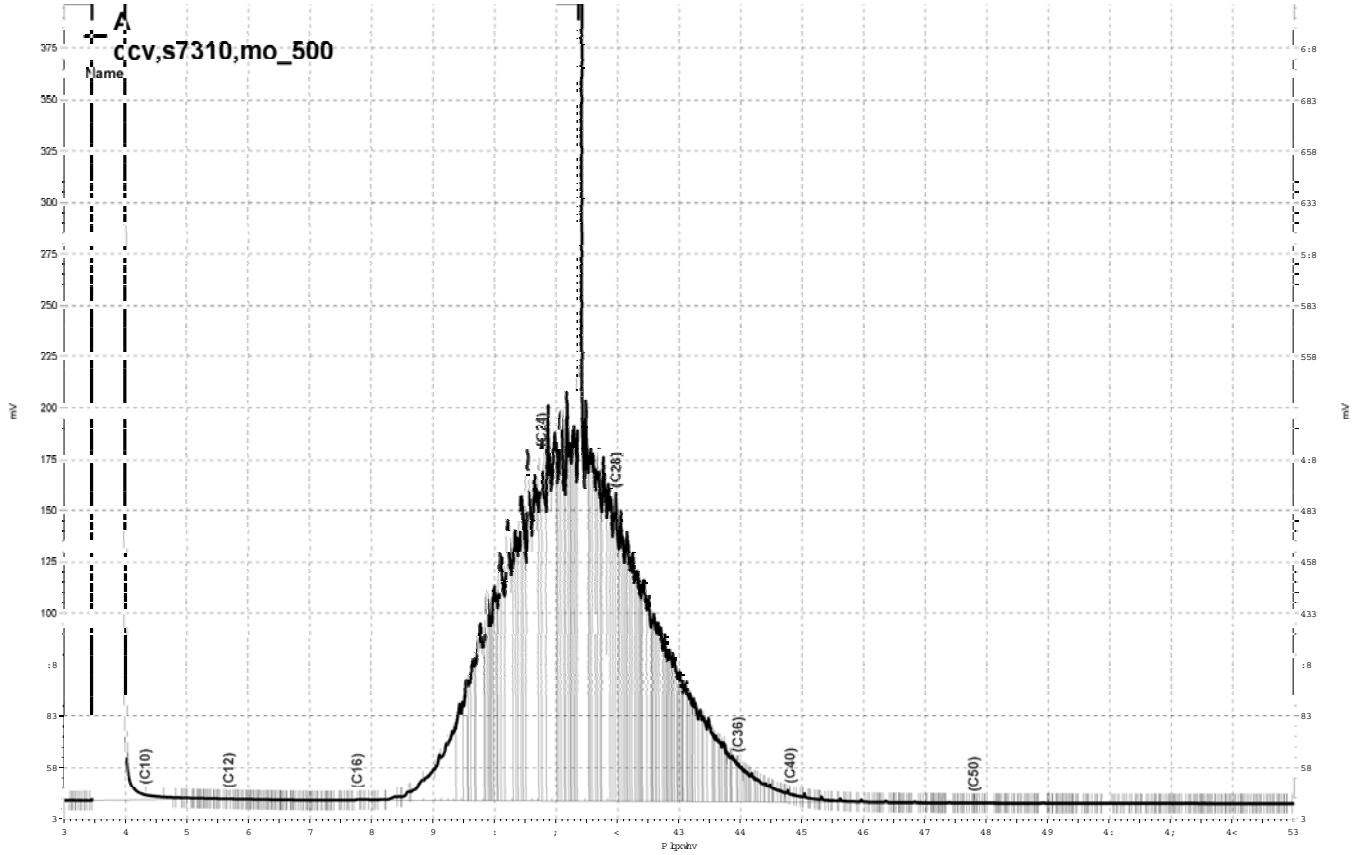


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Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-6-GW-17' | Batch#: | 130284 |
| Lab ID: | 198121-003 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-6-GW-17' | Batch#: | 130284 |
| Lab ID: | 198121-003 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 108 | 80-122 |
| 1,2-Dichloroethane-d4 | 129 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-5-GW-45' | Batch#: | 130284 |
| Lab ID: | 198121-006 | Sampled: | 10/03/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-5-GW-45' | Batch#: | 130284 |
| Lab ID: | 198121-006 | Sampled: | 10/03/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 108 | 80-122 |
| 1,2-Dichloroethane-d4 | 130 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 101 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409462 | Batch#: | 130284 |
| Matrix: | Water | Analyzed: | 10/08/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409462 | Batch#: | 130284 |
| Matrix: | Water | Analyzed: | 10/08/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 104 | 80-122 |
| 1,2-Dichloroethane-d4 | 115 | 74-137 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 101 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 130284 |
| Units: | ug/L | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409463

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 23.20 | 93 | 80-133 |
| Benzene | 25.00 | 23.31 | 93 | 80-120 |
| Trichloroethene | 25.00 | 26.84 | 107 | 80-120 |
| Toluene | 25.00 | 25.41 | 102 | 80-122 |
| Chlorobenzene | 25.00 | 23.61 | 94 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 97 | 80-122 |
| 1,2-Dichloroethane-d4 | 110 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 100 | 80-120 |

Type: BSD Lab ID: QC409464

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 24.99 | 100 | 80-133 | 7 | 20 |
| Benzene | 25.00 | 23.99 | 96 | 80-120 | 3 | 20 |
| Trichloroethene | 25.00 | 28.16 | 113 | 80-120 | 5 | 20 |
| Toluene | 25.00 | 25.08 | 100 | 80-122 | 1 | 20 |
| Chlorobenzene | 25.00 | 24.19 | 97 | 80-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 101 | 80-122 |
| 1,2-Dichloroethane-d4 | 109 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 98 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130284 |
| MSS Lab ID: | 198132-007 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/08/07 |
| Diln Fac: | 2.000 | | |

Type: MS Lab ID: QC409562

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 2.411 | 50.00 | 55.85 | 107 | 80-141 |
| Benzene | <0.5000 | 50.00 | 49.43 | 99 | 80-123 |
| Trichloroethene | 104.8 | 50.00 | 125.8 | 42 * | 73-129 |
| Toluene | <0.2675 | 50.00 | 51.54 | 103 | 80-124 |
| Chlorobenzene | <0.3139 | 50.00 | 47.42 | 95 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 106 | 80-122 |
| 1,2-Dichloroethane-d4 | 124 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 110 | 80-120 |

Type: MSD Lab ID: QC409563

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50.00 | 55.19 | 106 | 80-141 | 1 | 20 |
| Benzene | 50.00 | 48.93 | 98 | 80-123 | 1 | 20 |
| Trichloroethene | 50.00 | 126.4 | 43 * | 73-129 | 0 | 20 |
| Toluene | 50.00 | 51.19 | 102 | 80-124 | 1 | 20 |
| Chlorobenzene | 50.00 | 47.92 | 96 | 80-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 109 | 80-122 |
| 1,2-Dichloroethane-d4 | 125 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 106 | 80-120 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-6-SS-0.0' | Diln Fac: | 0.9804 |
| Lab ID: | 198121-001 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.8 |
| Chloromethane | ND | 9.8 |
| Vinyl Chloride | ND | 9.8 |
| Bromomethane | ND | 9.8 |
| Chloroethane | ND | 9.8 |
| Trichlorofluoromethane | ND | 4.9 |
| Acetone | ND | 25 |
| Freon 113 | ND | 4.9 |
| 1,1-Dichloroethene | ND | 4.9 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 4.9 |
| MTBE | ND | 4.9 |
| trans-1,2-Dichloroethene | ND | 4.9 |
| Vinyl Acetate | ND | 49 |
| 1,1-Dichloroethane | ND | 4.9 |
| 2-Butanone | ND | 9.8 |
| cis-1,2-Dichloroethene | ND | 4.9 |
| 2,2-Dichloropropane | ND | 4.9 |
| Chloroform | ND | 4.9 |
| Bromochloromethane | ND | 4.9 |
| 1,1,1-Trichloroethane | ND | 4.9 |
| 1,1-Dichloropropene | ND | 4.9 |
| Carbon Tetrachloride | ND | 4.9 |
| 1,2-Dichloroethane | ND | 4.9 |
| Benzene | ND | 4.9 |
| Trichloroethene | ND | 4.9 |
| 1,2-Dichloropropane | ND | 4.9 |
| Bromodichloromethane | ND | 4.9 |
| Dibromomethane | ND | 4.9 |
| 4-Methyl-2-Pentanone | ND | 9.8 |
| cis-1,3-Dichloropropene | ND | 4.9 |
| Toluene | ND | 4.9 |
| trans-1,3-Dichloropropene | ND | 4.9 |
| 1,1,2-Trichloroethane | ND | 4.9 |
| 2-Hexanone | ND | 9.8 |
| 1,3-Dichloropropane | ND | 4.9 |
| Tetrachloroethene | ND | 4.9 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-6-SS-0.0' | Diln Fac: | 0.9804 |
| Lab ID: | 198121-001 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.9 |
| 1,2-Dibromoethane | ND | 4.9 |
| Chlorobenzene | ND | 4.9 |
| 1,1,1,2-Tetrachloroethane | ND | 4.9 |
| Ethylbenzene | ND | 4.9 |
| m,p-Xylenes | ND | 4.9 |
| o-Xylene | ND | 4.9 |
| Styrene | ND | 4.9 |
| Bromoform | ND | 4.9 |
| Isopropylbenzene | ND | 4.9 |
| 1,1,2,2-Tetrachloroethane | ND | 4.9 |
| 1,2,3-Trichloropropane | ND | 4.9 |
| Propylbenzene | ND | 4.9 |
| Bromobenzene | ND | 4.9 |
| 1,3,5-Trimethylbenzene | ND | 4.9 |
| 2-Chlorotoluene | ND | 4.9 |
| 4-Chlorotoluene | ND | 4.9 |
| tert-Butylbenzene | ND | 4.9 |
| 1,2,4-Trimethylbenzene | ND | 4.9 |
| sec-Butylbenzene | ND | 4.9 |
| para-Isopropyl Toluene | ND | 4.9 |
| 1,3-Dichlorobenzene | ND | 4.9 |
| 1,4-Dichlorobenzene | ND | 4.9 |
| n-Butylbenzene | ND | 4.9 |
| 1,2-Dichlorobenzene | ND | 4.9 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.9 |
| 1,2,4-Trichlorobenzene | ND | 4.9 |
| Hexachlorobutadiene | ND | 4.9 |
| Naphthalene | ND | 4.9 |
| 1,2,3-Trichlorobenzene | ND | 4.9 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 104 | 80-124 |
| 1,2-Dichloroethane-d4 | 97 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 104 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-6-SS-25' | Diln Fac: | 0.9804 |
| Lab ID: | 198121-002 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.8 |
| Chloromethane | ND | 9.8 |
| Vinyl Chloride | ND | 9.8 |
| Bromomethane | ND | 9.8 |
| Chloroethane | ND | 9.8 |
| Trichlorofluoromethane | ND | 4.9 |
| Acetone | ND | 25 |
| Freon 113 | ND | 4.9 |
| 1,1-Dichloroethene | ND | 4.9 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 4.9 |
| MTBE | ND | 4.9 |
| trans-1,2-Dichloroethene | ND | 4.9 |
| Vinyl Acetate | ND | 49 |
| 1,1-Dichloroethane | ND | 4.9 |
| 2-Butanone | ND | 9.8 |
| cis-1,2-Dichloroethene | ND | 4.9 |
| 2,2-Dichloropropane | ND | 4.9 |
| Chloroform | ND | 4.9 |
| Bromochloromethane | ND | 4.9 |
| 1,1,1-Trichloroethane | ND | 4.9 |
| 1,1-Dichloropropene | ND | 4.9 |
| Carbon Tetrachloride | ND | 4.9 |
| 1,2-Dichloroethane | ND | 4.9 |
| Benzene | ND | 4.9 |
| Trichloroethene | ND | 4.9 |
| 1,2-Dichloropropane | ND | 4.9 |
| Bromodichloromethane | ND | 4.9 |
| Dibromomethane | ND | 4.9 |
| 4-Methyl-2-Pentanone | ND | 9.8 |
| cis-1,3-Dichloropropene | ND | 4.9 |
| Toluene | ND | 4.9 |
| trans-1,3-Dichloropropene | ND | 4.9 |
| 1,1,2-Trichloroethane | ND | 4.9 |
| 2-Hexanone | ND | 9.8 |
| 1,3-Dichloropropane | ND | 4.9 |
| Tetrachloroethene | ND | 4.9 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-6-SS-25' | Diln Fac: | 0.9804 |
| Lab ID: | 198121-002 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.9 |
| 1,2-Dibromoethane | ND | 4.9 |
| Chlorobenzene | ND | 4.9 |
| 1,1,1,2-Tetrachloroethane | ND | 4.9 |
| Ethylbenzene | ND | 4.9 |
| m,p-Xylenes | ND | 4.9 |
| o-Xylene | ND | 4.9 |
| Styrene | ND | 4.9 |
| Bromoform | ND | 4.9 |
| Isopropylbenzene | ND | 4.9 |
| 1,1,2,2-Tetrachloroethane | ND | 4.9 |
| 1,2,3-Trichloropropane | ND | 4.9 |
| Propylbenzene | ND | 4.9 |
| Bromobenzene | ND | 4.9 |
| 1,3,5-Trimethylbenzene | ND | 4.9 |
| 2-Chlorotoluene | ND | 4.9 |
| 4-Chlorotoluene | ND | 4.9 |
| tert-Butylbenzene | ND | 4.9 |
| 1,2,4-Trimethylbenzene | ND | 4.9 |
| sec-Butylbenzene | ND | 4.9 |
| para-Isopropyl Toluene | ND | 4.9 |
| 1,3-Dichlorobenzene | ND | 4.9 |
| 1,4-Dichlorobenzene | ND | 4.9 |
| n-Butylbenzene | ND | 4.9 |
| 1,2-Dichlorobenzene | ND | 4.9 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.9 |
| 1,2,4-Trichlorobenzene | ND | 4.9 |
| Hexachlorobutadiene | ND | 4.9 |
| Naphthalene | ND | 4.9 |
| 1,2,3-Trichlorobenzene | ND | 4.9 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 114 | 80-124 |
| 1,2-Dichloroethane-d4 | 109 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 104 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-5-SS-0.0' | Diln Fac: | 0.9434 |
| Lab ID: | 198121-004 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.4 |
| Chloromethane | ND | 9.4 |
| Vinyl Chloride | ND | 9.4 |
| Bromomethane | ND | 9.4 |
| Chloroethane | ND | 9.4 |
| Trichlorofluoromethane | ND | 4.7 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.7 |
| 1,1-Dichloroethene | ND | 4.7 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.7 |
| MTBE | ND | 4.7 |
| trans-1,2-Dichloroethene | ND | 4.7 |
| Vinyl Acetate | ND | 47 |
| 1,1-Dichloroethane | ND | 4.7 |
| 2-Butanone | ND | 9.4 |
| cis-1,2-Dichloroethene | ND | 4.7 |
| 2,2-Dichloropropane | ND | 4.7 |
| Chloroform | ND | 4.7 |
| Bromochloromethane | ND | 4.7 |
| 1,1,1-Trichloroethane | ND | 4.7 |
| 1,1-Dichloropropene | ND | 4.7 |
| Carbon Tetrachloride | ND | 4.7 |
| 1,2-Dichloroethane | ND | 4.7 |
| Benzene | ND | 4.7 |
| Trichloroethene | ND | 4.7 |
| 1,2-Dichloropropane | ND | 4.7 |
| Bromodichloromethane | ND | 4.7 |
| Dibromomethane | ND | 4.7 |
| 4-Methyl-2-Pentanone | ND | 9.4 |
| cis-1,3-Dichloropropene | ND | 4.7 |
| Toluene | ND | 4.7 |
| trans-1,3-Dichloropropene | ND | 4.7 |
| 1,1,2-Trichloroethane | ND | 4.7 |
| 2-Hexanone | ND | 9.4 |
| 1,3-Dichloropropane | ND | 4.7 |
| Tetrachloroethene | ND | 4.7 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-5-SS-0.0' | Diln Fac: | 0.9434 |
| Lab ID: | 198121-004 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.7 |
| 1,2-Dibromoethane | ND | 4.7 |
| Chlorobenzene | ND | 4.7 |
| 1,1,1,2-Tetrachloroethane | ND | 4.7 |
| Ethylbenzene | ND | 4.7 |
| m,p-Xylenes | ND | 4.7 |
| o-Xylene | ND | 4.7 |
| Styrene | ND | 4.7 |
| Bromoform | ND | 4.7 |
| Isopropylbenzene | ND | 4.7 |
| 1,1,2,2-Tetrachloroethane | ND | 4.7 |
| 1,2,3-Trichloropropane | ND | 4.7 |
| Propylbenzene | ND | 4.7 |
| Bromobenzene | ND | 4.7 |
| 1,3,5-Trimethylbenzene | ND | 4.7 |
| 2-Chlorotoluene | ND | 4.7 |
| 4-Chlorotoluene | ND | 4.7 |
| tert-Butylbenzene | ND | 4.7 |
| 1,2,4-Trimethylbenzene | ND | 4.7 |
| sec-Butylbenzene | ND | 4.7 |
| para-Isopropyl Toluene | ND | 4.7 |
| 1,3-Dichlorobenzene | ND | 4.7 |
| 1,4-Dichlorobenzene | ND | 4.7 |
| n-Butylbenzene | ND | 4.7 |
| 1,2-Dichlorobenzene | ND | 4.7 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.7 |
| 1,2,4-Trichlorobenzene | ND | 4.7 |
| Hexachlorobutadiene | ND | 4.7 |
| Naphthalene | ND | 4.7 |
| 1,2,3-Trichlorobenzene | ND | 4.7 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 108 | 80-124 |
| 1,2-Dichloroethane-d4 | 102 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 102 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-5-SS-46' | Diln Fac: | 0.9615 |
| Lab ID: | 198121-005 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.6 |
| Chloromethane | ND | 9.6 |
| Vinyl Chloride | ND | 9.6 |
| Bromomethane | ND | 9.6 |
| Chloroethane | ND | 9.6 |
| Trichlorofluoromethane | ND | 4.8 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.8 |
| 1,1-Dichloroethene | ND | 4.8 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.8 |
| MTBE | ND | 4.8 |
| trans-1,2-Dichloroethene | ND | 4.8 |
| Vinyl Acetate | ND | 48 |
| 1,1-Dichloroethane | ND | 4.8 |
| 2-Butanone | ND | 9.6 |
| cis-1,2-Dichloroethene | ND | 4.8 |
| 2,2-Dichloropropane | ND | 4.8 |
| Chloroform | ND | 4.8 |
| Bromochloromethane | ND | 4.8 |
| 1,1,1-Trichloroethane | ND | 4.8 |
| 1,1-Dichloropropene | ND | 4.8 |
| Carbon Tetrachloride | ND | 4.8 |
| 1,2-Dichloroethane | ND | 4.8 |
| Benzene | ND | 4.8 |
| Trichloroethene | ND | 4.8 |
| 1,2-Dichloropropane | ND | 4.8 |
| Bromodichloromethane | ND | 4.8 |
| Dibromomethane | ND | 4.8 |
| 4-Methyl-2-Pentanone | ND | 9.6 |
| cis-1,3-Dichloropropene | ND | 4.8 |
| Toluene | ND | 4.8 |
| trans-1,3-Dichloropropene | ND | 4.8 |
| 1,1,2-Trichloroethane | ND | 4.8 |
| 2-Hexanone | ND | 9.6 |
| 1,3-Dichloropropane | ND | 4.8 |
| Tetrachloroethene | ND | 4.8 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-5-SS-46' | Diln Fac: | 0.9615 |
| Lab ID: | 198121-005 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.8 |
| 1,2-Dibromoethane | ND | 4.8 |
| Chlorobenzene | ND | 4.8 |
| 1,1,1,2-Tetrachloroethane | ND | 4.8 |
| Ethylbenzene | ND | 4.8 |
| m,p-Xylenes | ND | 4.8 |
| o-Xylene | ND | 4.8 |
| Styrene | ND | 4.8 |
| Bromoform | ND | 4.8 |
| Isopropylbenzene | ND | 4.8 |
| 1,1,2,2-Tetrachloroethane | ND | 4.8 |
| 1,2,3-Trichloropropane | ND | 4.8 |
| Propylbenzene | ND | 4.8 |
| Bromobenzene | ND | 4.8 |
| 1,3,5-Trimethylbenzene | ND | 4.8 |
| 2-Chlorotoluene | ND | 4.8 |
| 4-Chlorotoluene | ND | 4.8 |
| tert-Butylbenzene | ND | 4.8 |
| 1,2,4-Trimethylbenzene | ND | 4.8 |
| sec-Butylbenzene | ND | 4.8 |
| para-Isopropyl Toluene | ND | 4.8 |
| 1,3-Dichlorobenzene | ND | 4.8 |
| 1,4-Dichlorobenzene | ND | 4.8 |
| n-Butylbenzene | ND | 4.8 |
| 1,2-Dichlorobenzene | ND | 4.8 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.8 |
| 1,2,4-Trichlorobenzene | ND | 4.8 |
| Hexachlorobutadiene | ND | 4.8 |
| Naphthalene | ND | 4.8 |
| 1,2,3-Trichlorobenzene | ND | 4.8 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 111 | 80-124 |
| 1,2-Dichloroethane-d4 | 108 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-4-SS-0.0' | Diln Fac: | 0.9259 |
| Lab ID: | 198121-007 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.3 |
| Chloromethane | ND | 9.3 |
| Vinyl Chloride | ND | 9.3 |
| Bromomethane | ND | 9.3 |
| Chloroethane | ND | 9.3 |
| Trichlorofluoromethane | ND | 4.6 |
| Acetone | ND | 23 |
| Freon 113 | ND | 4.6 |
| 1,1-Dichloroethene | ND | 4.6 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.6 |
| MTBE | ND | 4.6 |
| trans-1,2-Dichloroethene | ND | 4.6 |
| Vinyl Acetate | ND | 46 |
| 1,1-Dichloroethane | ND | 4.6 |
| 2-Butanone | 69 | 9.3 |
| cis-1,2-Dichloroethene | ND | 4.6 |
| 2,2-Dichloropropane | ND | 4.6 |
| Chloroform | ND | 4.6 |
| Bromochloromethane | ND | 4.6 |
| 1,1,1-Trichloroethane | ND | 4.6 |
| 1,1-Dichloropropene | ND | 4.6 |
| Carbon Tetrachloride | ND | 4.6 |
| 1,2-Dichloroethane | ND | 4.6 |
| Benzene | ND | 4.6 |
| Trichloroethene | ND | 4.6 |
| 1,2-Dichloropropane | ND | 4.6 |
| Bromodichloromethane | ND | 4.6 |
| Dibromomethane | ND | 4.6 |
| 4-Methyl-2-Pentanone | ND | 9.3 |
| cis-1,3-Dichloropropene | ND | 4.6 |
| Toluene | ND | 4.6 |
| trans-1,3-Dichloropropene | ND | 4.6 |
| 1,1,2-Trichloroethane | ND | 4.6 |
| 2-Hexanone | ND | 9.3 |
| 1,3-Dichloropropane | ND | 4.6 |
| Tetrachloroethene | ND | 4.6 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-4-SS-0.0' | Diln Fac: | 0.9259 |
| Lab ID: | 198121-007 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.6 |
| 1,2-Dibromoethane | ND | 4.6 |
| Chlorobenzene | ND | 4.6 |
| 1,1,1,2-Tetrachloroethane | ND | 4.6 |
| Ethylbenzene | ND | 4.6 |
| m,p-Xylenes | ND | 4.6 |
| o-Xylene | ND | 4.6 |
| Styrene | ND | 4.6 |
| Bromoform | ND | 4.6 |
| Isopropylbenzene | ND | 4.6 |
| 1,1,2,2-Tetrachloroethane | ND | 4.6 |
| 1,2,3-Trichloropropane | ND | 4.6 |
| Propylbenzene | ND | 4.6 |
| Bromobenzene | ND | 4.6 |
| 1,3,5-Trimethylbenzene | ND | 4.6 |
| 2-Chlorotoluene | ND | 4.6 |
| 4-Chlorotoluene | ND | 4.6 |
| tert-Butylbenzene | ND | 4.6 |
| 1,2,4-Trimethylbenzene | ND | 4.6 |
| sec-Butylbenzene | ND | 4.6 |
| para-Isopropyl Toluene | ND | 4.6 |
| 1,3-Dichlorobenzene | ND | 4.6 |
| 1,4-Dichlorobenzene | ND | 4.6 |
| n-Butylbenzene | ND | 4.6 |
| 1,2-Dichlorobenzene | ND | 4.6 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.6 |
| 1,2,4-Trichlorobenzene | ND | 4.6 |
| Hexachlorobutadiene | ND | 4.6 |
| Naphthalene | ND | 4.6 |
| 1,2,3-Trichlorobenzene | ND | 4.6 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 111 | 80-124 |
| 1,2-Dichloroethane-d4 | 104 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 97 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC409289 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130236 |
| Units: | ug/Kg | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC409289 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130236 |
| Units: | ug/Kg | Analyzed: | 10/05/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 107 | 80-124 |
| 1,2-Dichloroethane-d4 | 104 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 99 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC409290 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130236 |
| Units: | ug/Kg | Analyzed: | 10/05/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 50.00 | 54.65 | 109 | 74-131 |
| Benzene | 50.00 | 49.84 | 100 | 77-121 |
| Trichloroethene | 50.00 | 52.32 | 105 | 77-121 |
| Toluene | 50.00 | 49.78 | 100 | 79-122 |
| Chlorobenzene | 50.00 | 46.70 | 93 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-124 |
| 1,2-Dichloroethane-d4 | 99 | 79-136 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 99 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-4-SS-0.0' | Diln Fac: | 0.9259 |
| MSS Lab ID: | 198121-007 | Batch#: | 130236 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/05/07 |

Type: MS Lab ID: QC409349

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.3308 | 46.30 | 35.47 | 77 | 61-145 |
| Benzene | <0.4265 | 46.30 | 32.15 | 69 | 57-123 |
| Trichloroethene | <0.2546 | 46.30 | 27.42 | 59 | 52-141 |
| Toluene | <0.4615 | 46.30 | 24.26 | 52 * | 53-126 |
| Chlorobenzene | <0.2978 | 46.30 | 19.33 | 42 * | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 103 | 80-124 |
| 1,2-Dichloroethane-d4 | 102 | 79-136 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 101 | 80-122 |

Type: MSD Lab ID: QC409350

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 46.30 | 40.00 | 86 | 61-145 | 12 | 26 |
| Benzene | 46.30 | 36.74 | 79 | 57-123 | 13 | 25 |
| Trichloroethene | 46.30 | 35.47 | 77 | 52-141 | 26 | 26 |
| Toluene | 46.30 | 33.49 | 72 | 53-126 | 32 * | 27 |
| Chlorobenzene | 46.30 | 30.12 | 65 | 49-121 | 44 * | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-124 |
| 1,2-Dichloroethane-d4 | 101 | 79-136 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 101 | 80-122 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-6-SS-0.0' | Basis: | as received |
| Lab ID: | 198121-001 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | mg/Kg | Received: | 10/05/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 0.93 | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Arsenic | 7.2 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Barium | 130 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.42 | 0.10 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Chromium | 90 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cobalt | 22 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Copper | 25 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Lead | 9.6 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.055 | 0.020 | 130346 | 10/09/07 | 10/09/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Nickel | 110 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Selenium | ND | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Vanadium | 59 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Zinc | 48 | 1.0 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-6-SS-25' | Basis: | as received |
| Lab ID: | 198121-002 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | mg/Kg | Received: | 10/05/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Arsenic | 16 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Barium | 82 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.49 | 0.10 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Chromium | 47 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cobalt | 17 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Copper | 46 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Lead | 8.4 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.11 | 0.020 | 130346 | 10/09/07 | 10/09/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Nickel | 73 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Selenium | 2.9 | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Vanadium | 52 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Zinc | 75 | 1.0 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-5-SS-0.0' | Basis: | as received |
| Lab ID: | 198121-004 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | mg/Kg | Received: | 10/05/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Arsenic | 9.7 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Barium | 150 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.41 | 0.10 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Chromium | 82 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cobalt | 18 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Copper | 30 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Lead | 9.3 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.053 | 0.020 | 130346 | 10/09/07 | 10/09/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Nickel | 120 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Selenium | 2.0 | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Vanadium | 53 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Zinc | 55 | 1.0 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-5-SS-46' | Basis: | as received |
| Lab ID: | 198121-005 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | mg/Kg | Received: | 10/05/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Arsenic | 8.3 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Barium | 81 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.39 | 0.10 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Chromium | 43 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cobalt | 11 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Copper | 17 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Lead | 4.9 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.040 | 0.020 | 130346 | 10/09/07 | 10/09/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Nickel | 39 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.6 | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Thallium | 0.63 | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Vanadium | 55 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Zinc | 55 | 1.0 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-4-SS-0.0' | Basis: | as received |
| Lab ID: | 198121-007 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/03/07 |
| Units: | mg/Kg | Received: | 10/05/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 0.65 | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Arsenic | 8.4 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Barium | 150 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.44 | 0.10 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Chromium | 110 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Cobalt | 26 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Copper | 36 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Lead | 11 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.081 | 0.020 | 130346 | 10/09/07 | 10/09/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Nickel | 160 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Selenium | 2.3 | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Vanadium | 64 | 0.25 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |
| Zinc | 60 | 1.0 | 130259 | 10/05/07 | 10/08/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409376 | Batch#: | 130259 |
| Matrix: | Soil | Prepared: | 10/05/07 |
| Units: | mg/Kg | Analyzed: | 10/08/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | ND | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.25 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 130259 |
| Units: | mg/Kg | Prepared: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409377

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 92.87 | 93 | 80-120 |
| Arsenic | 50.00 | 47.74 | 95 | 80-120 |
| Barium | 100.0 | 93.70 | 94 | 80-120 |
| Beryllium | 2.500 | 2.440 | 98 | 80-120 |
| Cadmium | 10.00 | 9.354 | 94 | 80-120 |
| Chromium | 100.0 | 90.85 | 91 | 80-120 |
| Cobalt | 25.00 | 22.34 | 89 | 80-120 |
| Copper | 12.50 | 11.28 | 90 | 80-120 |
| Lead | 100.0 | 88.53 | 89 | 80-120 |
| Molybdenum | 20.00 | 18.84 | 94 | 80-120 |
| Nickel | 25.00 | 22.36 | 89 | 80-120 |
| Selenium | 50.00 | 45.97 | 92 | 80-120 |
| Silver | 10.00 | 8.883 | 89 | 80-120 |
| Thallium | 50.00 | 46.20 | 92 | 80-120 |
| Vanadium | 25.00 | 22.66 | 91 | 80-120 |
| Zinc | 25.00 | 22.19 | 89 | 80-120 |

Type: BSD Lab ID: QC409378

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 98.33 | 98 | 80-120 | 6 | 20 |
| Arsenic | 50.00 | 50.74 | 101 | 80-120 | 6 | 20 |
| Barium | 100.0 | 98.03 | 98 | 80-120 | 5 | 20 |
| Beryllium | 2.500 | 2.572 | 103 | 80-120 | 5 | 20 |
| Cadmium | 10.00 | 9.816 | 98 | 80-120 | 5 | 20 |
| Chromium | 100.0 | 95.64 | 96 | 80-120 | 5 | 20 |
| Cobalt | 25.00 | 23.41 | 94 | 80-120 | 5 | 20 |
| Copper | 12.50 | 11.87 | 95 | 80-120 | 5 | 20 |
| Lead | 100.0 | 93.81 | 94 | 80-120 | 6 | 20 |
| Molybdenum | 20.00 | 20.01 | 100 | 80-120 | 6 | 20 |
| Nickel | 25.00 | 23.57 | 94 | 80-120 | 5 | 20 |
| Selenium | 50.00 | 49.13 | 98 | 80-120 | 7 | 20 |
| Silver | 10.00 | 9.330 | 93 | 80-120 | 5 | 20 |
| Thallium | 50.00 | 49.07 | 98 | 80-120 | 6 | 20 |
| Vanadium | 25.00 | 23.89 | 96 | 80-120 | 5 | 20 |
| Zinc | 25.00 | 23.27 | 93 | 80-120 | 5 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | B-6-SS-0.0' | Batch#: | 130259 |
| MSS Lab ID: | 198121-001 | Sampled: | 10/04/07 |
| Matrix: | Soil | Received: | 10/05/07 |
| Units: | mg/Kg | Prepared: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409379

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 0.9286 | 95.24 | 40.61 | 42 | 1-122 |
| Arsenic | 7.159 | 47.62 | 53.13 | 97 | 72-120 |
| Barium | 134.8 | 95.24 | 228.4 | 98 | 49-139 |
| Beryllium | 0.4199 | 2.381 | 2.893 | 104 | 80-120 |
| Cadmium | <0.002454 | 9.524 | 8.898 | 93 | 74-120 |
| Chromium | 89.68 | 95.24 | 176.8 | 91 | 65-120 |
| Cobalt | 21.50 | 23.81 | 44.06 | 95 | 60-120 |
| Copper | 24.99 | 11.90 | 37.04 | 101 | 47-146 |
| Lead | 9.576 | 95.24 | 95.17 | 90 | 53-123 |
| Molybdenum | 0.1454 | 19.05 | 17.26 | 90 | 66-120 |
| Nickel | 114.8 | 23.81 | 138.2 | 98 NM | 43-142 |
| Selenium | <0.07209 | 47.62 | 46.97 | 99 | 71-120 |
| Silver | <0.01683 | 9.524 | 9.002 | 95 | 66-120 |
| Thallium | <0.03180 | 47.62 | 41.61 | 87 | 62-120 |
| Vanadium | 59.34 | 23.81 | 78.46 | 80 | 52-139 |
| Zinc | 47.96 | 23.81 | 69.27 | 89 | 42-147 |

Type: MSD Lab ID: QC409380

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 96.15 | 40.66 | 41 | 1-122 | 1 | 30 |
| Arsenic | 48.08 | 52.60 | 95 | 72-120 | 2 | 20 |
| Barium | 96.15 | 227.9 | 97 | 49-139 | 1 | 23 |
| Beryllium | 2.404 | 2.859 | 101 | 80-120 | 2 | 20 |
| Cadmium | 9.615 | 8.779 | 91 | 74-120 | 2 | 20 |
| Chromium | 96.15 | 173.6 | 87 | 65-120 | 2 | 20 |
| Cobalt | 24.04 | 44.04 | 94 | 60-120 | 1 | 24 |
| Copper | 12.02 | 36.71 | 97 | 47-146 | 1 | 21 |
| Lead | 96.15 | 93.63 | 87 | 53-123 | 3 | 28 |
| Molybdenum | 19.23 | 17.16 | 88 | 66-120 | 1 | 20 |
| Nickel | 24.04 | 137.3 | 93 NM | 43-142 | 1 | 26 |
| Selenium | 48.08 | 45.55 | 95 | 71-120 | 4 | 20 |
| Silver | 9.615 | 8.751 | 91 | 66-120 | 4 | 20 |
| Thallium | 48.08 | 40.74 | 85 | 62-120 | 3 | 20 |
| Vanadium | 24.04 | 78.60 | 80 | 52-139 | 0 | 20 |
| Zinc | 24.04 | 68.96 | 87 | 42-147 | 1 | 27 |

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409705 | Batch#: | 130346 |
| Matrix: | Soil | Prepared: | 10/09/07 |
| Units: | mg/Kg | Analyzed: | 10/09/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130346 |
| Units: | mg/Kg | Prepared: | 10/09/07 |
| Basis: | as received | Analyzed: | 10/09/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409706 | 0.5000 | 0.4400 | 88 | 80-120 | | |
| BSD | QC409707 | 0.5000 | 0.4660 | 93 | 80-120 | 6 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130346 |
| MSS Lab ID: | 198112-002 | Sampled: | 10/03/07 |
| Matrix: | Soil | Received: | 10/04/07 |
| Units: | mg/Kg | Prepared: | 10/09/07 |
| Basis: | as received | Analyzed: | 10/09/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409709 | 0.02510 | 0.4630 | 0.4574 | 93 | 70-143 | | |
| MSD | QC409710 | | 0.4464 | 0.4563 | 97 | 70-143 | 3 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-6-GW-17' | Diln Fac: | 1.000 |
| Lab ID: | 198121-003 | Sampled: | 10/04/07 |
| Matrix: | Filtrate | Received: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Barium | 81 | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130338 | 10/09/07 | 10/09/07 | METHOD | EPA 7470A |
| Molybdenum | 5.2 | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-5-GW-45' | Diln Fac: | 1.000 |
| Lab ID: | 198121-006 | Sampled: | 10/03/07 |
| Matrix: | Filtrate | Received: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 16 | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Barium | 130 | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130338 | 10/09/07 | 10/09/07 | METHOD | EPA 7470A |
| Molybdenum | 6.6 | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409489 | Batch#: | 130292 |
| Matrix: | Water | Prepared: | 10/08/07 |
| Units: | ug/L | Analyzed: | 10/08/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 6.1 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.0 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130292 |
| Units: | ug/L | Prepared: | 10/08/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/08/07 |

Type: BS Lab ID: QC409490

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 499.4 | 100 | 80-120 |
| Arsenic | 100.0 | 114.5 | 114 | 80-120 |
| Barium | 2,000 | 1,993 | 100 | 80-120 |
| Beryllium | 50.00 | 54.75 | 110 | 80-120 |
| Cadmium | 50.00 | 51.28 | 103 | 80-120 |
| Chromium | 200.0 | 203.7 | 102 | 80-120 |
| Cobalt | 500.0 | 493.2 | 99 | 80-120 |
| Copper | 250.0 | 248.8 | 100 | 80-120 |
| Lead | 100.0 | 94.39 | 94 | 80-120 |
| Molybdenum | 400.0 | 419.3 | 105 | 80-120 |
| Nickel | 500.0 | 504.1 | 101 | 80-120 |
| Selenium | 100.0 | 106.1 | 106 | 80-120 |
| Silver | 50.00 | 49.50 | 99 | 80-120 |
| Thallium | 100.0 | 106.6 | 107 | 80-120 |
| Vanadium | 500.0 | 510.0 | 102 | 80-120 |
| Zinc | 500.0 | 520.5 | 104 | 80-120 |

Type: BSD Lab ID: QC409491

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 493.7 | 99 | 80-120 | 1 | 20 |
| Arsenic | 100.0 | 110.7 | 111 | 80-120 | 3 | 20 |
| Barium | 2,000 | 1,936 | 97 | 80-120 | 3 | 20 |
| Beryllium | 50.00 | 53.24 | 106 | 80-120 | 3 | 20 |
| Cadmium | 50.00 | 49.55 | 99 | 80-120 | 3 | 20 |
| Chromium | 200.0 | 197.5 | 99 | 80-120 | 3 | 20 |
| Cobalt | 500.0 | 479.1 | 96 | 80-120 | 3 | 20 |
| Copper | 250.0 | 241.9 | 97 | 80-120 | 3 | 20 |
| Lead | 100.0 | 91.40 | 91 | 80-120 | 3 | 20 |
| Molybdenum | 400.0 | 407.2 | 102 | 80-120 | 3 | 20 |
| Nickel | 500.0 | 488.1 | 98 | 80-120 | 3 | 20 |
| Selenium | 100.0 | 102.7 | 103 | 80-120 | 3 | 20 |
| Silver | 50.00 | 49.30 | 99 | 80-120 | 0 | 20 |
| Thallium | 100.0 | 104.7 | 105 | 80-120 | 2 | 20 |
| Vanadium | 500.0 | 495.8 | 99 | 80-120 | 3 | 20 |
| Zinc | 500.0 | 505.2 | 101 | 80-120 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130292 |
| MSS Lab ID: | 198116-001 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Prepared: | 10/08/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/08/07 |

Type: MS Lab ID: QC409492

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 3.839 | 500.0 | 553.6 | 110 | 80-120 |
| Arsenic | 5.247 | 100.0 | 132.8 | 128 * | 80-127 |
| Barium | 44.95 | 2,000 | 1,882 | 92 | 80-120 |
| Beryllium | 0.8083 | 50.00 | 49.15 | 97 | 80-120 |
| Cadmium | 12.47 | 50.00 | 56.98 | 89 | 80-120 |
| Chromium | 9.743 | 200.0 | 190.3 | 90 | 80-120 |
| Cobalt | 2.919 | 500.0 | 429.8 | 85 | 80-120 |
| Copper | 40.55 | 250.0 | 320.7 | 112 | 80-120 |
| Lead | 30.19 | 100.0 | 116.8 | 87 | 76-120 |
| Molybdenum | 35.42 | 400.0 | 423.1 | 97 | 80-120 |
| Nickel | 39.27 | 500.0 | 462.0 | 85 | 80-120 |
| Selenium | 5.768 | 100.0 | 126.1 | 120 | 80-128 |
| Silver | 0.8867 | 50.00 | 59.82 | 118 | 73-122 |
| Thallium | <1.616 | 100.0 | 82.16 | 82 | 78-120 |
| Vanadium | 1.241 | 500.0 | 480.4 | 96 | 80-120 |
| Zinc | 2,997 | 500.0 | 3,487 | 98 NM | 80-123 |

Type: MSD Lab ID: QC409493

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 552.4 | 110 | 80-120 | 0 | 20 |
| Arsenic | 100.0 | 129.8 | 125 | 80-127 | 2 | 20 |
| Barium | 2,000 | 1,857 | 91 | 80-120 | 1 | 20 |
| Beryllium | 50.00 | 48.91 | 96 | 80-120 | 0 | 20 |
| Cadmium | 50.00 | 58.37 | 92 | 80-120 | 2 | 20 |
| Chromium | 200.0 | 188.9 | 90 | 80-120 | 1 | 20 |
| Cobalt | 500.0 | 427.0 | 85 | 80-120 | 1 | 20 |
| Copper | 250.0 | 320.9 | 112 | 80-120 | 0 | 20 |
| Lead | 100.0 | 116.8 | 87 | 76-120 | 0 | 20 |
| Molybdenum | 400.0 | 417.3 | 95 | 80-120 | 1 | 20 |
| Nickel | 500.0 | 458.8 | 84 | 80-120 | 1 | 20 |
| Selenium | 100.0 | 119.7 | 114 | 80-128 | 5 | 20 |
| Silver | 50.00 | 61.21 | 121 | 73-122 | 2 | 20 |
| Thallium | 100.0 | 79.59 | 80 | 78-120 | 3 | 20 |
| Vanadium | 500.0 | 478.8 | 96 | 80-120 | 0 | 20 |
| Zinc | 500.0 | 3,385 | 78 NM | 80-123 | 3 | 20 |

*= Value outside of QC limits; see narrative
NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130338 |
| Lab ID: | QC409673 | Prepared: | 10/09/07 |
| Matrix: | Water | Analyzed: | 10/09/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130338 |
| Matrix: | Water | Prepared: | 10/09/07 |
| Units: | ug/L | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409674 | 5.000 | 5.040 | 101 | 80-120 | | |
| BSD | QC409675 | 5.000 | 5.040 | 101 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130338 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/04/07 |
| MSS Lab ID: | 198176-002 | Received: | 10/08/07 |
| Matrix: | Water | Prepared: | 10/09/07 |
| Units: | ug/L | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409680 | <0.05879 | 5.000 | 5.460 | 109 | 79-125 | | |
| MSD | QC409681 | | 5.000 | 5.640 | 113 | 79-125 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Matrix: | Water | Batch#: | 130232 |
| Units: | mg/L | Received: | 10/05/07 |

| Field ID | Type | Lab ID | Result | RL | Sampled | Analyzed |
|---|---|---|---|---|---|---|
| B-6-GW-17' | SAMPLE | 198121-003 | 0.05 | 0.05 | 10/04/07 10:15 | 10/05/07 12:14 |
| B-5-GW-45' | SAMPLE | 198121-006 | ND | 0.05 | 10/03/07 16:00 | 10/05/07 11:54 |
| | BLANK | QC409271 | ND | 0.05 | | 10/05/07 11:28 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | B-6-GW-17' | Batch#: | 130232 |
| MSS Lab ID: | 198121-003 | Sampled: | 10/04/07 10:15 |
| Matrix: | Water | Received: | 10/05/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409272 | | 1.000 | 0.9603 | 96 | 80-120 | | | 1.000 | 10/05/07 14:13 |
| BSD | QC409273 | | 1.000 | 0.9830 | 98 | 80-120 | 2 | 20 | 1.000 | 10/05/07 14:31 |
| MS | QC409351 | 0.05275 | 2.500 | 2.464 | 96 | 80-120 | | | 5.000 | 10/05/07 19:29 |
| MSD | QC409352 | | 2.500 | 2.501 | 98 | 80-120 | 2 | 20 | 5.000 | 10/05/07 19:47 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130304 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | | |

| Field ID | Type | Lab ID | Result | RL | Sampled | Analyzed |
|---|---|---|---|---|---|---|
| B-6-SS-25' | SAMPLE | 198121-002 | ND | 0.5 | 10/04/07 10:40 | 10/08/07 15:18 |
| B-5-SS-46' | SAMPLE | 198121-005 | ND | 0.5 | 10/04/07 15:45 | 10/08/07 15:36 |
| | BLANK | QC409544 | ND | 0.5 | | 10/08/07 12:58 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198121 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Field ID: | B-12-SS-0.0' | Batch#: | 130304 |
| MSS Lab ID: | 198049-002 | Sampled: | 10/01/07 09:00 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409545 | | 10.00 | 10.34 | 103 | 80-120 | | | 1.000 | 10/08/07 13:15 |
| BSD | QC409546 | | 10.00 | 9.983 | 100 | 80-120 | 3 | 20 | 1.000 | 10/08/07 13:33 |
| MS | QC409587 | 2.349 | 5.100 | 6.705 | 85 | 50-120 | | | 1.020 | 10/08/07 16:52 |
| MSD | QC409588 | | 5.100 | 6.956 | 90 | 50-120 | 4 | 30 | 1.020 | 10/08/07 17:10 |

RPD= Relative Percent Difference

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2323 5th Street Berkeley, Ca 94710
510-204-2225

# Chain of Custody Record

198121

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/4/07 |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS - 9X3169 |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | |
| Project Name: Cloverdale Project | ☐ 1 week | | |
| Site: Cloverdale, Ca | ☐ 2 days | | |
| C&T-WO-07-002 | ☐ 1 day | | |

1827-15 - G
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filter Samples | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B-6-SS-0.0' | 10/4/07 | 8:30 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| 2 | B-6-SS-25' | ↓ | 10:40 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 3 | B-6-GW-17' | 10/4/07 | 10:15 | VOA | GW | 3 | | ✓ | | | | | | | |
| | ↓ | ↓ | ↓ | VOA | ↓ | 3 | | | | | ✓ | | | | |
| | | | | 1L poly | | 2 | | | | ✓ | | | | | |
| | | | | 750 ml poly | | 1 | ✓ | | ✓ | | | | | | |
| | | ↓ | ↓ | 250 ml poly | ↓ | 1 | | | | | | ✓ | | | |
| 4 | B-5-SS-0.0' | 10/3/07 | 14:00 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| 5 | B-5-SS-46' | 10/3/07 | 15:45 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 6 | B-5-GW-45' | 10/3/07 | 16:00 | VOA | GW | 6 | | ✓ | | | ✓ | | | | |
| | ↓ | ↓ | ↓ | 1L poly | ↓ | 2 | | | | ✓ | | | | | |
| | | ↓ | ↓ | 750, 250 poly | ↓ | 2 | ✓ | | ✓ | | ✓ | | | | |
| 7 | B-4-SS-0.0' | 10/3/07 | 10:30 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:
Trip Blank also included in shipment

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Robert R. C... | Weiss Associates | 10/4/07, 14:50 | [signature] | C+T | 10-5-07 1015 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

# COOLER RECEIPT CHECKLIST

Login#: 198121 Date Received: 10-5-07 Number of Coolers: 1
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10-5-07 By (print): Faith Nichols (sign) [signature]

1. Did cooler come with a shipping slip (airbill, etc.)? ..... (YES) NO
   If YES, enter carrier name and airbill number: UPS 1Z 832 32E 01 4164 2993
2. Were custody seals on outside of cooler? ..... YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: Bubble Wrap, Voa foam
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... (YES) NO
   Type of ice: Wet Temperature: 3°C
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-5-07 By (print): Faith Nichols (sign) [signature]

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below. ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
*1 L amber for sample B-6-GW-17' arrived broken in Cooler
*No Trip blank in cooler

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-13-SS-0.0' | 198154-001 |
| B-13-SS-45' | 198154-002 |
| B-13-GW-38' | 198154-003 |
| TRIP BLANK | 198154-004 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/29/2007
Project Manager

Signature: _____ Date: 10/29/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198154** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/08/07** |
| Samples Received: | **10/05/07** |

This hardcopy data package contains sample and QC results for two soil samples and two water samples, requested for the above referenced project on 10/08/07. The samples were received cold and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
B-13-SS-0.0' (lab # 198154-001) was diluted due to high non-target analytes. B-13-SS-45' (lab # 198154-002) was diluted due to the dark and viscous nature of the sample extract. No other analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
High surrogate recovery was observed for bromofluorobenzene in B-13-SS-45' (lab # 198154-002); no target analytes were detected in the sample. No other analytical problems were encountered.

**Pesticides (EPA 8081A):**
No analytical problems were encountered.

**Polychlorinated Biphenyls (PCBs) (EPA 8082):**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
High recoveries were observed for copper and lead in the MS/MSD for batch 130325; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPDs were within limits. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
High recovery was observed for arsenic in the MS for batch 130292; the parent sample was not a project sample, and the associated RPD was within limits. No

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198154** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/08/07** |
| Samples Received: | **10/05/07** |

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
other analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Soil:**
No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-13-GW-38' | Batch#: | 130404 |
| Matrix: | Water | Sampled: | 10/04/07 |
| Units: | ug/L | Received: | 10/05/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/10/07 |

Type: SAMPLE Lab ID: 198154-003

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 120 | 73-134 |
| Bromofluorobenzene (FID) | 126 | 77-140 |

Type: BLANK Lab ID: QC409948

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 104 | 73-134 |
| Bromofluorobenzene (FID) | 97 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409949 | Batch#: | 130404 |
| Matrix: | Water | Analyzed: | 10/10/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 917.8 | 92 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 125 | 73-134 |
| Bromofluorobenzene (FID) | 120 | 77-140 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130404 |
| MSS Lab ID: | 198188-008 | Sampled: | 10/08/07 |
| Matrix: | Water | Received: | 10/08/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409950

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 24.42 | 2,000 | 1,885 | 93 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 127 | 73-134 |
| Bromofluorobenzene (FID) | 134 | 77-140 |

Type: MSD Lab ID: QC409951

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,868 | 92 | 72-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 122 | 73-134 |
| Bromofluorobenzene (FID) | 129 | 77-140 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130395 |
| Units: | mg/Kg | Sampled: | 10/04/07 |
| Basis: | as received | Received: | 10/05/07 |
| Diln Fac: | 1.000 | | |

Field ID: B-13-SS-0.0' Lab ID: 198154-001
Type: SAMPLE Analyzed: 10/11/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.97 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 87 | 71-132 |
| Bromofluorobenzene (FID) | 97 | 69-145 |

Field ID: B-13-SS-45' Lab ID: 198154-002
Type: SAMPLE Analyzed: 10/11/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 84 | 71-132 |
| Bromofluorobenzene (FID) | 90 | 69-145 |

Type: BLANK Analyzed: 10/10/07
Lab ID: QC409917

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 97 | 71-132 |
| Bromofluorobenzene (FID) | 99 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC409918 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130395 |
| Units: | mg/Kg | Analyzed: | 10/10/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 5.000 | 5.263 | 105 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 100 | 69-145 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 198144-002 | Batch#: | 130395 |
| Matrix: | Soil | Sampled: | 10/05/07 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/10/07 |

Type: MS Lab ID: QC409919

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 0.2430 | 9.804 | 7.760 | 77 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 110 | 71-132 |
| Bromofluorobenzene (FID) | 104 | 69-145 |

Type: MSD Lab ID: QC409920

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 10.20 | 7.782 | 74 | 43-120 | 4 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 109 | 71-132 |
| Bromofluorobenzene (FID) | 103 | 69-145 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-13-GW-38' | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Prepared: | 10/10/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/12/07 |
| Batch#: | 130398 | | |

Type: SAMPLE Lab ID: 198154-003

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | 74 Y | 50 | |
| Motor Oil C24-C36 | ND | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 98 | 61-133 |

Type: BLANK Lab ID: QC409929

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 104 | 61-133 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409930 | Batch#: | 130398 |
| Matrix: | Water | Prepared: | 10/10/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,081 | 83 | 58-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 83 | 61-133 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130398 |
| MSS Lab ID: | 198061-003 | Sampled: | 10/03/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Prepared: | 10/10/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/12/07 |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC409931

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | 33.12 | 2,500 | 2,490 | 98 | 58-129 |

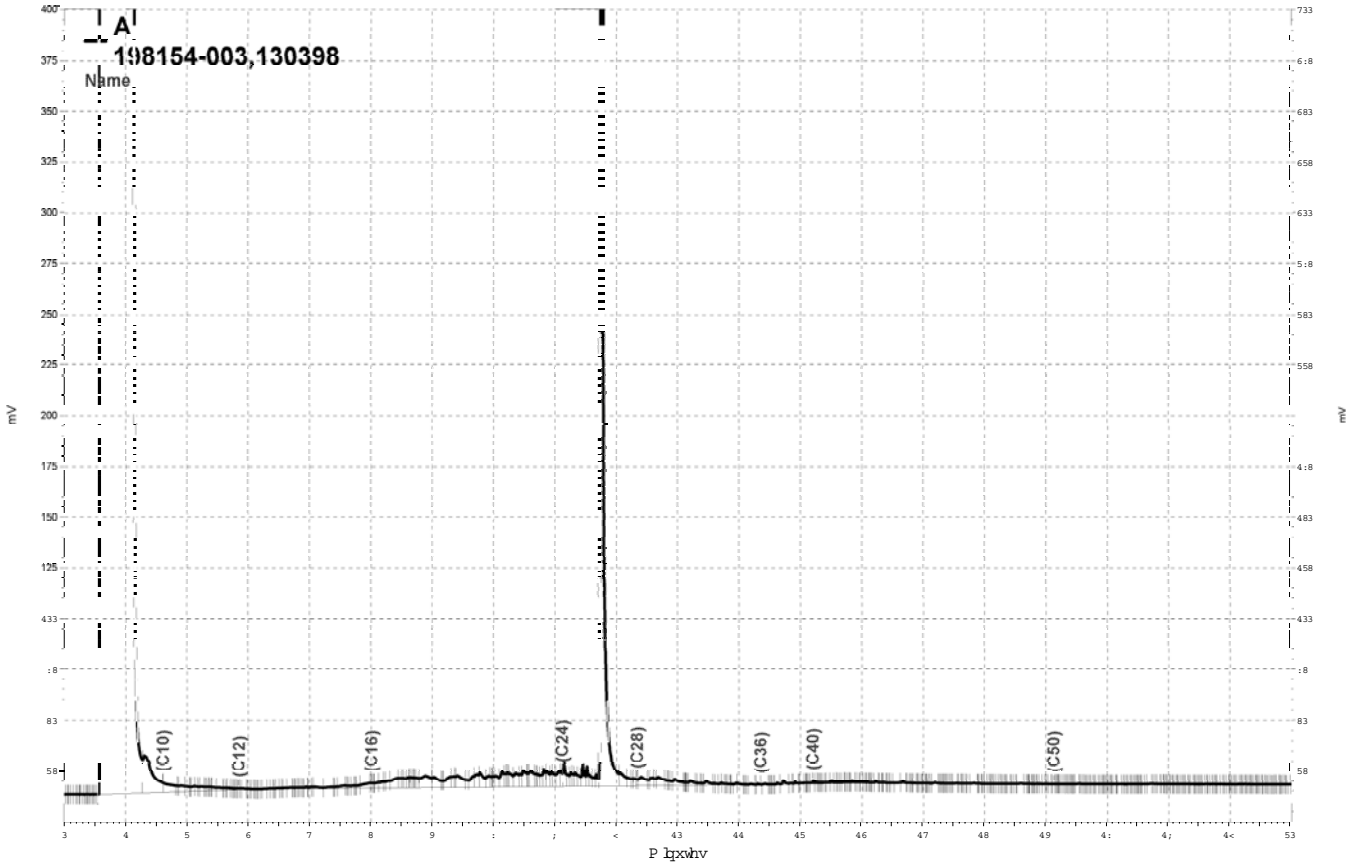
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 122 | 61-133 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC409932

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,372 | 94 | 58-129 | 5 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 114 | 61-133 |

RPD= Relative Percent Difference

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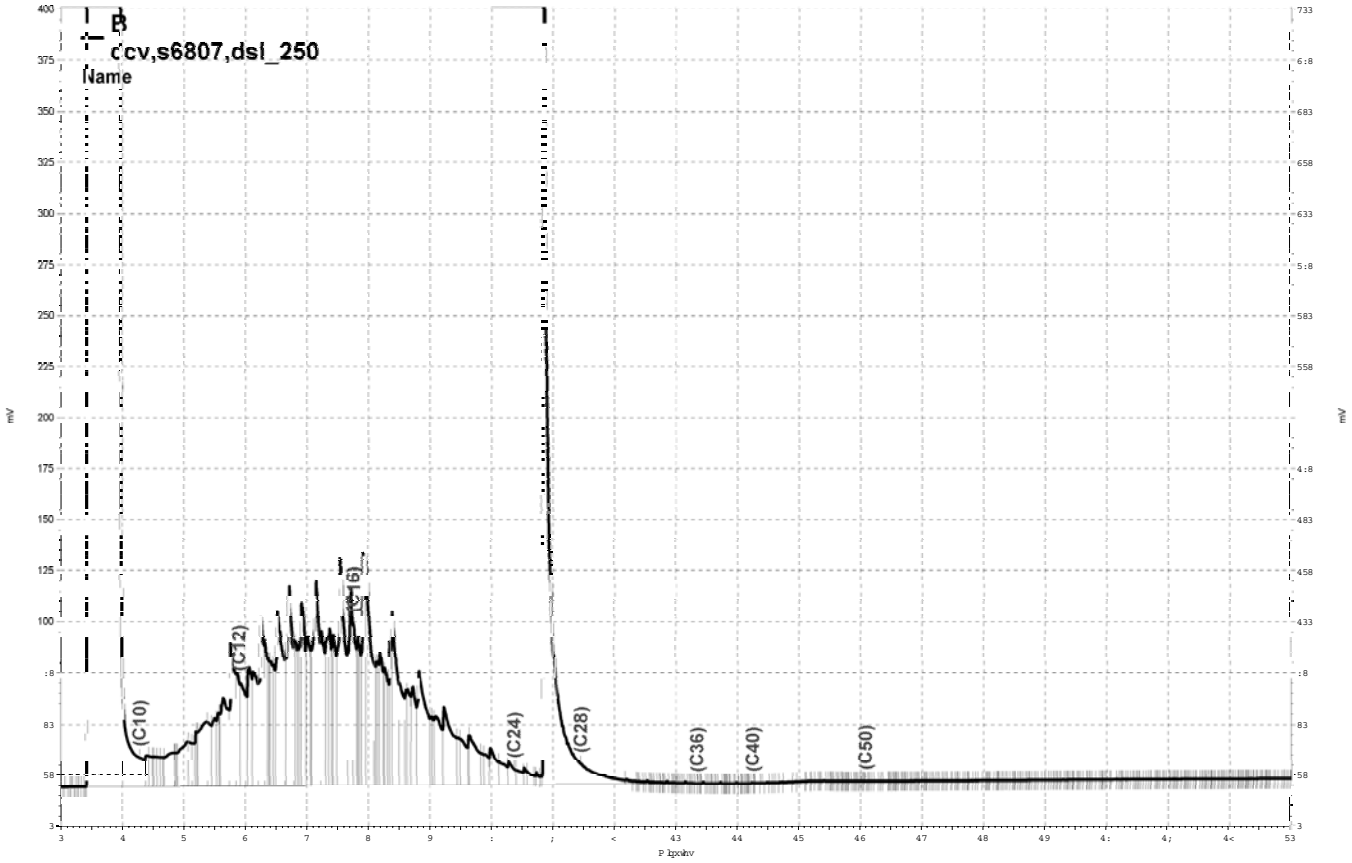


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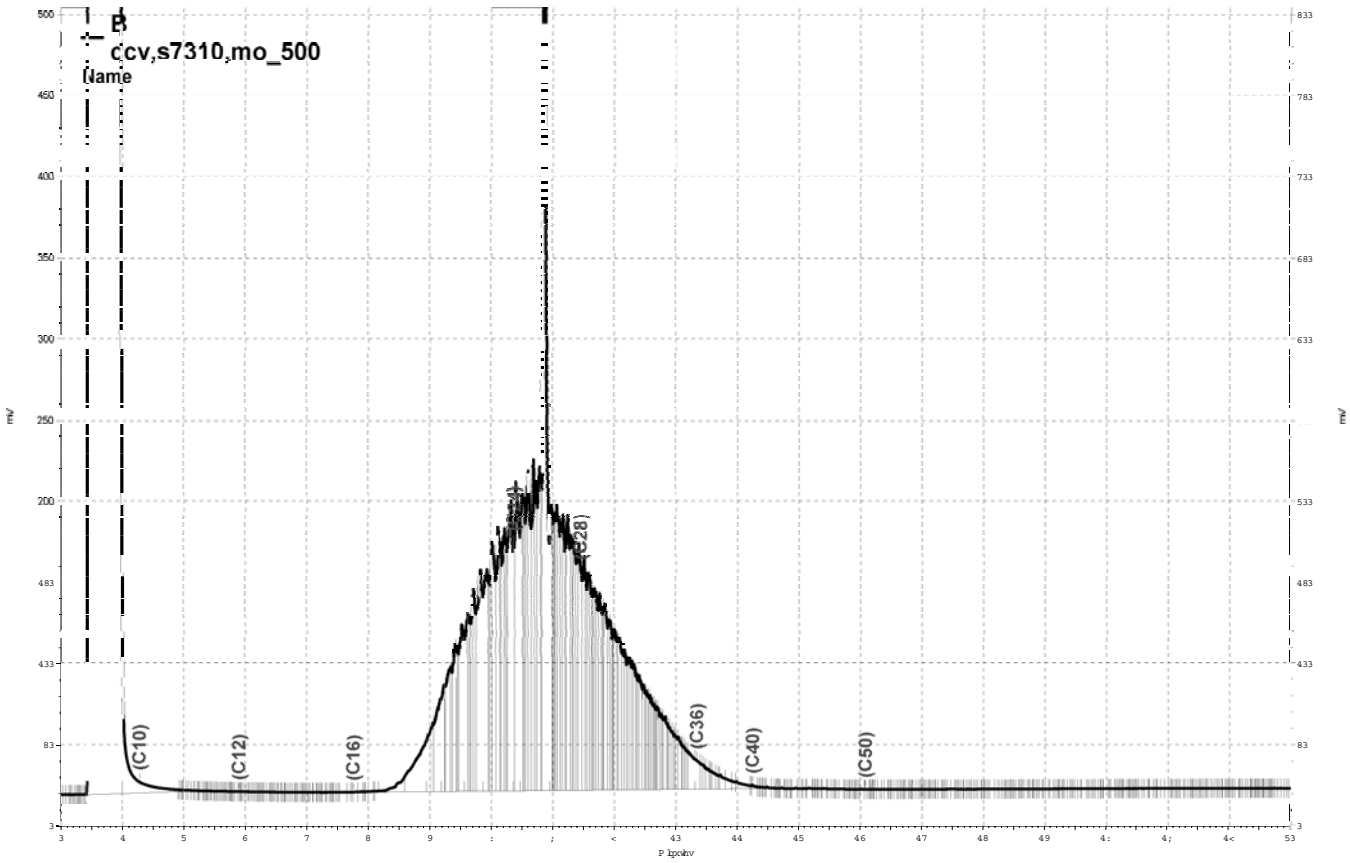


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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | Prepared: | 10/13/07 |
| Batch#: | 130512 | | |

Field ID: B-13-SS-0.0' Diln Fac: 2.000
Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198154-001

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 26 Y | 2.0 |
| Motor Oil C24-C36 | 94 | 9.9 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 99 | 46-128 |

Field ID: B-13-SS-45' Diln Fac: 2.000
Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198154-002

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 8.9 Y | 2.0 |
| Motor Oil C24-C36 | 17 | 9.9 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 97 | 46-128 |

Type: BLANK Diln Fac: 1.000
Lab ID: QC410400 Analyzed: 10/15/07

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 0.99 |
| Motor Oil C24-C36 | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 98 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410401 | Batch#: | 130512 |
| Matrix: | Soil | Prepared: | 10/13/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 49.77 | 36.17 | 73 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 77 | 46-128 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130512 |
| MSS Lab ID: | 198070-001 | Sampled: | 10/02/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | Prepared: | 10/13/07 |
| Basis: | as received | Analyzed: | 10/16/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410402

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | 0.5333 | 49.99 | 46.40 | 92 | 31-150 |

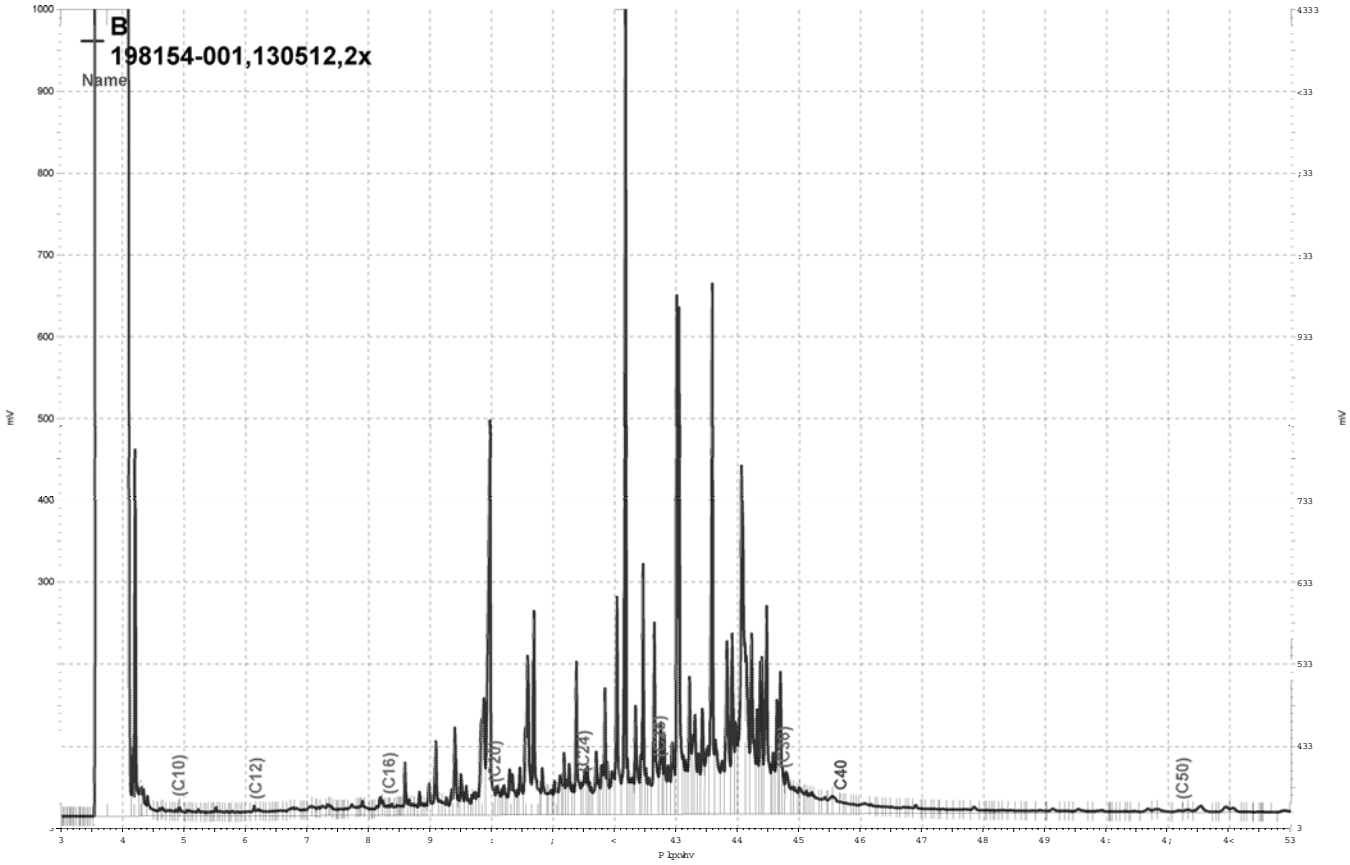
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 102 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410403

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 49.60 | 41.26 | 82 | 31-150 | 11 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 89 | 46-128 |

RPD= Relative Percent Difference

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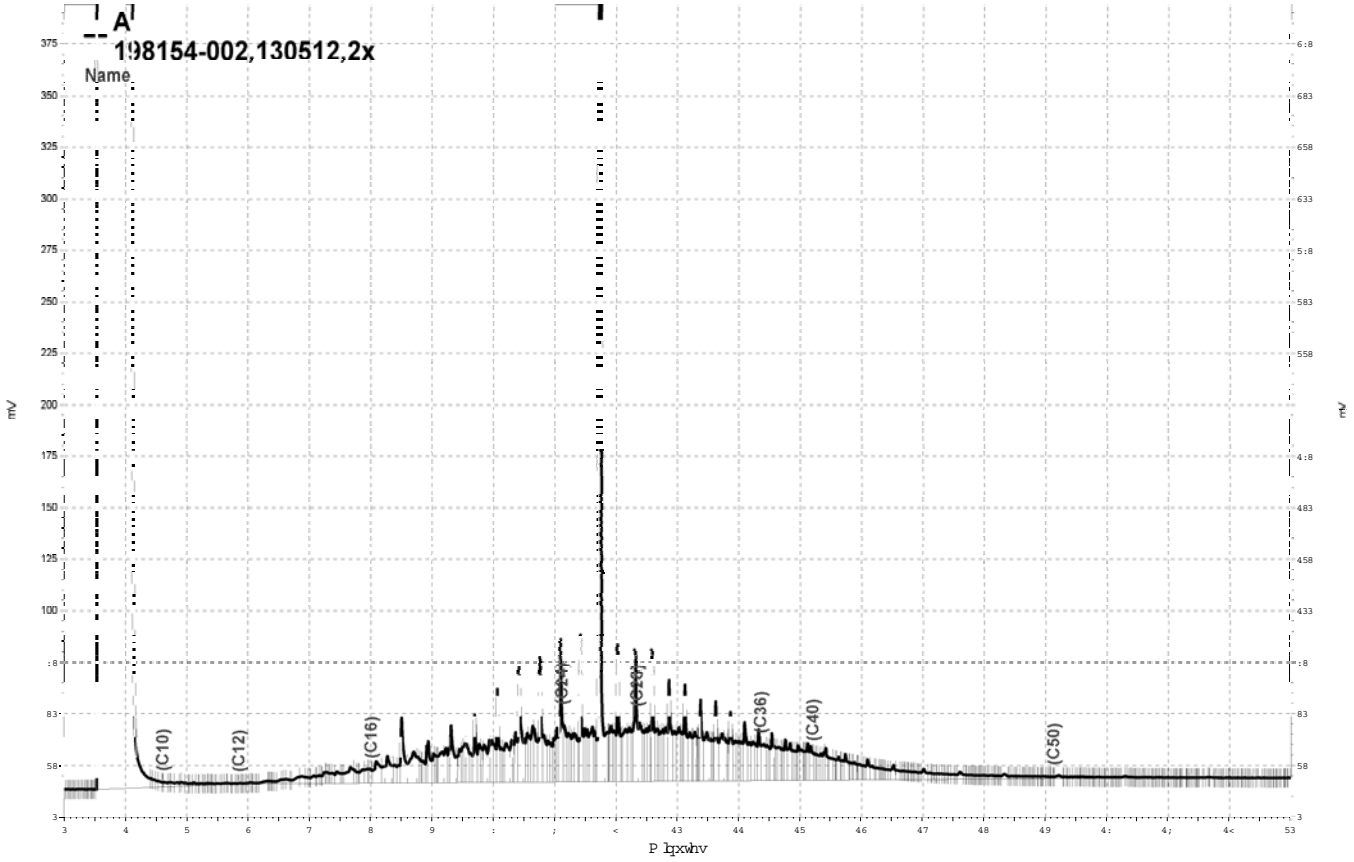


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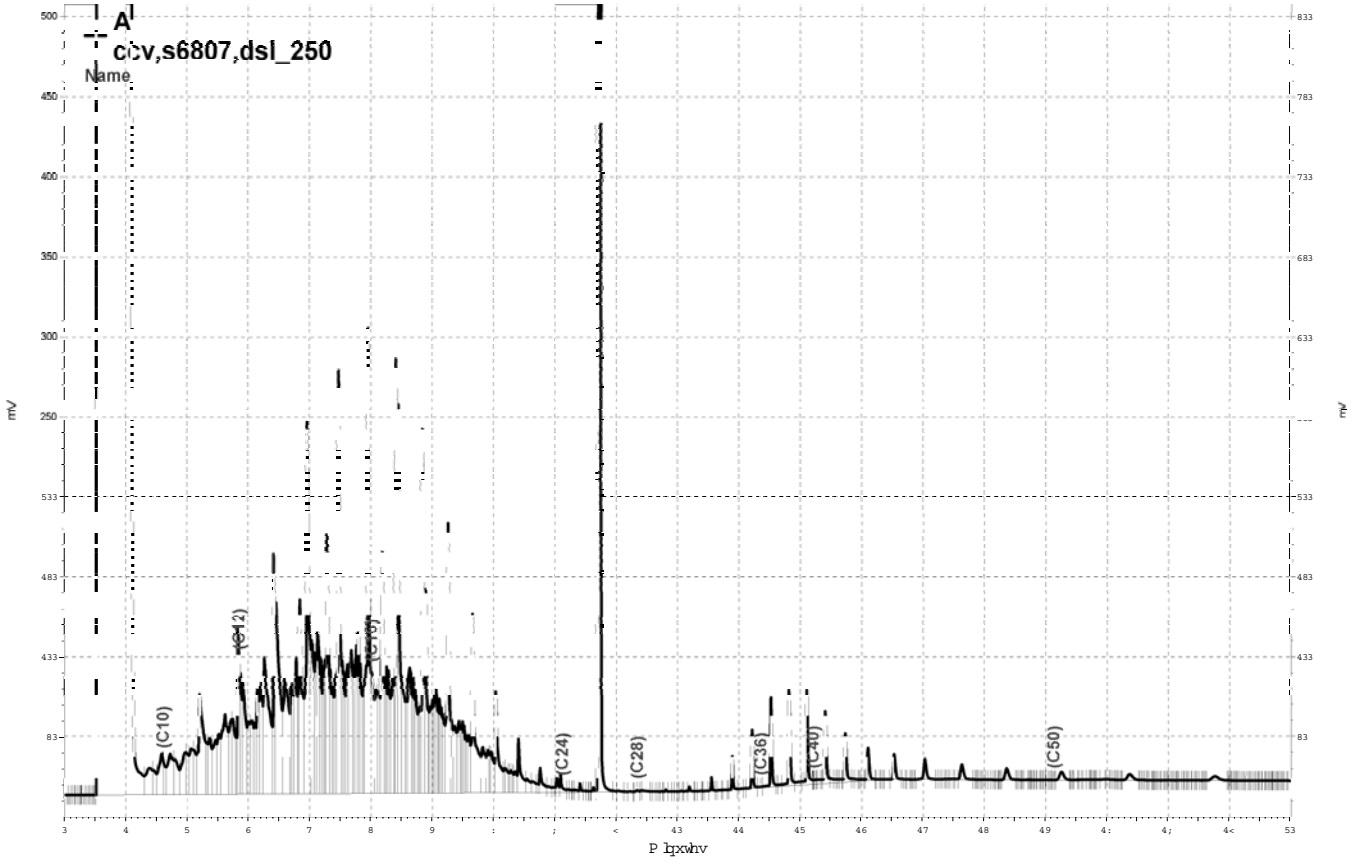


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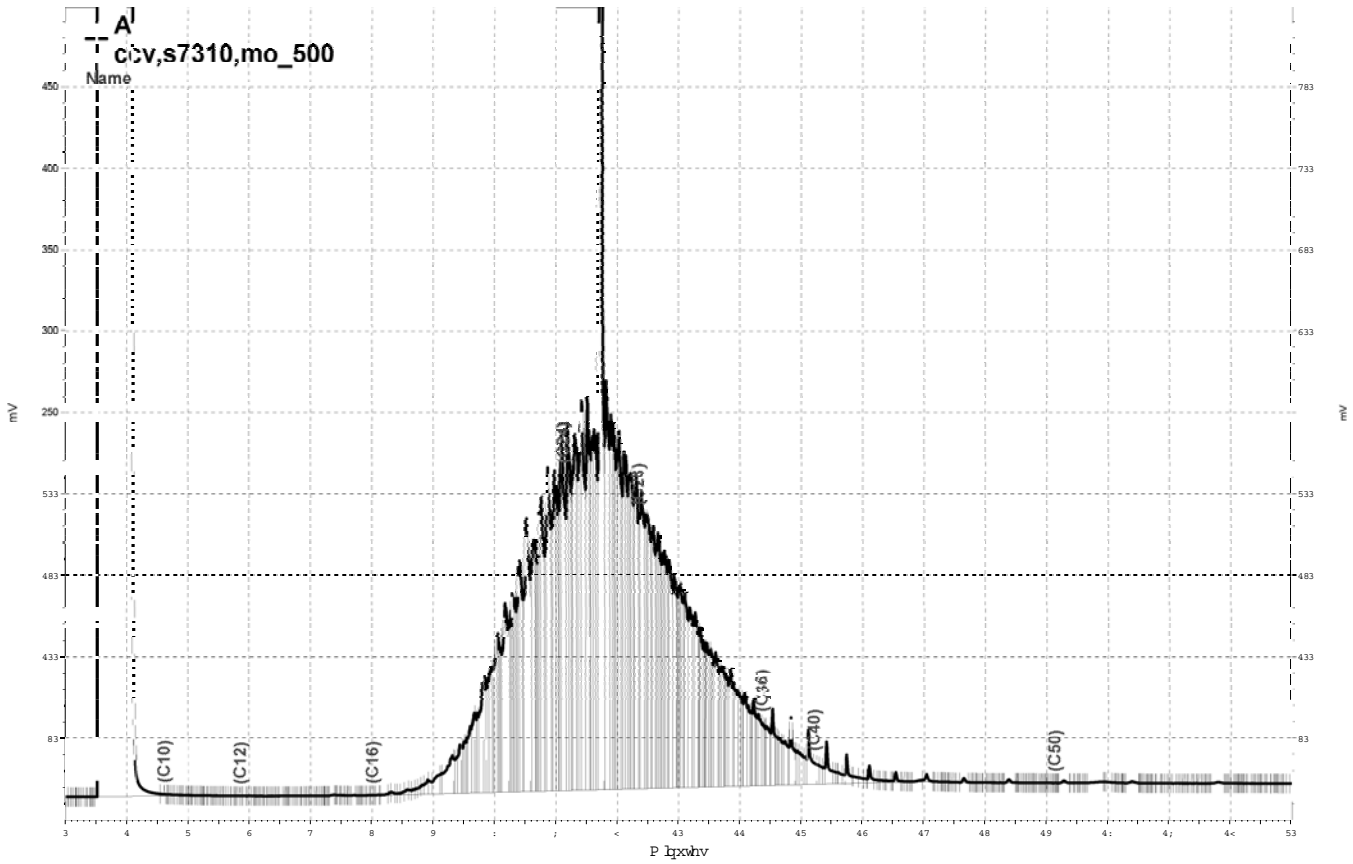


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Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-13-GW-38' | Batch#: | 130328 |
| Lab ID: | 198154-003 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-13-GW-38' | Batch#: | 130328 |
| Lab ID: | 198154-003 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 110 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 107 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | TRIP BLANK | Batch#: | 130375 |
| Lab ID: | 198154-004 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | 11 | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | TRIP BLANK | Batch#: | 130375 |
| Lab ID: | 198154-004 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/05/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 103 | 80-122 |
| 1,2-Dichloroethane-d4 | 114 | 74-137 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 100 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 130328 |
| Units: | ug/L | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409632

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 29.53 | 118 | 80-133 |
| Benzene | 25.00 | 25.69 | 103 | 80-120 |
| Trichloroethene | 25.00 | 26.24 | 105 | 80-120 |
| Toluene | 25.00 | 25.01 | 100 | 80-122 |
| Chlorobenzene | 25.00 | 25.03 | 100 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 101 | 80-122 |
| 1,2-Dichloroethane-d4 | 108 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

Type: BSD Lab ID: QC409633

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 27.94 | 112 | 80-133 | 6 | 20 |
| Benzene | 25.00 | 24.95 | 100 | 80-120 | 3 | 20 |
| Trichloroethene | 25.00 | 25.61 | 102 | 80-120 | 2 | 20 |
| Toluene | 25.00 | 24.90 | 100 | 80-122 | 0 | 20 |
| Chlorobenzene | 25.00 | 24.38 | 98 | 80-120 | 3 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 108 | 74-137 |
| Toluene-d8 | 105 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409721 | Batch#: | 130328 |
| Matrix: | Water | Analyzed: | 10/09/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409721 | Batch#: | 130328 |
| Matrix: | Water | Analyzed: | 10/09/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 106 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 106 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409828 | Batch#: | 130375 |
| Matrix: | Water | Analyzed: | 10/10/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409828 | Batch#: | 130375 |
| Matrix: | Water | Analyzed: | 10/10/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 104 | 80-122 |
| 1,2-Dichloroethane-d4 | 115 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409829 | Batch#: | 130375 |
| Matrix: | Water | Analyzed: | 10/10/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 23.37 | 93 | 80-133 |
| Benzene | 25.00 | 23.09 | 92 | 80-120 |
| Trichloroethene | 25.00 | 26.15 | 105 | 80-120 |
| Toluene | 25.00 | 24.56 | 98 | 80-122 |
| Chlorobenzene | 25.00 | 23.20 | 93 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 98 | 80-122 |
| 1,2-Dichloroethane-d4 | 106 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 104 | 80-120 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130375 |
| MSS Lab ID: | 198043-017 | Sampled: | 10/02/07 |
| Matrix: | Water | Received: | 10/02/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409830

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.1973 | 25.00 | 21.81 | 86 | 80-141 |
| Benzene | <0.2500 | 25.00 | 21.81 | 87 | 80-123 |
| Trichloroethene | 2.555 | 25.00 | 25.45 | 92 | 73-129 |
| Toluene | <0.1338 | 25.00 | 22.63 | 91 | 80-124 |
| Chlorobenzene | <0.1569 | 25.00 | 21.59 | 86 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 115 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

Type: MSD Lab ID: QC409831

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 23.43 | 93 | 80-141 | 7 | 20 |
| Benzene | 25.00 | 22.97 | 92 | 80-123 | 5 | 20 |
| Trichloroethene | 25.00 | 27.12 | 98 | 73-129 | 6 | 20 |
| Toluene | 25.00 | 23.74 | 95 | 80-124 | 5 | 20 |
| Chlorobenzene | 25.00 | 23.27 | 93 | 80-120 | 8 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-122 |
| 1,2-Dichloroethane-d4 | 115 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 104 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-13-SS-0.0' | Diln Fac: | 0.9434 |
| Lab ID: | 198154-001 | Batch#: | 130287 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/08/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.4 |
| Chloromethane | ND | 9.4 |
| Vinyl Chloride | ND | 9.4 |
| Bromomethane | ND | 9.4 |
| Chloroethane | ND | 9.4 |
| Trichlorofluoromethane | ND | 4.7 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.7 |
| 1,1-Dichloroethene | ND | 4.7 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.7 |
| MTBE | ND | 4.7 |
| trans-1,2-Dichloroethene | ND | 4.7 |
| Vinyl Acetate | ND | 47 |
| 1,1-Dichloroethane | ND | 4.7 |
| 2-Butanone | ND | 9.4 |
| cis-1,2-Dichloroethene | ND | 4.7 |
| 2,2-Dichloropropane | ND | 4.7 |
| Chloroform | ND | 4.7 |
| Bromochloromethane | ND | 4.7 |
| 1,1,1-Trichloroethane | ND | 4.7 |
| 1,1-Dichloropropene | ND | 4.7 |
| Carbon Tetrachloride | ND | 4.7 |
| 1,2-Dichloroethane | ND | 4.7 |
| Benzene | ND | 4.7 |
| Trichloroethene | ND | 4.7 |
| 1,2-Dichloropropane | ND | 4.7 |
| Bromodichloromethane | ND | 4.7 |
| Dibromomethane | ND | 4.7 |
| 4-Methyl-2-Pentanone | ND | 9.4 |
| cis-1,3-Dichloropropene | ND | 4.7 |
| Toluene | ND | 4.7 |
| trans-1,3-Dichloropropene | ND | 4.7 |
| 1,1,2-Trichloroethane | ND | 4.7 |
| 2-Hexanone | ND | 9.4 |
| 1,3-Dichloropropane | ND | 4.7 |
| Tetrachloroethene | ND | 4.7 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-13-SS-0.0' | Diln Fac: | 0.9434 |
| Lab ID: | 198154-001 | Batch#: | 130287 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/08/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.7 |
| 1,2-Dibromoethane | ND | 4.7 |
| Chlorobenzene | ND | 4.7 |
| 1,1,1,2-Tetrachloroethane | ND | 4.7 |
| Ethylbenzene | ND | 4.7 |
| m,p-Xylenes | ND | 4.7 |
| o-Xylene | ND | 4.7 |
| Styrene | ND | 4.7 |
| Bromoform | ND | 4.7 |
| Isopropylbenzene | ND | 4.7 |
| 1,1,2,2-Tetrachloroethane | ND | 4.7 |
| 1,2,3-Trichloropropane | ND | 4.7 |
| Propylbenzene | ND | 4.7 |
| Bromobenzene | ND | 4.7 |
| 1,3,5-Trimethylbenzene | ND | 4.7 |
| 2-Chlorotoluene | ND | 4.7 |
| 4-Chlorotoluene | ND | 4.7 |
| tert-Butylbenzene | ND | 4.7 |
| 1,2,4-Trimethylbenzene | ND | 4.7 |
| sec-Butylbenzene | ND | 4.7 |
| para-Isopropyl Toluene | ND | 4.7 |
| 1,3-Dichlorobenzene | ND | 4.7 |
| 1,4-Dichlorobenzene | ND | 4.7 |
| n-Butylbenzene | ND | 4.7 |
| 1,2-Dichlorobenzene | ND | 4.7 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.7 |
| 1,2,4-Trichlorobenzene | ND | 4.7 |
| Hexachlorobutadiene | ND | 4.7 |
| Naphthalene | ND | 4.7 |
| 1,2,3-Trichlorobenzene | ND | 4.7 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 89 | 80-124 |
| 1,2-Dichloroethane-d4 | 103 | 79-136 |
| Toluene-d8 | 90 | 80-120 |
| Bromofluorobenzene | 102 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-13-SS-45' | Diln Fac: | 0.9615 |
| Lab ID: | 198154-002 | Batch#: | 130287 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/08/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.6 |
| Chloromethane | ND | 9.6 |
| Vinyl Chloride | ND | 9.6 |
| Bromomethane | ND | 9.6 |
| Chloroethane | ND | 9.6 |
| Trichlorofluoromethane | ND | 4.8 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.8 |
| 1,1-Dichloroethene | ND | 4.8 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.8 |
| MTBE | ND | 4.8 |
| trans-1,2-Dichloroethene | ND | 4.8 |
| Vinyl Acetate | ND | 48 |
| 1,1-Dichloroethane | ND | 4.8 |
| 2-Butanone | ND | 9.6 |
| cis-1,2-Dichloroethene | ND | 4.8 |
| 2,2-Dichloropropane | ND | 4.8 |
| Chloroform | ND | 4.8 |
| Bromochloromethane | ND | 4.8 |
| 1,1,1-Trichloroethane | ND | 4.8 |
| 1,1-Dichloropropene | ND | 4.8 |
| Carbon Tetrachloride | ND | 4.8 |
| 1,2-Dichloroethane | ND | 4.8 |
| Benzene | ND | 4.8 |
| Trichloroethene | ND | 4.8 |
| 1,2-Dichloropropane | ND | 4.8 |
| Bromodichloromethane | ND | 4.8 |
| Dibromomethane | ND | 4.8 |
| 4-Methyl-2-Pentanone | ND | 9.6 |
| cis-1,3-Dichloropropene | ND | 4.8 |
| Toluene | ND | 4.8 |
| trans-1,3-Dichloropropene | ND | 4.8 |
| 1,1,2-Trichloroethane | ND | 4.8 |
| 2-Hexanone | ND | 9.6 |
| 1,3-Dichloropropane | ND | 4.8 |
| Tetrachloroethene | ND | 4.8 |
| Dibromochloromethane | ND | 4.8 |
| 1,2-Dibromoethane | ND | 4.8 |
| Chlorobenzene | ND | 4.8 |
| 1,1,1,2-Tetrachloroethane | ND | 4.8 |
| Ethylbenzene | ND | 4.8 |
| m,p-Xylenes | ND | 4.8 |
| o-Xylene | ND | 4.8 |
| Styrene | ND | 4.8 |
| Bromoform | ND | 4.8 |
| Isopropylbenzene | ND | 4.8 |
| 1,1,2,2-Tetrachloroethane | ND | 4.8 |
| 1,2,3-Trichloropropane | ND | 4.8 |
| Propylbenzene | ND | 4.8 |
| Bromobenzene | ND | 4.8 |
| 1,3,5-Trimethylbenzene | ND | 4.8 |
| 2-Chlorotoluene | ND | 4.8 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-13-SS-45' | Dil'n Fac: | 0.9615 |
| Lab ID: | 198154-002 | Batch#: | 130287 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/08/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.8 |
| tert-Butylbenzene | ND | 4.8 |
| 1,2,4-Trimethylbenzene | ND | 4.8 |
| sec-Butylbenzene | ND | 4.8 |
| para-Isopropyl Toluene | ND | 4.8 |
| 1,3-Dichlorobenzene | ND | 4.8 |
| 1,4-Dichlorobenzene | ND | 4.8 |
| n-Butylbenzene | ND | 4.8 |
| 1,2-Dichlorobenzene | ND | 4.8 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.8 |
| 1,2,4-Trichlorobenzene | ND | 4.8 |
| Hexachlorobutadiene | ND | 4.8 |
| Naphthalene | ND | 4.8 |
| 1,2,3-Trichlorobenzene | ND | 4.8 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 86 | 80-124 |
| 1,2-Dichloroethane-d4 | 96 | 79-136 |
| Toluene-d8 | 87 | 80-120 |
| Bromofluorobenzene | 130 * | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC409473 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130287 |
| Units: | ug/Kg | Analyzed: | 10/08/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 25.67 | 103 | 74-131 |
| Benzene | 25.00 | 25.38 | 102 | 77-121 |
| Trichloroethene | 25.00 | 26.87 | 107 | 77-121 |
| Toluene | 25.00 | 25.54 | 102 | 79-122 |
| Chlorobenzene | 25.00 | 26.62 | 106 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 91 | 80-124 |
| 1,2-Dichloroethane-d4 | 94 | 79-136 |
| Toluene-d8 | 94 | 80-120 |
| Bromofluorobenzene | 102 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC409474 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130287 |
| Units: | ug/Kg | Analyzed: | 10/08/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC409474 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130287 |
| Units: | ug/Kg | Analyzed: | 10/08/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 92 | 80-124 |
| 1,2-Dichloroethane-d4 | 96 | 79-136 |
| Toluene-d8 | 94 | 80-120 |
| Bromofluorobenzene | 108 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 0.9434 |
| MSS Lab ID: | 198144-002 | Batch#: | 130287 |
| Matrix: | Soil | Sampled: | 10/05/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/08/07 |

Type: MS Lab ID: QC409517

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.5076 | 47.17 | 38.30 | 81 | 61-145 |
| Benzene | <0.2990 | 47.17 | 38.93 | 83 | 57-123 |
| Trichloroethene | <0.6858 | 47.17 | 40.46 | 86 | 52-141 |
| Toluene | <0.3016 | 47.17 | 37.56 | 80 | 53-126 |
| Chlorobenzene | <0.2335 | 47.17 | 39.32 | 83 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 88 | 80-124 |
| 1,2-Dichloroethane-d4 | 95 | 79-136 |
| Toluene-d8 | 92 | 80-120 |
| Bromofluorobenzene | 94 | 80-122 |

Type: MSD Lab ID: QC409518

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 47.17 | 40.38 | 86 | 61-145 | 5 | 26 |
| Benzene | 47.17 | 40.40 | 86 | 57-123 | 4 | 25 |
| Trichloroethene | 47.17 | 42.87 | 91 | 52-141 | 6 | 26 |
| Toluene | 47.17 | 39.71 | 84 | 53-126 | 6 | 27 |
| Chlorobenzene | 47.17 | 41.25 | 87 | 49-121 | 5 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 89 | 80-124 |
| 1,2-Dichloroethane-d4 | 96 | 79-136 |
| Toluene-d8 | 93 | 80-120 |
| Bromofluorobenzene | 95 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-13-SS-0.0' | Batch#: | 130274 |
| Lab ID: | 198154-001 | Sampled: | 10/04/07 |
| Matrix: | Soil | Received: | 10/05/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND # | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 74 | 54-120 |
| Decachlorobiphenyl | 75 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409432 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 58 | 54-120 |
| Decachlorobiphenyl | 57 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409433 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| gamma-BHC | 13.23 | 13.69 | 104 | 44-120 |
| Heptachlor | 13.23 | 10.56 | 80 | 44-120 |
| Aldrin | 13.23 | 10.41 | 79 | 47-120 |
| Dieldrin | 26.46 | 30.57 | 116 | 50-120 |
| Endrin | 26.46 | 30.91 | 117 | 27-128 |
| 4,4'-DDT | 26.46 | 33.21 | 126 | 42-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 101 | 54-120 |
| Decachlorobiphenyl | 79 | 49-142 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0' | Batch#: | 130274 |
| MSS Lab ID: | 198049-002 | Sampled: | 10/01/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3620B
Lab ID: QC409434

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| gamma-BHC | <0.3690 | 13.28 | 9.105 | 69 | 45-122 |
| Heptachlor | <0.4798 | 13.28 | 9.355 | 70 | 49-125 |
| Aldrin | <0.3153 | 13.28 | 9.232 | 70 | 48-120 |
| Dieldrin | <0.9915 | 26.56 | 19.07 | 72 | 50-121 |
| Endrin | <1.176 | 26.56 | 18.43 | 69 | 42-123 |
| 4,4'-DDT | <1.267 | 26.56 | 22.21 # | 84 | 29-135 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 74 | 54-120 |
| Decachlorobiphenyl | 73 | 49-142 |

Type: MSD Cleanup Method: EPA 3620B
Lab ID: QC409435

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| gamma-BHC | 13.31 | 10.67 | 80 | 45-122 | 16 | 40 |
| Heptachlor | 13.31 | 11.13 | 84 | 49-125 | 17 | 42 |
| Aldrin | 13.31 | 10.67 | 80 | 48-120 | 14 | 37 |
| Dieldrin | 26.62 | 22.92 | 86 | 50-121 | 18 | 34 |
| Endrin | 26.62 | 22.52 | 85 | 42-123 | 20 | 39 |
| 4,4'-DDT | 26.62 | 23.64 # | 89 | 29-135 | 6 | 51 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 82 | 54-120 |
| Decachlorobiphenyl | 84 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | B-13-SS-0.0' | Batch#: | 130274 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | ug/Kg | Received: | 10/05/07 |
| Basis: | as received | Prepared: | 10/07/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/08/07 |

Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198154-001

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 107 | 66-140 |
| Decachlorobiphenyl | 98 | 51-152 |

Type: BLANK Cleanup Method: EPA 3665A
Lab ID: QC409432

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 94 | 66-140 |
| Decachlorobiphenyl | 105 | 51-152 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409436 | Batch#: | 130274 |
| Matrix: | Soil | Prepared: | 10/07/07 |
| Units: | ug/Kg | Analyzed: | 10/08/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3665A

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Aroclor-1016 | 164.1 | 195.3 | 119 | 69-142 |
| Aroclor-1260 | 164.1 | 191.7 | 117 | 69-155 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 99 | 66-140 |
| Decachlorobiphenyl | 110 | 51-152 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130274 |
| MSS Lab ID: | 198070-005 | Sampled: | 10/02/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | ug/Kg | Prepared: | 10/07/07 |
| Basis: | as received | Analyzed: | 10/08/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC409437

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Aroclor-1016 | <2.656 | 166.2 | 186.7 | 112 | 62-139 |
| Aroclor-1260 | <2.695 | 166.2 | 176.7 | 106 | 54-143 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 102 | 66-140 |
| Decachlorobiphenyl | 107 | 51-152 |

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC409438

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Aroclor-1016 | 166.2 | 197.8 | 119 | 62-139 | 6 | 33 |
| Aroclor-1260 | 166.2 | 193.3 | 116 | 54-143 | 9 | 34 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 102 | 66-140 |
| Decachlorobiphenyl | 106 | 51-152 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-13-SS-0.0' | Basis: | as received |
| Lab ID: | 198154-001 | Sampled: | 10/04/07 |
| Matrix: | Soil | Received: | 10/05/07 |
| Units: | mg/Kg | | |

| Analyte | Result | RL | Diln Fac | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Arsenic | 6.7 | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Barium | 85 | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.34 | 0.10 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Chromium | 65 | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Cobalt | 16 | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Copper | 17 | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Lead | 12 | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.88 | 0.033 | 2.000 | 130392 | 10/10/07 | 10/10/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Nickel | 73 | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.5 | 0.50 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Vanadium | 49 | 0.25 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Zinc | 35 | 1.0 | 1.000 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-13-SS-45' | Basis: | as received |
| Lab ID: | 198154-002 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/04/07 |
| Units: | mg/Kg | Received: | 10/05/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.50 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Arsenic | 29 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Barium | 36 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.34 | 0.10 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Chromium | 22 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Cobalt | 17 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Copper | 44 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Lead | 7.8 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.43 | 0.020 | 130392 | 10/10/07 | 10/10/07 | METHOD | EPA 7471A |
| Molybdenum | 1.1 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Nickel | 46 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Selenium | 3.9 | 0.50 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Silver | 0.25 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Thallium | 1.1 | 0.50 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Vanadium | 35 | 0.25 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Zinc | 61 | 1.0 | 130325 | 10/08/07 | 10/09/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409617 | Batch#: | 130325 |
| Matrix: | Soil | Prepared: | 10/08/07 |
| Units: | mg/Kg | Analyzed: | 10/09/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | ND | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.25 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 130325 |
| Units: | mg/Kg | Prepared: | 10/08/07 |
| Basis: | as received | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409618

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 90.99 | 91 | 80-120 |
| Arsenic | 50.00 | 46.95 | 94 | 80-120 |
| Barium | 100.0 | 91.97 | 92 | 80-120 |
| Beryllium | 2.500 | 2.408 | 96 | 80-120 |
| Cadmium | 10.00 | 9.488 | 95 | 80-120 |
| Chromium | 100.0 | 90.06 | 90 | 80-120 |
| Cobalt | 25.00 | 22.17 | 89 | 80-120 |
| Copper | 12.50 | 11.24 | 90 | 80-120 |
| Lead | 100.0 | 89.17 | 89 | 80-120 |
| Molybdenum | 20.00 | 18.64 | 93 | 80-120 |
| Nickel | 25.00 | 22.44 | 90 | 80-120 |
| Selenium | 50.00 | 46.57 | 93 | 80-120 |
| Silver | 10.00 | 8.604 | 86 | 80-120 |
| Thallium | 50.00 | 44.59 | 89 | 80-120 |
| Vanadium | 25.00 | 22.57 | 90 | 80-120 |
| Zinc | 25.00 | 23.21 | 93 | 80-120 |

Type: BSD Lab ID: QC409619

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 94.76 | 95 | 80-120 | 4 | 20 |
| Arsenic | 50.00 | 48.62 | 97 | 80-120 | 3 | 20 |
| Barium | 100.0 | 95.57 | 96 | 80-120 | 4 | 20 |
| Beryllium | 2.500 | 2.502 | 100 | 80-120 | 4 | 20 |
| Cadmium | 10.00 | 9.786 | 98 | 80-120 | 3 | 20 |
| Chromium | 100.0 | 93.48 | 93 | 80-120 | 4 | 20 |
| Cobalt | 25.00 | 22.90 | 92 | 80-120 | 3 | 20 |
| Copper | 12.50 | 11.65 | 93 | 80-120 | 4 | 20 |
| Lead | 100.0 | 91.83 | 92 | 80-120 | 3 | 20 |
| Molybdenum | 20.00 | 19.33 | 97 | 80-120 | 4 | 20 |
| Nickel | 25.00 | 22.92 | 92 | 80-120 | 2 | 20 |
| Selenium | 50.00 | 47.94 | 96 | 80-120 | 3 | 20 |
| Silver | 10.00 | 8.986 | 90 | 80-120 | 4 | 20 |
| Thallium | 50.00 | 46.05 | 92 | 80-120 | 3 | 20 |
| Vanadium | 25.00 | 23.41 | 94 | 80-120 | 4 | 20 |
| Zinc | 25.00 | 23.83 | 95 | 80-120 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130325 |
| MSS Lab ID: | 198135-001 | Sampled: | 10/04/07 |
| Matrix: | Soil | Received: | 10/05/07 |
| Units: | mg/Kg | Prepared: | 10/08/07 |
| Basis: | as received | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409620

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 1.736 | 89.29 | 51.52 | 56 | 1-122 |
| Arsenic | 2.184 | 44.64 | 48.76 | 104 | 72-120 |
| Barium | 113.6 | 89.29 | 169.8 | 63 | 49-139 |
| Beryllium | 0.06166 | 2.232 | 2.170 | 94 | 80-120 |
| Cadmium | 0.9771 | 8.929 | 8.941 | 89 | 74-120 |
| Chromium | 10.66 | 89.29 | 88.58 | 87 | 65-120 |
| Cobalt | 1.369 | 22.32 | 19.34 | 81 | 60-120 |
| Copper | 24.97 | 11.16 | 44.98 | 179 * | 47-146 |
| Lead | 52.95 | 89.29 | 164.1 | 125 * | 53-123 |
| Molybdenum | 0.4365 | 17.86 | 16.18 | 88 | 66-120 |
| Nickel | 12.86 | 22.32 | 34.82 | 98 | 43-142 |
| Selenium | 0.2957 | 44.64 | 42.89 | 95 | 71-120 |
| Silver | 0.2760 | 8.929 | 8.268 | 90 | 66-120 |
| Thallium | 0.1462 | 44.64 | 32.96 | 73 | 62-120 |
| Vanadium | 13.38 | 22.32 | 33.49 | 90 | 52-139 |
| Zinc | 864.1 | 22.32 | 990.1 >LR | 564 NM | 42-147 |

Type: MSD Lab ID: QC409621

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 97.09 | 59.21 | 59 | 1-122 | 6 | 30 |
| Arsenic | 48.54 | 54.54 | 108 | 72-120 | 3 | 20 |
| Barium | 97.09 | 182.4 | 71 | 49-139 | 3 | 23 |
| Beryllium | 2.427 | 2.349 | 94 | 80-120 | 0 | 20 |
| Cadmium | 9.709 | 9.713 | 90 | 74-120 | 1 | 20 |
| Chromium | 97.09 | 92.85 | 85 | 65-120 | 3 | 20 |
| Cobalt | 24.27 | 21.06 | 81 | 60-120 | 1 | 24 |
| Copper | 12.14 | 47.36 | 184 * | 47-146 | 2 | 21 |
| Lead | 97.09 | 155.1 | 105 | 53-123 | 11 | 28 |
| Molybdenum | 19.42 | 17.48 | 88 | 66-120 | 1 | 20 |
| Nickel | 24.27 | 35.78 | 94 | 43-142 | 3 | 26 |
| Selenium | 48.54 | 46.67 | 96 | 71-120 | 0 | 20 |
| Silver | 9.709 | 8.911 | 89 | 66-120 | 1 | 20 |
| Thallium | 48.54 | 37.01 | 76 | 62-120 | 3 | 20 |
| Vanadium | 24.27 | 36.67 | 96 | 52-139 | 4 | 20 |
| Zinc | 24.27 | 1,199 >LR | 1380 NM | 42-147 | NC | 27 |

*= Value outside of QC limits; see narrative
NC= Not Calculated
NM= Not Meaningful: Sample concentration > 4X spike concentration
>LR= Response exceeds instrument's linear range
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409898 | Batch#: | 130392 |
| Matrix: | Soil | Prepared: | 10/10/07 |
| Units: | mg/Kg | Analyzed: | 10/10/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130392 |
| Units: | mg/Kg | Prepared: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/10/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409899 | 0.5000 | 0.5370 | 107 | 80-120 | | |
| BSD | QC409900 | 0.5000 | 0.5250 | 105 | 80-120 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130392 |
| MSS Lab ID: | 198135-001 | Sampled: | 10/04/07 |
| Matrix: | Soil | Received: | 10/05/07 |
| Units: | mg/Kg | Prepared: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/10/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409902 | 0.4034 | 0.5000 | 0.8470 | 89 | 70-143 | | |
| MSD | QC409903 | | 0.5000 | 0.8200 | 83 | 70-143 | 3 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-13-GW-38' | Diln Fac: | 1.000 |
| Lab ID: | 198154-003 | Sampled: | 10/04/07 |
| Matrix: | Filtrate | Received: | 10/05/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 41 | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Arsenic | 9.1 | 6.1 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Barium | 51 | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130391 | 10/10/07 | 10/10/07 | METHOD | EPA 7470A |
| Molybdenum | 31 | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130292 | 10/08/07 | 10/08/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409489 | Batch#: | 130292 |
| Matrix: | Water | Prepared: | 10/08/07 |
| Units: | ug/L | Analyzed: | 10/08/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 6.1 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.0 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130292 |
| Units: | ug/L | Prepared: | 10/08/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/08/07 |

Type: BS Lab ID: QC409490

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 499.4 | 100 | 80-120 |
| Arsenic | 100.0 | 114.5 | 114 | 80-120 |
| Barium | 2,000 | 1,993 | 100 | 80-120 |
| Beryllium | 50.00 | 54.75 | 110 | 80-120 |
| Cadmium | 50.00 | 51.28 | 103 | 80-120 |
| Chromium | 200.0 | 203.7 | 102 | 80-120 |
| Cobalt | 500.0 | 493.2 | 99 | 80-120 |
| Copper | 250.0 | 248.8 | 100 | 80-120 |
| Lead | 100.0 | 94.39 | 94 | 80-120 |
| Molybdenum | 400.0 | 419.3 | 105 | 80-120 |
| Nickel | 500.0 | 504.1 | 101 | 80-120 |
| Selenium | 100.0 | 106.1 | 106 | 80-120 |
| Silver | 50.00 | 49.50 | 99 | 80-120 |
| Thallium | 100.0 | 106.6 | 107 | 80-120 |
| Vanadium | 500.0 | 510.0 | 102 | 80-120 |
| Zinc | 500.0 | 520.5 | 104 | 80-120 |

Type: BSD Lab ID: QC409491

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 493.7 | 99 | 80-120 | 1 | 20 |
| Arsenic | 100.0 | 110.7 | 111 | 80-120 | 3 | 20 |
| Barium | 2,000 | 1,936 | 97 | 80-120 | 3 | 20 |
| Beryllium | 50.00 | 53.24 | 106 | 80-120 | 3 | 20 |
| Cadmium | 50.00 | 49.55 | 99 | 80-120 | 3 | 20 |
| Chromium | 200.0 | 197.5 | 99 | 80-120 | 3 | 20 |
| Cobalt | 500.0 | 479.1 | 96 | 80-120 | 3 | 20 |
| Copper | 250.0 | 241.9 | 97 | 80-120 | 3 | 20 |
| Lead | 100.0 | 91.40 | 91 | 80-120 | 3 | 20 |
| Molybdenum | 400.0 | 407.2 | 102 | 80-120 | 3 | 20 |
| Nickel | 500.0 | 488.1 | 98 | 80-120 | 3 | 20 |
| Selenium | 100.0 | 102.7 | 103 | 80-120 | 3 | 20 |
| Silver | 50.00 | 49.30 | 99 | 80-120 | 0 | 20 |
| Thallium | 100.0 | 104.7 | 105 | 80-120 | 2 | 20 |
| Vanadium | 500.0 | 495.8 | 99 | 80-120 | 3 | 20 |
| Zinc | 500.0 | 505.2 | 101 | 80-120 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130292 |
| MSS Lab ID: | 198116-001 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Prepared: | 10/08/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/08/07 |

Type: MS Lab ID: QC409492

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 3.839 | 500.0 | 553.6 | 110 | 80-120 |
| Arsenic | 5.247 | 100.0 | 132.8 | 128 * | 80-127 |
| Barium | 44.95 | 2,000 | 1,882 | 92 | 80-120 |
| Beryllium | 0.8083 | 50.00 | 49.15 | 97 | 80-120 |
| Cadmium | 12.47 | 50.00 | 56.98 | 89 | 80-120 |
| Chromium | 9.743 | 200.0 | 190.3 | 90 | 80-120 |
| Cobalt | 2.919 | 500.0 | 429.8 | 85 | 80-120 |
| Copper | 40.55 | 250.0 | 320.7 | 112 | 80-120 |
| Lead | 30.19 | 100.0 | 116.8 | 87 | 76-120 |
| Molybdenum | 35.42 | 400.0 | 423.1 | 97 | 80-120 |
| Nickel | 39.27 | 500.0 | 462.0 | 85 | 80-120 |
| Selenium | 5.768 | 100.0 | 126.1 | 120 | 80-128 |
| Silver | 0.8867 | 50.00 | 59.82 | 118 | 73-122 |
| Thallium | <1.616 | 100.0 | 82.16 | 82 | 78-120 |
| Vanadium | 1.241 | 500.0 | 480.4 | 96 | 80-120 |
| Zinc | 2,997 | 500.0 | 3,487 | 98 NM | 80-123 |

Type: MSD Lab ID: QC409493

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 552.4 | 110 | 80-120 | 0 | 20 |
| Arsenic | 100.0 | 129.8 | 125 | 80-127 | 2 | 20 |
| Barium | 2,000 | 1,857 | 91 | 80-120 | 1 | 20 |
| Beryllium | 50.00 | 48.91 | 96 | 80-120 | 0 | 20 |
| Cadmium | 50.00 | 58.37 | 92 | 80-120 | 2 | 20 |
| Chromium | 200.0 | 188.9 | 90 | 80-120 | 1 | 20 |
| Cobalt | 500.0 | 427.0 | 85 | 80-120 | 1 | 20 |
| Copper | 250.0 | 320.9 | 112 | 80-120 | 0 | 20 |
| Lead | 100.0 | 116.8 | 87 | 76-120 | 0 | 20 |
| Molybdenum | 400.0 | 417.3 | 95 | 80-120 | 1 | 20 |
| Nickel | 500.0 | 458.8 | 84 | 80-120 | 1 | 20 |
| Selenium | 100.0 | 119.7 | 114 | 80-128 | 5 | 20 |
| Silver | 50.00 | 61.21 | 121 | 73-122 | 2 | 20 |
| Thallium | 100.0 | 79.59 | 80 | 78-120 | 3 | 20 |
| Vanadium | 500.0 | 478.8 | 96 | 80-120 | 0 | 20 |
| Zinc | 500.0 | 3,385 | 78 NM | 80-123 | 3 | 20 |

*= Value outside of QC limits; see narrative
NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130391 |
| Lab ID: | QC409888 | Prepared: | 10/10/07 |
| Matrix: | Filtrate | Analyzed: | 10/10/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130391 |
| Matrix: | Filtrate | Prepared: | 10/10/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409889 | 5.000 | 4.940 | 99 | 80-120 | | |
| BSD | QC409890 | 5.000 | 4.950 | 99 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130391 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/03/07 |
| MSS Lab ID: | 198073-001 | Received: | 10/03/07 |
| Matrix: | Filtrate | Prepared: | 10/10/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409892 | 0.4560 | 5.000 | 5.220 | 95 | 79-125 | | |
| MSD | QC409893 | | 5.000 | 5.090 | 93 | 79-125 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-13-GW-38' | Batch#: | 130232 |
| Matrix: | Water | Sampled: | 10/04/07 14:05 |
| Units: | mg/L | Received: | 10/05/07 |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198154-003 | ND | 0.05 | 10/05/07 20:56 |
| BLANK | QC409271 | ND | 0.05 | 10/05/07 11:28 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | B-6-GW-17' | Batch#: | 130232 |
| MSS Lab ID: | 198121-003 | Sampled: | 10/04/07 10:15 |
| Matrix: | Water | Received: | 10/05/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409272 | | 1.000 | 0.9603 | 96 | 80-120 | | | 1.000 | 10/05/07 14:13 |
| BSD | QC409273 | | 1.000 | 0.9830 | 98 | 80-120 | 2 | 20 | 1.000 | 10/05/07 14:31 |
| MS | QC409351 | 0.05275 | 2.500 | 2.464 | 96 | 80-120 | | | 5.000 | 10/05/07 19:29 |
| MSD | QC409352 | | 2.500 | 2.501 | 98 | 80-120 | 2 | 20 | 5.000 | 10/05/07 19:47 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-13-SS-45' | Batch#: | 130304 |
| Matrix: | Soil | Sampled: | 10/04/07 13:55 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | | |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198154-002 | ND | 0.5 | 10/08/07 15:53 |
| BLANK | QC409544 | ND | 0.5 | 10/08/07 12:58 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198154 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Field ID: | B-12-SS-0.0' | Batch#: | 130304 |
| MSS Lab ID: | 198049-002 | Sampled: | 10/01/07 09:00 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409545 | | 10.00 | 10.34 | 103 | 80-120 | | | 1.000 | 10/08/07 13:15 |
| BSD | QC409546 | | 10.00 | 9.983 | 100 | 80-120 | 3 | 20 | 1.000 | 10/08/07 13:33 |
| MS | QC409587 | 2.349 | 5.100 | 6.705 | 85 | 50-120 | | | 1.020 | 10/08/07 16:52 |
| MSD | QC409588 | | 5.100 | 6.956 | 90 | 50-120 | 4 | 30 | 1.020 | 10/08/07 17:10 |

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198154

# Chain of Custody Record

| | | | | |
|---|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/5/07 | 1827-15 – H |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: | 1 of 1 COCs |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | | Job No. 379-1827-15-02 |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | | SDG No. |
| Project Name: Cloverdale Project | ☐ 1 week | | | |
| Site: Cloverdale, Ca | ☐ 2 days | | | |
| C&T-WO-07-002 | ☐ 1 day | | | |

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|
| -1 | B-13-SS-0.0' * | 10/4/05 | 12:00 | poly | SO | 1 | |
| -2 | B-13-SS-45' | 10/4/05 | 13:55 | poly | SO | 1 | |
| -3 | B-13-GW-38' | 10/4/05 | 14:05 | VOA | GW | 3 | |
| | | | | VOA | | 3 | |
| | | | | 1L amber | | 2 | |
| | | | | 750 ml poly | | 1 | |
| | | | | 250 ml poly | | 1 | |
| -4 | Trip Blank | | | VOA | AQ | 1 | |

| Sample Identification | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 |
|---|---|---|---|---|---|---|---|
| B-13-SS-0.0' | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| B-13-SS-45' | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| B-13-GW-38' | ✓ | | | | | | |
| | | | | ✓ | | | |
| | | | ✓ | | | | |
| | | ✓ | | | | | |
| | | | | | ✓ | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

**Special Instructions/QC Requirements & Comments:**

REC D ON ICE) intact

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Weiss Associates | 10/5/07 17:35 | [signature] | Curtis & Tompkins | 10/5/07 5:36pm |
| | | | | | |
| | | | | | |

* Logged in as 10/4/07. ZGW 10/5/07

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-14-SS-53' | 198195-001 |
| B-14-GW-45' | 198195-002 |
| TRIP BLANK | 198195-003 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 10/30/2007
Project Manager

Signature: _____ Date: 10/30/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198195** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/09/07** |
| Samples Received: | **10/09/07** |

This hardcopy data package contains sample and QC results for one soil sample and one water sample, requested for the above referenced project on 10/09/07. The samples were received cold and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
High surrogate recovery was observed for trifluorotoluene (FID) in the MS for batch 130396; the corresponding bromofluorobenzene (FID) surrogate recovery was within limits, and the parent sample was not a project sample. Sample BV-14-SS-53'(198195-001) was received in a polyethylene container. No other analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
Sample BV-14-SS-53'(198195-001) was received in a polyethylene container. No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
Sample BV-14-SS-53'(198195-001) was received in a polyethylene container. No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Soil:**
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-14-GW-45' | Batch#: | 130396 |
| Matrix: | Water | Sampled: | 10/08/07 |
| Units: | ug/L | Received: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Type: SAMPLE Analyzed: 10/11/07
Lab ID: 198195-002

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 97 | 73-134 |
| Bromofluorobenzene (FID) | 94 | 77-140 |

Type: BLANK Analyzed: 10/10/07
Lab ID: QC409921

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 102 | 73-134 |
| Bromofluorobenzene (FID) | 95 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC409922 | Batch#: | 130396 |
| Matrix: | Water | Analyzed: | 10/10/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 961.2 | 96 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 117 | 73-134 |
| Bromofluorobenzene (FID) | 92 | 77-140 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130396 |
| MSS Lab ID: | 198183-003 | Sampled: | 10/08/07 |
| Matrix: | Water | Received: | 10/08/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409923

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 93.11 | 2,000 | 1,761 | 83 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 135 * | 73-134 |
| Bromofluorobenzene (FID) | 100 | 77-140 |

Type: MSD Lab ID: QC409924

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,712 | 81 | 72-120 | 3 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 132 | 73-134 |
| Bromofluorobenzene (FID) | 99 | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-14-SS-53' | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130395 |
| Units: | mg/Kg | Sampled: | 10/08/07 |
| Basis: | as received | Received: | 10/09/07 |

Type: SAMPLE Analyzed: 10/11/07
Lab ID: 198195-001

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 93 | 71-132 |
| Bromofluorobenzene (FID) | 95 | 69-145 |

Type: BLANK Analyzed: 10/10/07
Lab ID: QC409917

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 97 | 71-132 |
| Bromofluorobenzene (FID) | 99 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC409918 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130395 |
| Units: | mg/Kg | Analyzed: | 10/10/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 5.000 | 5.263 | 105 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 100 | 69-145 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 198144-002 | Batch#: | 130395 |
| Matrix: | Soil | Sampled: | 10/05/07 |
| Units: | mg/Kg | Received: | 10/05/07 |
| Basis: | as received | Analyzed: | 10/10/07 |

Type: MS Lab ID: QC409919

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 0.2430 | 9.804 | 7.760 | 77 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 110 | 71-132 |
| Bromofluorobenzene (FID) | 104 | 69-145 |

Type: MSD Lab ID: QC409920

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 10.20 | 7.782 | 74 | 43-120 | 4 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 109 | 71-132 |
| Bromofluorobenzene (FID) | 103 | 69-145 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-14-GW-45' | Batch#: | 130435 |
| Matrix: | Water | Sampled: | 10/08/07 |
| Units: | ug/L | Received: | 10/09/07 |
| Diln Fac: | 1.000 | Prepared: | 10/11/07 |

Type: SAMPLE
Lab ID: 198195-002

Cleanup Method: EPA 3630C

| Analyte | Result | RL | MDL | Analyzed |
|---|---|---|---|---|
| Diesel C10-C24 | 280 Y | 50 | | 10/12/07 |
| Diesel C10-C24 (SGCU) | 110 Y | 50 | | 11/02/07 |
| Motor Oil C24-C36 | 370 | 300 | 64 | 10/12/07 |
| Motor Oil C24-C36 (SGCU) | 250 J | 300 | 130 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 109 | 61-133 | 10/12/07 |
| Hexacosane (SGCU) | 102 | 61-133 | 11/02/07 |

Type: BLANK
Lab ID: QC410090

Analyzed: 10/12/07
Cleanup Method: EPA 3630C

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Diesel C10-C24 (SGCU) | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 56 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 95 | 61-133 |
| Hexacosane (SGCU) | 88 | 61-133 |

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410091 | Batch#: | 130435 |
| Matrix: | Water | Prepared: | 10/11/07 |
| Units: | ug/L | Analyzed: | 10/12/07 |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 1,823 | 73 | 58-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 90 | 61-133 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130435 |
| MSS Lab ID: | 198077-001 | Sampled: | 10/03/07 |
| Matrix: | Water | Received: | 10/03/07 |
| Units: | ug/L | Prepared: | 10/11/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/12/07 |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410092

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | <19.31 | 2,500 | 2,114 | 85 | 58-129 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 83 | 61-133 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410093

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,336 | 93 | 58-129 | 10 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 93 | 61-133 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130435 |
| MSS Lab ID: | 198119-008 | Sampled: | 10/04/07 |
| Matrix: | Water | Received: | 10/04/07 |
| Units: | ug/L | Prepared: | 10/11/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/12/07 |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410094

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 20.71 | 2,500 | 2,187 | 87 | 58-129 |

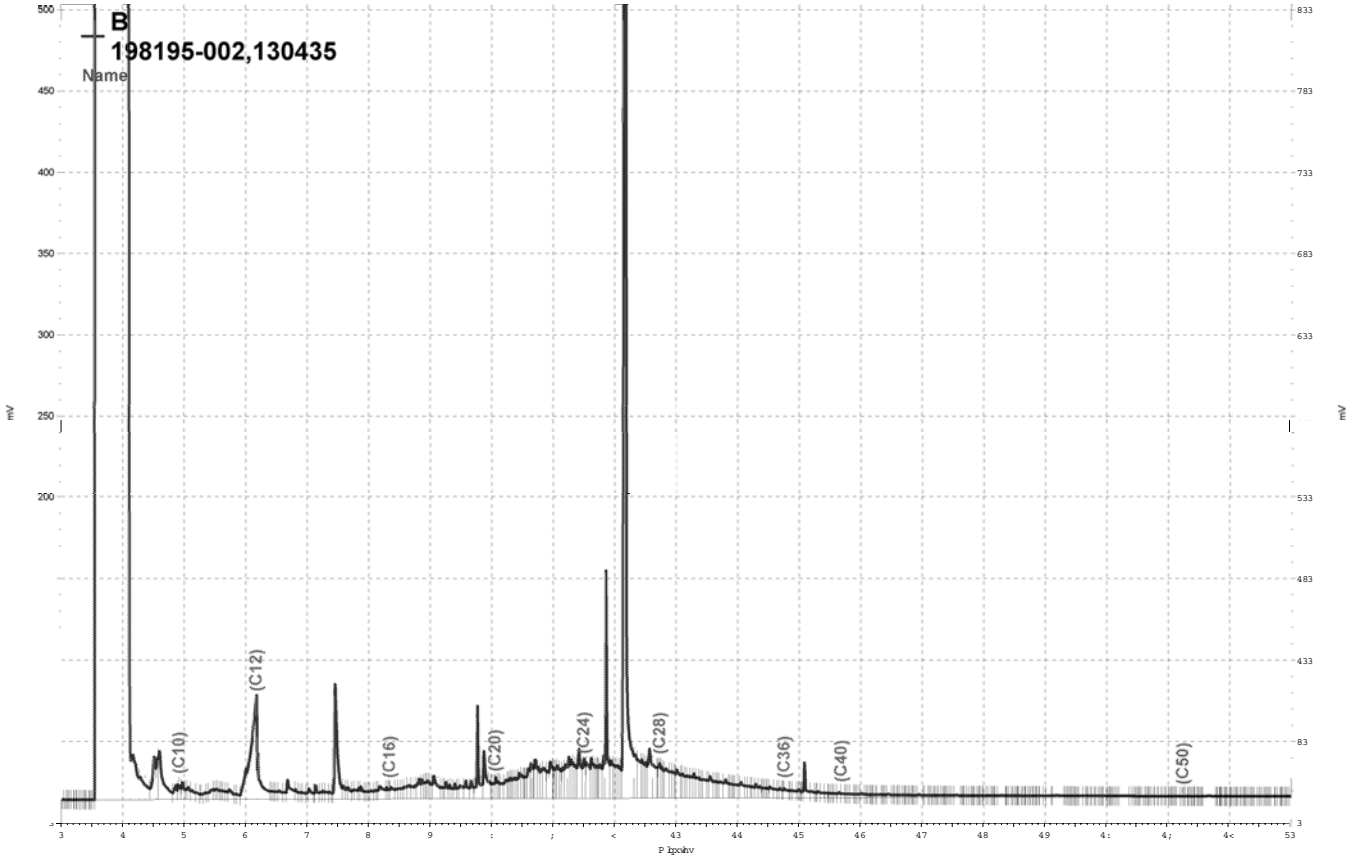
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 108 | 61-133 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410095

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,160 | 86 | 58-129 | 1 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 105 | 61-133 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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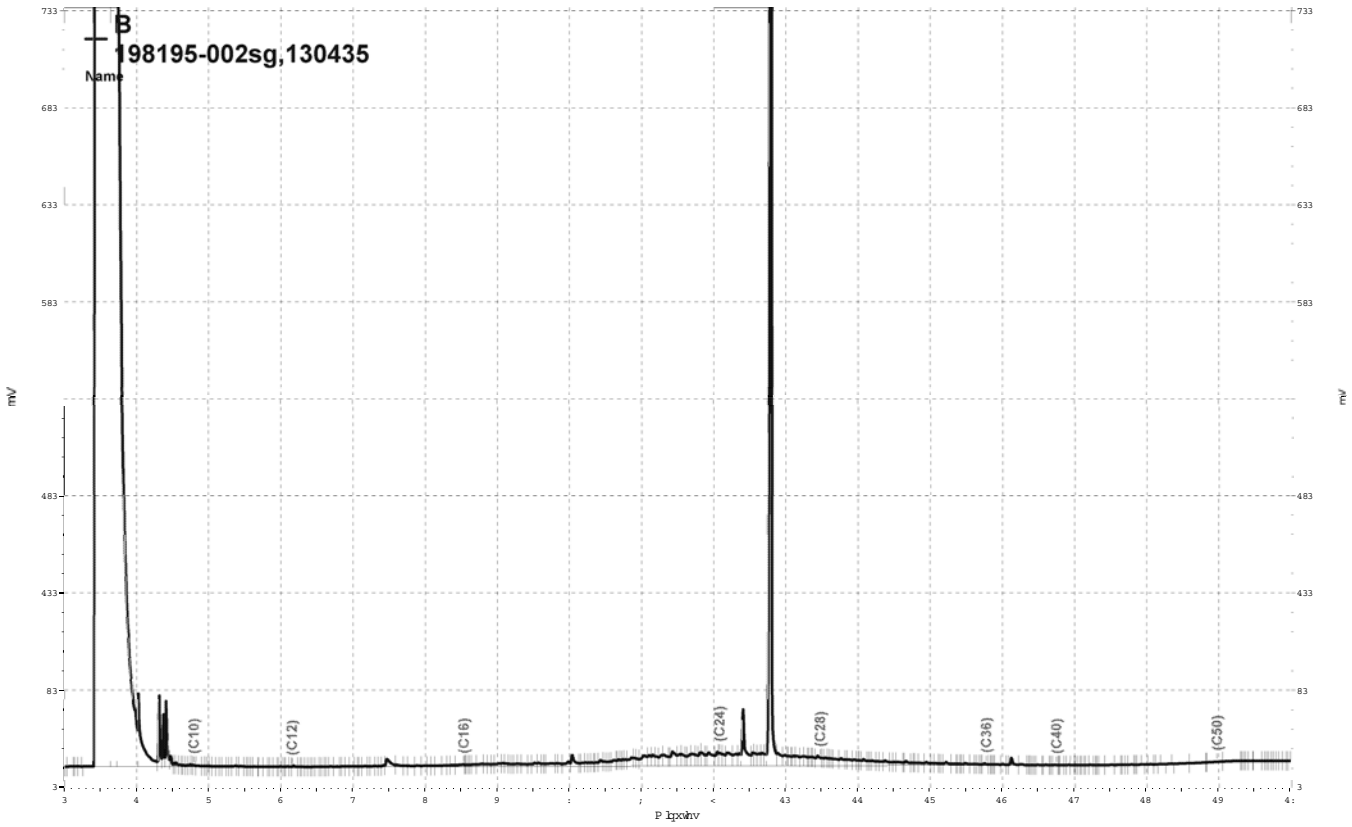
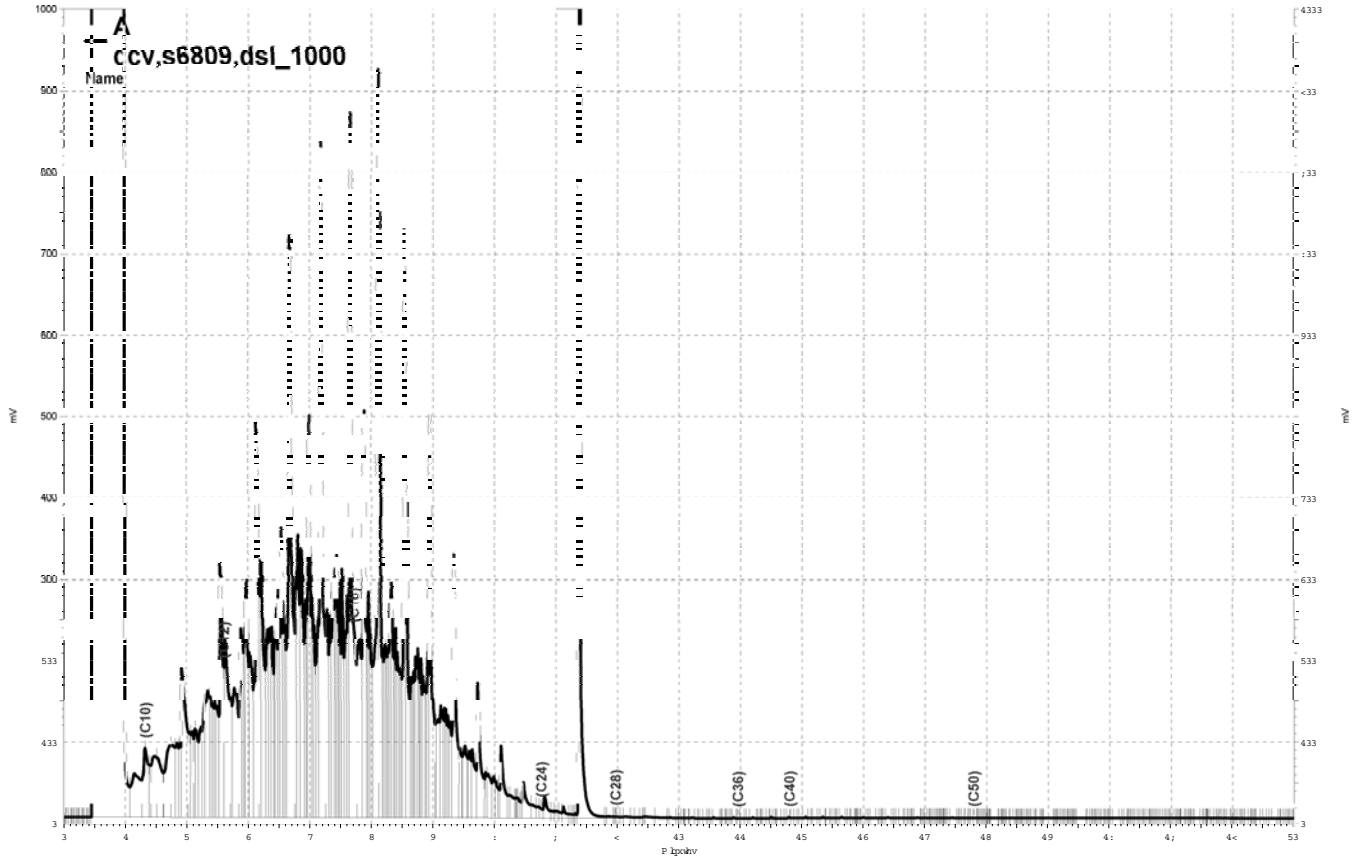



_Olp v_jgulyh_h}fkurp _Surmhfw_J F59_Gdwd_639e344/E

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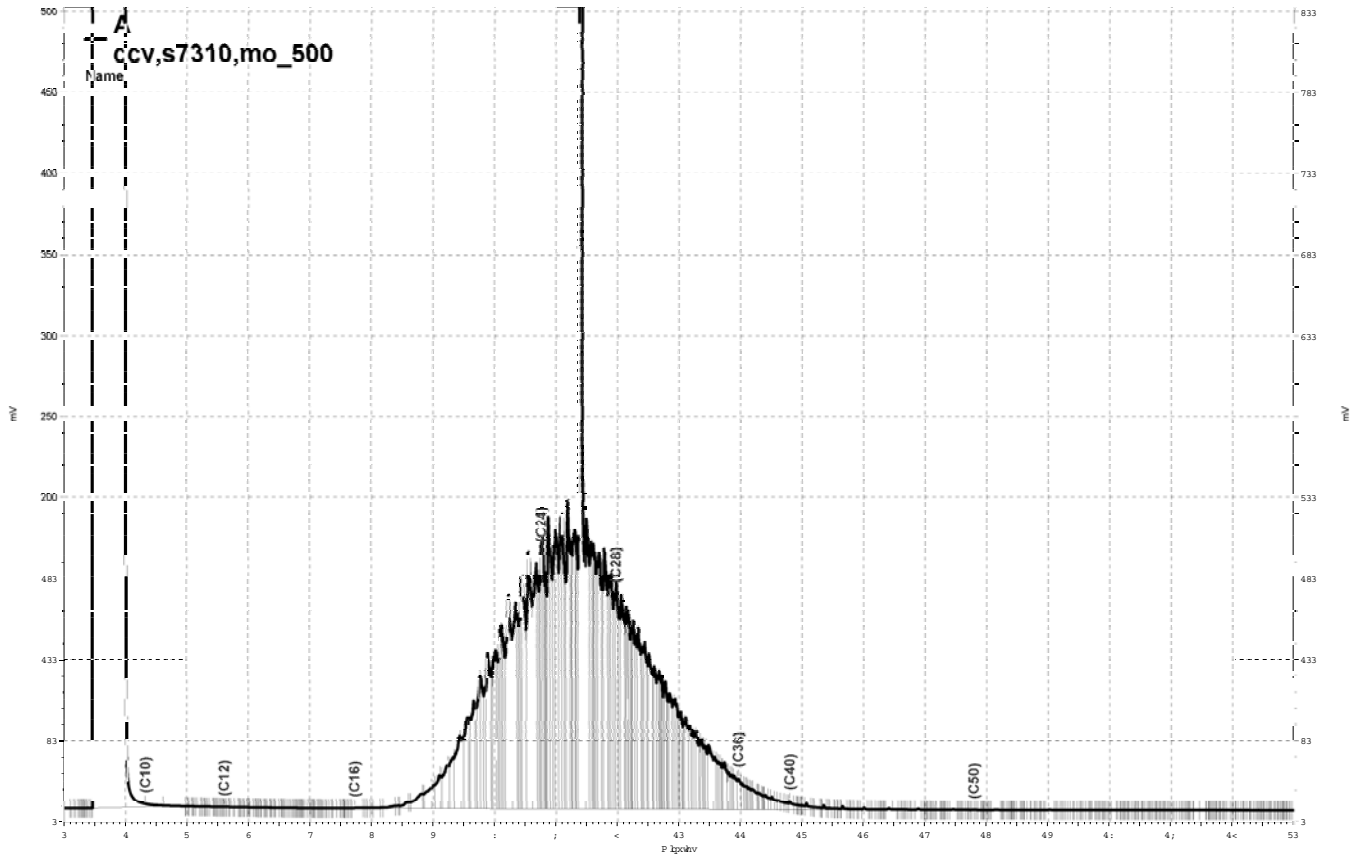


_Olp v_jgulyh_h}fkurp _Surmhfwv_J F44D_Gdwd_5;7d374/D

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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-14-SS-53' | Batch#: | 130512 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | mg/Kg | Received: | 10/09/07 |
| Basis: | as received | Prepared: | 10/13/07 |
| Diln Fac: | 1.000 | | |

Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198195-001

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 19 | 1.0 |
| Motor Oil C24-C36 | 35 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 101 | 46-128 |

Type: BLANK Analyzed: 10/15/07
Lab ID: QC410400

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 0.99 |
| Motor Oil C24-C36 | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 98 | 46-128 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410401 | Batch#: | 130512 |
| Matrix: | Soil | Prepared: | 10/13/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 49.77 | 36.17 | 73 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 77 | 46-128 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130512 |
| MSS Lab ID: | 198070-001 | Sampled: | 10/02/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | Prepared: | 10/13/07 |
| Basis: | as received | Analyzed: | 10/16/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410402

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | 0.5333 | 49.99 | 46.40 | 92 | 31-150 |

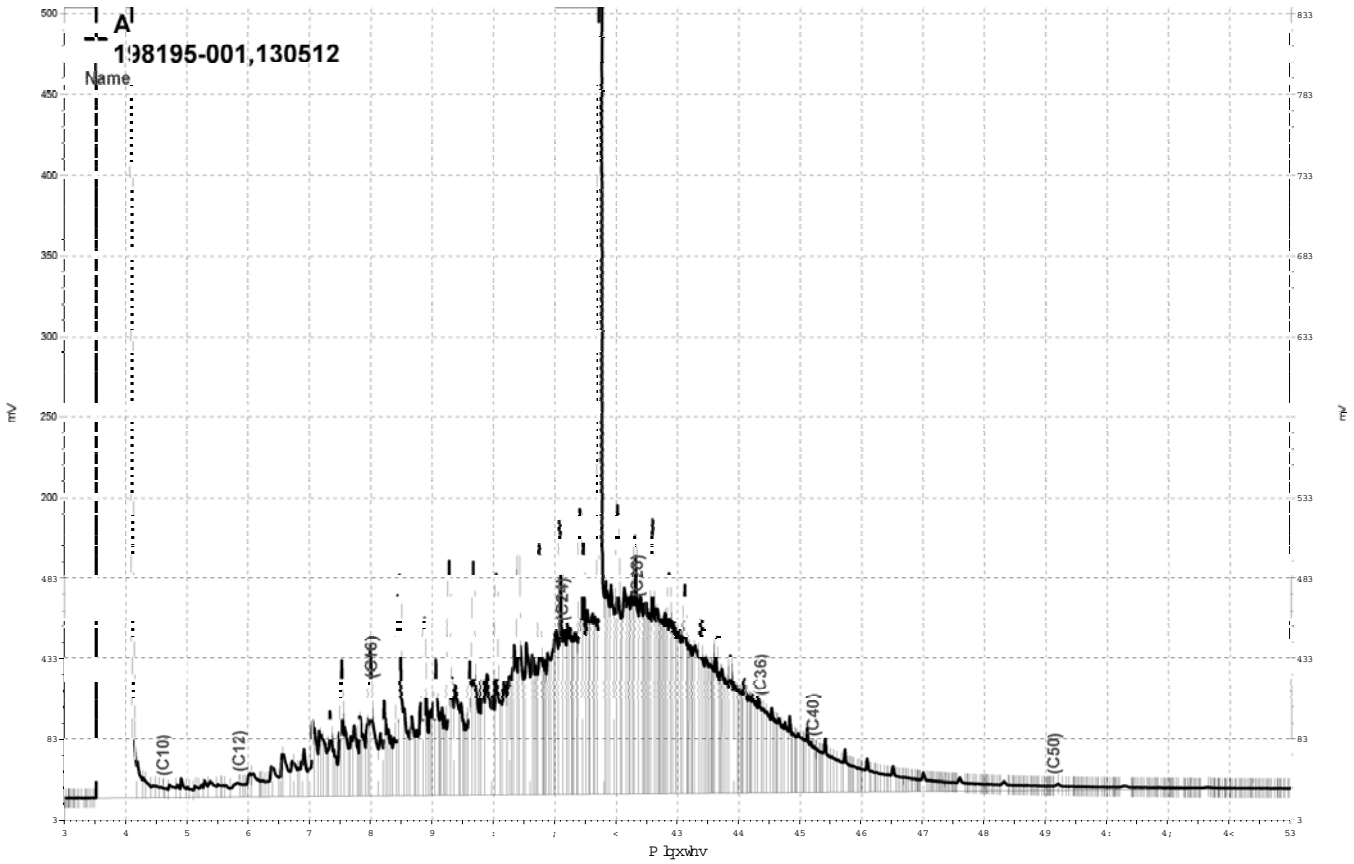
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 102 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410403

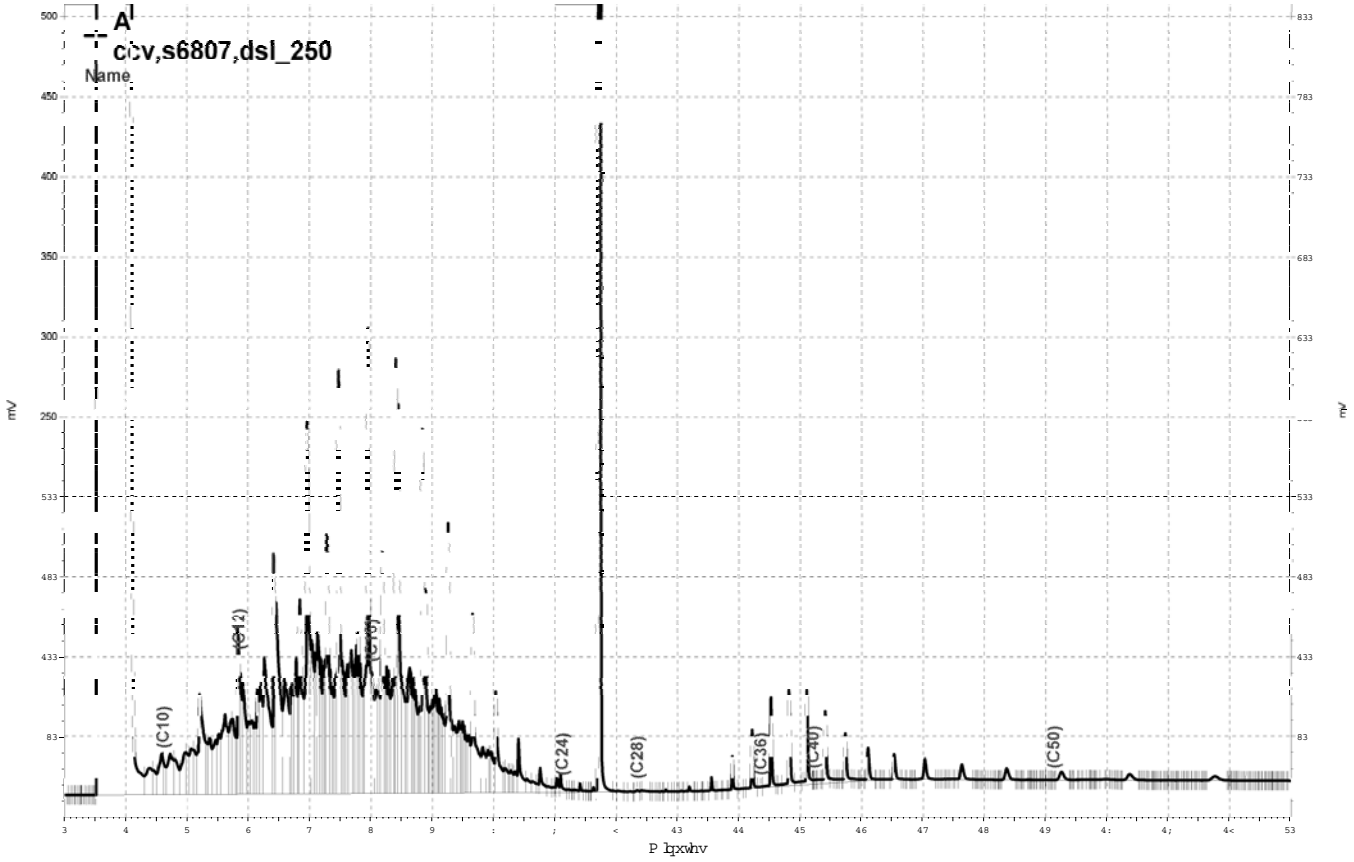
| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 49.60 | 41.26 | 82 | 31-150 | 11 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 89 | 46-128 |

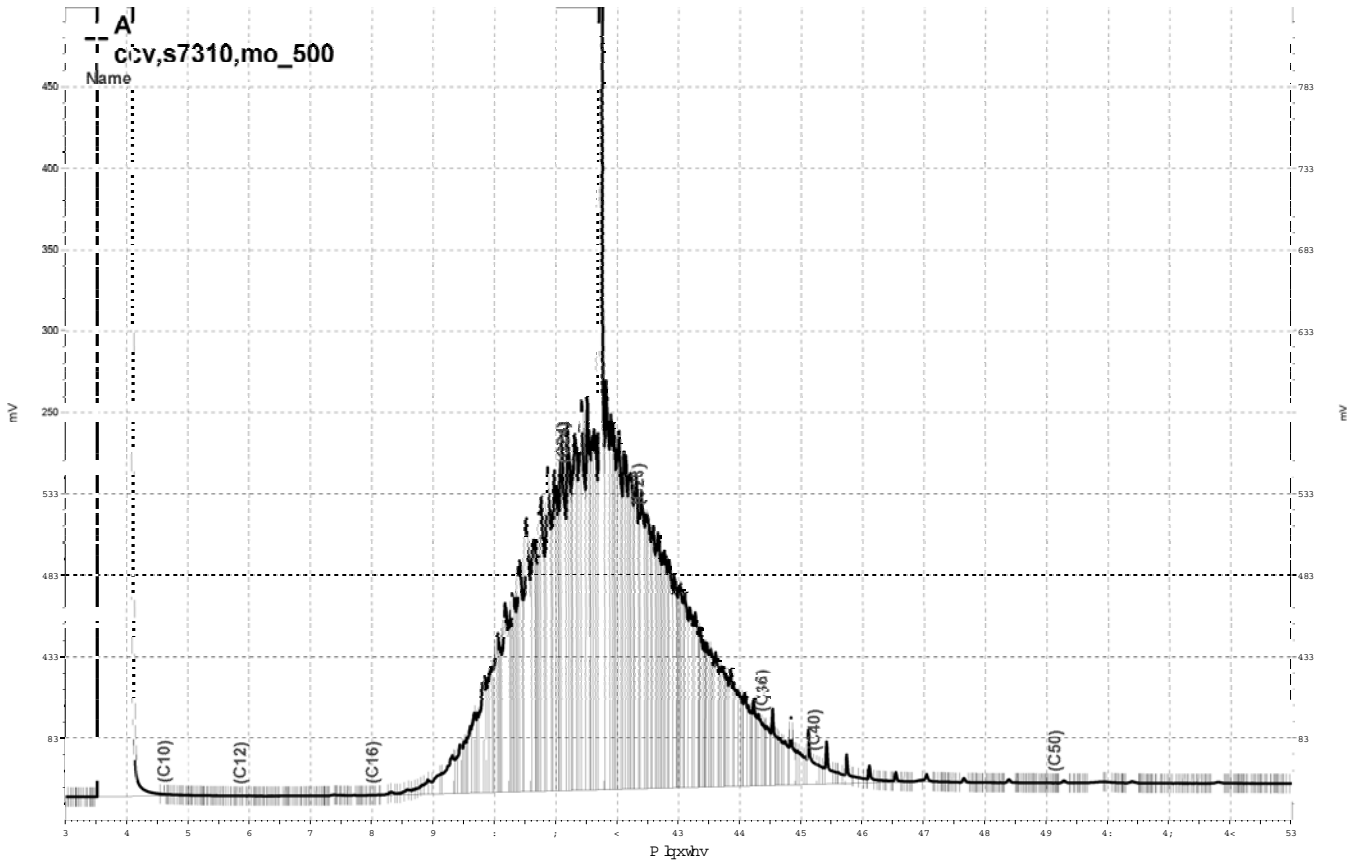
RPD= Relative Percent Difference




_Olp vjgulyh_h}fkurp_SurmfwvJF4:D_Gdwd_5;:d393/D




_Olpvjgulyh_h}fkurp_SurmfwJF4:D_Gdwd_5;:d357/D




_Olp vjgulyh_h}fkurp_SurmfwJF4:D_Gdwd_5;:d358/D

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-14-GW-45' | Batch#: | 130380 |
| Lab ID: | 198195-002 | Sampled: | 10/08/07 |
| Matrix: | Water | Received: | 10/09/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-14-GW-45' | Batch#: | 130380 |
| Lab ID: | 198195-002 | Sampled: | 10/08/07 |
| Matrix: | Water | Received: | 10/09/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 108 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 110 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 130380 |
| Units: | ug/L | Analyzed: | 10/10/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409847

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 28.30 | 113 | 80-133 |
| Benzene | 25.00 | 25.33 | 101 | 80-120 |
| Trichloroethene | 25.00 | 26.46 | 106 | 80-120 |
| Toluene | 25.00 | 25.15 | 101 | 80-122 |
| Chlorobenzene | 25.00 | 24.63 | 99 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 107 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

Type: BSD Lab ID: QC409848

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 26.55 | 106 | 80-133 | 6 | 20 |
| Benzene | 25.00 | 23.50 | 94 | 80-120 | 7 | 20 |
| Trichloroethene | 25.00 | 24.64 | 99 | 80-120 | 7 | 20 |
| Toluene | 25.00 | 23.67 | 95 | 80-122 | 6 | 20 |
| Chlorobenzene | 25.00 | 23.72 | 95 | 80-120 | 4 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 103 | 74-137 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409849 | Batch#: | 130380 |
| Matrix: | Water | Analyzed: | 10/10/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409849 | Batch#: | 130380 |
| Matrix: | Water | Analyzed: | 10/10/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 106 | 74-137 |
| Toluene-d8 | 103 | 80-120 |
| Bromofluorobenzene | 108 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-14-SS-53' | Diln Fac: | 0.9615 |
| Lab ID: | 198195-001 | Batch#: | 130337 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | ug/Kg | Received: | 10/09/07 |
| Basis: | as received | Analyzed: | 10/09/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.6 |
| Chloromethane | ND | 9.6 |
| Vinyl Chloride | ND | 9.6 |
| Bromomethane | ND | 9.6 |
| Chloroethane | ND | 9.6 |
| Trichlorofluoromethane | ND | 4.8 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.8 |
| 1,1-Dichloroethene | ND | 4.8 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.8 |
| MTBE | ND | 4.8 |
| trans-1,2-Dichloroethene | ND | 4.8 |
| Vinyl Acetate | ND | 48 |
| 1,1-Dichloroethane | ND | 4.8 |
| 2-Butanone | ND | 9.6 |
| cis-1,2-Dichloroethene | ND | 4.8 |
| 2,2-Dichloropropane | ND | 4.8 |
| Chloroform | ND | 4.8 |
| Bromochloromethane | ND | 4.8 |
| 1,1,1-Trichloroethane | ND | 4.8 |
| 1,1-Dichloropropene | ND | 4.8 |
| Carbon Tetrachloride | ND | 4.8 |
| 1,2-Dichloroethane | ND | 4.8 |
| Benzene | ND | 4.8 |
| Trichloroethene | ND | 4.8 |
| 1,2-Dichloropropane | ND | 4.8 |
| Bromodichloromethane | ND | 4.8 |
| Dibromomethane | ND | 4.8 |
| 4-Methyl-2-Pentanone | ND | 9.6 |
| cis-1,3-Dichloropropene | ND | 4.8 |
| Toluene | ND | 4.8 |
| trans-1,3-Dichloropropene | ND | 4.8 |
| 1,1,2-Trichloroethane | ND | 4.8 |
| 2-Hexanone | ND | 9.6 |
| 1,3-Dichloropropane | ND | 4.8 |
| Tetrachloroethene | ND | 4.8 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-14-SS-53' | Diln Fac: | 0.9615 |
| Lab ID: | 198195-001 | Batch#: | 130337 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | ug/Kg | Received: | 10/09/07 |
| Basis: | as received | Analyzed: | 10/09/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.8 |
| 1,2-Dibromoethane | ND | 4.8 |
| Chlorobenzene | ND | 4.8 |
| 1,1,1,2-Tetrachloroethane | ND | 4.8 |
| Ethylbenzene | ND | 4.8 |
| m,p-Xylenes | ND | 4.8 |
| o-Xylene | ND | 4.8 |
| Styrene | ND | 4.8 |
| Bromoform | ND | 4.8 |
| Isopropylbenzene | ND | 4.8 |
| 1,1,2,2-Tetrachloroethane | ND | 4.8 |
| 1,2,3-Trichloropropane | ND | 4.8 |
| Propylbenzene | ND | 4.8 |
| Bromobenzene | ND | 4.8 |
| 1,3,5-Trimethylbenzene | ND | 4.8 |
| 2-Chlorotoluene | ND | 4.8 |
| 4-Chlorotoluene | ND | 4.8 |
| tert-Butylbenzene | ND | 4.8 |
| 1,2,4-Trimethylbenzene | ND | 4.8 |
| sec-Butylbenzene | ND | 4.8 |
| para-Isopropyl Toluene | ND | 4.8 |
| 1,3-Dichlorobenzene | ND | 4.8 |
| 1,4-Dichlorobenzene | ND | 4.8 |
| n-Butylbenzene | ND | 4.8 |
| 1,2-Dichlorobenzene | ND | 4.8 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.8 |
| 1,2,4-Trichlorobenzene | ND | 4.8 |
| Hexachlorobutadiene | ND | 4.8 |
| Naphthalene | ND | 4.8 |
| 1,2,3-Trichlorobenzene | ND | 4.8 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 94 | 80-124 |
| 1,2-Dichloroethane-d4 | 84 | 79-136 |
| Toluene-d8 | 96 | 80-120 |
| Bromofluorobenzene | 113 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC409667 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130337 |
| Units: | ug/Kg | Analyzed: | 10/09/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 25.39 | 102 | 74-131 |
| Benzene | 25.00 | 25.27 | 101 | 77-121 |
| Trichloroethene | 25.00 | 25.18 | 101 | 77-121 |
| Toluene | 25.00 | 25.10 | 100 | 79-122 |
| Chlorobenzene | 25.00 | 24.68 | 99 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 93 | 80-124 |
| 1,2-Dichloroethane-d4 | 92 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 97 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC409668 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130337 |
| Units: | ug/Kg | Analyzed: | 10/09/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC409668 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130337 |
| Units: | ug/Kg | Analyzed: | 10/09/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 103 | 80-124 |
| 1,2-Dichloroethane-d4 | 96 | 79-136 |
| Toluene-d8 | 95 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 0.9259 |
| MSS Lab ID: | 198106-008 | Batch#: | 130337 |
| Matrix: | Soil | Sampled: | 09/28/07 |
| Units: | ug/Kg | Received: | 10/04/07 |
| Basis: | as received | Analyzed: | 10/09/07 |

Type: MS Lab ID: QC409711

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.4048 | 46.30 | 37.40 | 81 | 61-145 |
| Benzene | <0.2822 | 46.30 | 34.97 | 76 | 57-123 |
| Trichloroethene | <0.3985 | 46.30 | 36.89 | 80 | 52-141 |
| Toluene | <0.3824 | 46.30 | 36.32 | 78 | 53-126 |
| Chlorobenzene | <0.2585 | 46.30 | 33.67 | 73 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 93 | 80-124 |
| 1,2-Dichloroethane-d4 | 86 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 97 | 80-122 |

Type: MSD Lab ID: QC409712

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 46.30 | 38.59 | 83 | 61-145 | 3 | 26 |
| Benzene | 46.30 | 35.26 | 76 | 57-123 | 1 | 25 |
| Trichloroethene | 46.30 | 37.21 | 80 | 52-141 | 1 | 26 |
| Toluene | 46.30 | 36.95 | 80 | 53-126 | 2 | 27 |
| Chlorobenzene | 46.30 | 34.14 | 74 | 49-121 | 1 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 92 | 80-124 |
| 1,2-Dichloroethane-d4 | 85 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-14-SS-53' | Basis: | as received |
| Lab ID: | 198195-001 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | mg/Kg | Received: | 10/09/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 1.7 | 0.50 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Arsenic | 6.5 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Barium | 72 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.31 | 0.10 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Chromium | 32 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Cobalt | 11 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Copper | 31 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Lead | 4.9 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.095 | 0.020 | 130392 | 10/10/07 | 10/10/07 | METHOD | EPA 7471A |
| Molybdenum | 0.67 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Nickel | 53 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.4 | 0.50 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Vanadium | 33 | 0.25 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |
| Zinc | 38 | 1.0 | 130360 | 10/09/07 | 10/09/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409777 | Batch#: | 130360 |
| Matrix: | Soil | Prepared: | 10/09/07 |
| Units: | mg/Kg | Analyzed: | 10/09/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | ND | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.25 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 130360 |
| Units: | mg/Kg | Prepared: | 10/09/07 |
| Basis: | as received | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409778

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 92.67 | 93 | 80-120 |
| Arsenic | 50.00 | 51.72 | 103 | 80-120 |
| Barium | 100.0 | 99.79 | 100 | 80-120 |
| Beryllium | 2.500 | 2.621 | 105 | 80-120 |
| Cadmium | 10.00 | 10.20 | 102 | 80-120 |
| Chromium | 100.0 | 96.38 | 96 | 80-120 |
| Cobalt | 25.00 | 23.77 | 95 | 80-120 |
| Copper | 12.50 | 12.04 | 96 | 80-120 |
| Lead | 100.0 | 96.40 | 96 | 80-120 |
| Molybdenum | 20.00 | 20.04 | 100 | 80-120 |
| Nickel | 25.00 | 24.07 | 96 | 80-120 |
| Selenium | 50.00 | 49.60 | 99 | 80-120 |
| Silver | 10.00 | 9.327 | 93 | 80-120 |
| Thallium | 50.00 | 48.07 | 96 | 80-120 |
| Vanadium | 25.00 | 24.17 | 97 | 80-120 |
| Zinc | 25.00 | 24.66 | 99 | 80-120 |

Type: BSD Lab ID: QC409779

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 86.21 | 86 | 80-120 | 7 | 20 |
| Arsenic | 50.00 | 47.72 | 95 | 80-120 | 8 | 20 |
| Barium | 100.0 | 91.62 | 92 | 80-120 | 9 | 20 |
| Beryllium | 2.500 | 2.404 | 96 | 80-120 | 9 | 20 |
| Cadmium | 10.00 | 9.378 | 94 | 80-120 | 8 | 20 |
| Chromium | 100.0 | 88.76 | 89 | 80-120 | 8 | 20 |
| Cobalt | 25.00 | 21.83 | 87 | 80-120 | 9 | 20 |
| Copper | 12.50 | 11.08 | 89 | 80-120 | 8 | 20 |
| Lead | 100.0 | 88.36 | 88 | 80-120 | 9 | 20 |
| Molybdenum | 20.00 | 18.51 | 93 | 80-120 | 8 | 20 |
| Nickel | 25.00 | 21.99 | 88 | 80-120 | 9 | 20 |
| Selenium | 50.00 | 45.76 | 92 | 80-120 | 8 | 20 |
| Silver | 10.00 | 8.614 | 86 | 80-120 | 8 | 20 |
| Thallium | 50.00 | 44.28 | 89 | 80-120 | 8 | 20 |
| Vanadium | 25.00 | 22.22 | 89 | 80-120 | 8 | 20 |
| Zinc | 25.00 | 22.73 | 91 | 80-120 | 8 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130360 |
| MSS Lab ID: | 198179-001 | Sampled: | 10/08/07 |
| Matrix: | Soil | Received: | 10/08/07 |
| Units: | mg/Kg | Prepared: | 10/09/07 |
| Basis: | as received | Analyzed: | 10/09/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409780

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 1.871 | 95.24 | 31.24 | 31 | 1-122 |
| Arsenic | 4.506 | 47.62 | 48.37 | 92 | 72-120 |
| Barium | 131.7 | 95.24 | 233.1 | 106 | 49-139 |
| Beryllium | 0.4706 | 2.381 | 2.602 | 90 | 80-120 |
| Cadmium | 0.04620 | 9.524 | 8.256 | 86 | 74-120 |
| Chromium | 27.87 | 95.24 | 104.0 | 80 | 65-120 |
| Cobalt | 6.129 | 23.81 | 25.32 | 81 | 60-120 |
| Copper | 17.51 | 11.90 | 27.78 | 86 | 47-146 |
| Lead | 24.03 | 95.24 | 110.5 | 91 | 53-123 |
| Molybdenum | 0.8130 | 19.05 | 15.55 | 77 | 66-120 |
| Nickel | 28.83 | 23.81 | 47.75 | 79 | 43-142 |
| Selenium | 1.323 | 47.62 | 43.40 | 88 | 71-120 |
| Silver | <0.01782 | 9.524 | 8.011 | 84 | 66-120 |
| Thallium | 0.2177 | 47.62 | 36.18 | 76 | 62-120 |
| Vanadium | 29.01 | 23.81 | 48.85 | 83 | 52-139 |
| Zinc | 49.95 | 23.81 | 70.18 | 85 | 42-147 |

Type: MSD Lab ID: QC409781

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 99.01 | 30.77 | 29 | 1-122 | 5 | 30 |
| Arsenic | 49.50 | 49.07 | 90 | 72-120 | 2 | 20 |
| Barium | 99.01 | 221.5 | 91 | 49-139 | 7 | 23 |
| Beryllium | 2.475 | 2.684 | 89 | 80-120 | 0 | 20 |
| Cadmium | 9.901 | 8.502 | 85 | 74-120 | 1 | 20 |
| Chromium | 99.01 | 108.0 | 81 | 65-120 | 1 | 20 |
| Cobalt | 24.75 | 27.09 | 85 | 60-120 | 4 | 24 |
| Copper | 12.38 | 28.03 | 85 | 47-146 | 1 | 21 |
| Lead | 99.01 | 106.6 | 83 | 53-123 | 7 | 28 |
| Molybdenum | 19.80 | 16.03 | 77 | 66-120 | 1 | 20 |
| Nickel | 24.75 | 49.19 | 82 | 43-142 | 1 | 26 |
| Selenium | 49.50 | 44.96 | 88 | 71-120 | 0 | 20 |
| Silver | 9.901 | 8.257 | 83 | 66-120 | 1 | 20 |
| Thallium | 49.50 | 37.35 | 75 | 62-120 | 1 | 20 |
| Vanadium | 24.75 | 50.80 | 88 | 52-139 | 2 | 20 |
| Zinc | 24.75 | 70.87 | 85 | 42-147 | 0 | 27 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409898 | Batch#: | 130392 |
| Matrix: | Soil | Prepared: | 10/10/07 |
| Units: | mg/Kg | Analyzed: | 10/10/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130392 |
| Units: | mg/Kg | Prepared: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/10/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC409899 | 0.5000 | 0.5370 | 107 | 80-120 | | |
| BSD | QC409900 | 0.5000 | 0.5250 | 105 | 80-120 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130392 |
| MSS Lab ID: | 198135-001 | Sampled: | 10/04/07 |
| Matrix: | Soil | Received: | 10/05/07 |
| Units: | mg/Kg | Prepared: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/10/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC409902 | 0.4034 | 0.5000 | 0.8470 | 89 | 70-143 | | |
| MSD | QC409903 | | 0.5000 | 0.8200 | 83 | 70-143 | 3 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-14-GW-45' | Diln Fac: | 1.000 |
| Lab ID: | 198195-002 | Sampled: | 10/08/07 |
| Matrix: | Filtrate | Received: | 10/09/07 |
| Units: | ug/L | Prepared: | 10/11/07 |

| Analyte | Result | RL | Batch# | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Barium | 230 | 5.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130432 | 10/11/07 | METHOD | EPA 7470A |
| Molybdenum | 77 | 5.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130423 | 10/12/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130423 | 10/11/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409859 | Batch#: | 130383 |
| Matrix: | Water | Prepared: | 10/10/07 |
| Units: | ug/L | Analyzed: | 10/10/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 6.1 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.0 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130383 |
| Units: | ug/L | Prepared: | 10/10/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/10/07 |

Type: BS Lab ID: QC409860

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 463.5 | 93 | 80-120 |
| Arsenic | 100.0 | 104.7 | 105 | 80-120 |
| Barium | 2,000 | 1,939 | 97 | 80-120 |
| Beryllium | 50.00 | 52.43 | 105 | 80-120 |
| Cadmium | 50.00 | 50.24 | 100 | 80-120 |
| Chromium | 200.0 | 192.8 | 96 | 80-120 |
| Cobalt | 500.0 | 471.8 | 94 | 80-120 |
| Copper | 250.0 | 236.4 | 95 | 80-120 |
| Lead | 100.0 | 93.34 | 93 | 80-120 |
| Molybdenum | 400.0 | 400.0 | 100 | 80-120 |
| Nickel | 500.0 | 486.2 | 97 | 80-120 |
| Selenium | 100.0 | 101.5 | 102 | 80-120 |
| Silver | 50.00 | 47.33 | 95 | 80-120 |
| Thallium | 100.0 | 105.5 | 106 | 80-120 |
| Vanadium | 500.0 | 482.8 | 97 | 80-120 |
| Zinc | 500.0 | 505.1 | 101 | 80-120 |

Type: BSD Lab ID: QC409861

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 466.4 | 93 | 80-120 | 1 | 20 |
| Arsenic | 100.0 | 104.3 | 104 | 80-120 | 0 | 20 |
| Barium | 2,000 | 1,895 | 95 | 80-120 | 2 | 20 |
| Beryllium | 50.00 | 51.40 | 103 | 80-120 | 2 | 20 |
| Cadmium | 50.00 | 49.35 | 99 | 80-120 | 2 | 20 |
| Chromium | 200.0 | 189.2 | 95 | 80-120 | 2 | 20 |
| Cobalt | 500.0 | 466.8 | 93 | 80-120 | 1 | 20 |
| Copper | 250.0 | 232.7 | 93 | 80-120 | 2 | 20 |
| Lead | 100.0 | 93.84 | 94 | 80-120 | 1 | 20 |
| Molybdenum | 400.0 | 398.2 | 100 | 80-120 | 0 | 20 |
| Nickel | 500.0 | 475.0 | 95 | 80-120 | 2 | 20 |
| Selenium | 100.0 | 99.85 | 100 | 80-120 | 2 | 20 |
| Silver | 50.00 | 46.63 | 93 | 80-120 | 1 | 20 |
| Thallium | 100.0 | 105.8 | 106 | 80-120 | 0 | 20 |
| Vanadium | 500.0 | 476.2 | 95 | 80-120 | 1 | 20 |
| Zinc | 500.0 | 488.8 | 98 | 80-120 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | B-14-GW-45' | Batch#: | 130383 |
| MSS Lab ID: | 198195-002 | Sampled: | 10/08/07 |
| Matrix: | Water | Received: | 10/09/07 |
| Units: | ug/L | Prepared: | 10/10/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/10/07 |

Type: MS Lab ID: QC409862

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | <1.074 | 500.0 | 467.8 | 94 | 80-120 |
| Arsenic | <2.042 | 100.0 | 103.5 | 104 | 80-127 |
| Barium | 264.4 | 2,000 | 2,158 | 95 | 80-120 |
| Beryllium | 0.1546 | 50.00 | 51.79 | 103 | 80-120 |
| Cadmium | <0.1091 | 50.00 | 48.20 | 96 | 80-120 |
| Chromium | 7.700 | 200.0 | 193.0 | 93 | 80-120 |
| Cobalt | 2.740 | 500.0 | 453.3 | 90 | 80-120 |
| Copper | 10.49 | 250.0 | 246.1 | 94 | 80-120 |
| Lead | <0.6892 | 100.0 | 93.51 | 94 | 76-120 |
| Molybdenum | 76.84 | 400.0 | 481.4 | 101 | 80-120 |
| Nickel | 12.18 | 500.0 | 465.6 | 91 | 80-120 |
| Selenium | <1.469 | 100.0 | 100.4 | 100 | 80-128 |
| Silver | <0.7459 | 50.00 | 47.42 | 95 | 73-122 |
| Thallium | <1.616 | 100.0 | 100.8 | 101 | 78-120 |
| Vanadium | 7.169 | 500.0 | 481.3 | 95 | 80-120 |
| Zinc | 13.48 | 500.0 | 484.6 | 94 | 80-123 |

Type: MSD Lab ID: QC409863

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 465.2 | 93 | 80-120 | 1 | 20 |
| Arsenic | 100.0 | 104.1 | 104 | 80-127 | 1 | 20 |
| Barium | 2,000 | 2,167 | 95 | 80-120 | 0 | 20 |
| Beryllium | 50.00 | 51.88 | 103 | 80-120 | 0 | 20 |
| Cadmium | 50.00 | 48.75 | 97 | 80-120 | 1 | 20 |
| Chromium | 200.0 | 196.2 | 94 | 80-120 | 2 | 20 |
| Cobalt | 500.0 | 458.6 | 91 | 80-120 | 1 | 20 |
| Copper | 250.0 | 249.9 | 96 | 80-120 | 2 | 20 |
| Lead | 100.0 | 93.02 | 93 | 76-120 | 1 | 20 |
| Molybdenum | 400.0 | 480.1 | 101 | 80-120 | 0 | 20 |
| Nickel | 500.0 | 472.0 | 92 | 80-120 | 1 | 20 |
| Selenium | 100.0 | 103.0 | 103 | 80-128 | 3 | 20 |
| Silver | 50.00 | 47.97 | 96 | 73-122 | 1 | 20 |
| Thallium | 100.0 | 104.6 | 105 | 78-120 | 4 | 20 |
| Vanadium | 500.0 | 484.2 | 95 | 80-120 | 1 | 20 |
| Zinc | 500.0 | 494.5 | 96 | 80-123 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410023 | Batch#: | 130423 |
| Matrix: | Water | Prepared: | 10/11/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Antimony | ND | 10 | 10/11/07 |
| Arsenic | ND | 6.1 | 10/11/07 |
| Barium | ND | 5.0 | 10/11/07 |
| Beryllium | ND | 2.0 | 10/11/07 |
| Cadmium | ND | 5.0 | 10/11/07 |
| Chromium | ND | 5.0 | 10/11/07 |
| Cobalt | ND | 5.0 | 10/11/07 |
| Copper | ND | 5.0 | 10/11/07 |
| Lead | ND | 3.0 | 10/11/07 |
| Molybdenum | ND | 5.0 | 10/11/07 |
| Nickel | ND | 5.0 | 10/11/07 |
| Selenium | ND | 10 | 10/11/07 |
| Silver | ND | 5.0 | 10/12/07 |
| Thallium | ND | 10 | 10/11/07 |
| Vanadium | ND | 5.0 | 10/11/07 |
| Zinc | ND | 20 | 10/11/07 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130423 |
| Units: | ug/L | Prepared: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC410024

| Analyte | Spiked | Result | %REC | Limits | Analyzed |
|---|---|---|---|---|---|
| Antimony | 500.0 | 466.7 | 93 | 80-120 | 10/11/07 |
| Arsenic | 100.0 | 95.38 | 95 | 80-120 | 10/11/07 |
| Barium | 2,000 | 1,928 | 96 | 80-120 | 10/11/07 |
| Beryllium | 50.00 | 51.88 | 104 | 80-120 | 10/11/07 |
| Cadmium | 50.00 | 51.19 | 102 | 80-120 | 10/11/07 |
| Chromium | 200.0 | 192.9 | 96 | 80-120 | 10/11/07 |
| Cobalt | 500.0 | 478.6 | 96 | 80-120 | 10/11/07 |
| Copper | 250.0 | 238.5 | 95 | 80-120 | 10/11/07 |
| Lead | 100.0 | 96.36 | 96 | 80-120 | 10/11/07 |
| Molybdenum | 400.0 | 387.9 | 97 | 80-120 | 10/11/07 |
| Nickel | 500.0 | 481.8 | 96 | 80-120 | 10/11/07 |
| Selenium | 100.0 | 95.34 | 95 | 80-120 | 10/11/07 |
| Silver | 50.00 | 50.68 | 101 | 80-120 | 10/12/07 |
| Thallium | 100.0 | 90.77 | 91 | 80-120 | 10/11/07 |
| Vanadium | 500.0 | 488.5 | 98 | 80-120 | 10/11/07 |
| Zinc | 500.0 | 494.1 | 99 | 80-120 | 10/11/07 |

Type: BSD Lab ID: QC410025

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | 500.0 | 468.4 | 94 | 80-120 | 0 | 20 | 10/11/07 |
| Arsenic | 100.0 | 96.36 | 96 | 80-120 | 1 | 20 | 10/11/07 |
| Barium | 2,000 | 1,915 | 96 | 80-120 | 1 | 20 | 10/11/07 |
| Beryllium | 50.00 | 51.33 | 103 | 80-120 | 1 | 20 | 10/11/07 |
| Cadmium | 50.00 | 50.78 | 102 | 80-120 | 1 | 20 | 10/11/07 |
| Chromium | 200.0 | 190.6 | 95 | 80-120 | 1 | 20 | 10/11/07 |
| Cobalt | 500.0 | 466.2 | 93 | 80-120 | 3 | 20 | 10/11/07 |
| Copper | 250.0 | 235.1 | 94 | 80-120 | 1 | 20 | 10/11/07 |
| Lead | 100.0 | 96.57 | 97 | 80-120 | 0 | 20 | 10/11/07 |
| Molybdenum | 400.0 | 387.9 | 97 | 80-120 | 0 | 20 | 10/11/07 |
| Nickel | 500.0 | 477.1 | 95 | 80-120 | 1 | 20 | 10/11/07 |
| Selenium | 100.0 | 97.32 | 97 | 80-120 | 2 | 20 | 10/11/07 |
| Silver | 50.00 | 47.21 | 94 | 80-120 | 7 | 20 | 10/12/07 |
| Thallium | 100.0 | 89.65 | 90 | 80-120 | 1 | 20 | 10/11/07 |
| Vanadium | 500.0 | 482.1 | 96 | 80-120 | 1 | 20 | 10/11/07 |
| Zinc | 500.0 | 487.7 | 98 | 80-120 | 1 | 20 | 10/11/07 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130423 |
| MSS Lab ID: | 198264-001 | Sampled: | 10/10/07 |
| Matrix: | Water | Received: | 10/10/07 |
| Units: | ug/L | Prepared: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC410026

| Analyte | MSS Result | Spiked | Result | %REC | Limits | Analyzed |
|---|---|---|---|---|---|---|
| Antimony | 3.905 | 500.0 | 463.6 | 92 | 80-120 | 10/11/07 |
| Arsenic | 6.011 | 100.0 | 104.4 | 98 | 80-127 | 10/11/07 |
| Barium | 80.40 | 2,000 | 1,962 | 94 | 80-120 | 10/11/07 |
| Beryllium | 0.1085 | 50.00 | 50.96 | 102 | 80-120 | 10/11/07 |
| Cadmium | <0.1091 | 50.00 | 49.76 | 100 | 80-120 | 10/11/07 |
| Chromium | 21.10 | 200.0 | 196.4 | 88 | 80-120 | 10/11/07 |
| Cobalt | 8.736 | 500.0 | 467.5 | 92 | 80-120 | 10/11/07 |
| Copper | 41.85 | 250.0 | 278.7 | 95 | 80-120 | 10/11/07 |
| Lead | 42.63 | 100.0 | 133.9 | 91 | 76-120 | 10/11/07 |
| Molybdenum | 1.071 | 400.0 | 381.1 | 95 | 80-120 | 10/11/07 |
| Nickel | 79.58 | 500.0 | 513.8 | 87 | 80-120 | 10/11/07 |
| Selenium | <1.469 | 100.0 | 93.90 | 94 | 80-128 | 10/11/07 |
| Silver | <0.7459 | 50.00 | 47.52 | 95 | 73-122 | 10/12/07 |
| Thallium | <1.616 | 100.0 | 83.08 | 83 | 78-120 | 10/11/07 |
| Vanadium | 11.71 | 500.0 | 485.4 | 95 | 80-120 | 10/11/07 |
| Zinc | 173.8 | 500.0 | 641.9 | 94 | 80-123 | 10/11/07 |

Type: MSD Lab ID: QC410027

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | 500.0 | 462.5 | 92 | 80-120 | 0 | 20 | 10/11/07 |
| Arsenic | 100.0 | 102.3 | 96 | 80-127 | 2 | 20 | 10/11/07 |
| Barium | 2,000 | 1,938 | 93 | 80-120 | 1 | 20 | 10/11/07 |
| Beryllium | 50.00 | 49.63 | 99 | 80-120 | 3 | 20 | 10/11/07 |
| Cadmium | 50.00 | 48.50 | 97 | 80-120 | 3 | 20 | 10/11/07 |
| Chromium | 200.0 | 191.7 | 85 | 80-120 | 2 | 20 | 10/11/07 |
| Cobalt | 500.0 | 456.4 | 90 | 80-120 | 2 | 20 | 10/11/07 |
| Copper | 250.0 | 273.1 | 93 | 80-120 | 2 | 20 | 10/11/07 |
| Lead | 100.0 | 131.7 | 89 | 76-120 | 2 | 20 | 10/11/07 |
| Molybdenum | 400.0 | 375.8 | 94 | 80-120 | 1 | 20 | 10/11/07 |
| Nickel | 500.0 | 501.7 | 84 | 80-120 | 2 | 20 | 10/11/07 |
| Selenium | 100.0 | 91.10 | 91 | 80-128 | 3 | 20 | 10/11/07 |
| Silver | 50.00 | 46.88 | 94 | 73-122 | 1 | 20 | 10/12/07 |
| Thallium | 100.0 | 83.98 | 84 | 78-120 | 1 | 20 | 10/11/07 |
| Vanadium | 500.0 | 472.9 | 92 | 80-120 | 3 | 20 | 10/11/07 |
| Zinc | 500.0 | 626.2 | 90 | 80-123 | 2 | 20 | 10/11/07 |

RPD= Relative Percent Difference

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130432 |
| Lab ID: | QC410058 | Prepared: | 10/11/07 |
| Matrix: | Filtrate | Analyzed: | 10/11/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130432 |
| Matrix: | Filtrate | Prepared: | 10/11/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC410059 | 5.000 | 5.070 | 101 | 80-120 | | |
| BSD | QC410060 | 5.000 | 5.180 | 104 | 80-120 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130432 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/04/07 |
| MSS Lab ID: | 198119-008 | Received: | 10/04/07 |
| Matrix: | Filtrate | Prepared: | 10/11/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410062 | <0.04502 | 5.000 | 5.250 | 105 | 79-125 | | |
| MSD | QC410063 | | 5.000 | 5.470 | 109 | 79-125 | 4 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130432 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/04/07 |
| MSS Lab ID: | 198119-010 | Received: | 10/04/07 |
| Matrix: | Filtrate | Prepared: | 10/11/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410065 | <0.04502 | 5.000 | 5.250 | 105 | 79-125 | | |
| MSD | QC410066 | | 5.000 | 5.540 | 111 | 79-125 | 5 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130432 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/08/07 |
| MSS Lab ID: | 198262-002 | Received: | 10/10/07 |
| Matrix: | Filtrate | Prepared: | 10/11/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410068 | <0.04502 | 5.000 | 5.400 | 108 | 79-125 | | |
| MSD | QC410069 | | 5.000 | 5.270 | 105 | 79-125 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-14-GW-45' | Batch#: | 130348 |
| Matrix: | Water | Sampled: | 10/08/07 09:45 |
| Units: | mg/L | Received: | 10/09/07 |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198195-002 | 0.07 | 0.05 | 10/09/07 13:25 |
| BLANK | QC409716 | ND | 0.05 | 10/09/07 12:26 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | B-14-GW-45' | Batch#: | 130348 |
| MSS Lab ID: | 198195-002 | Sampled: | 10/08/07 09:45 |
| Matrix: | Water | Received: | 10/09/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409717 | | 1.000 | 1.022 | 102 | 80-120 | | | 1.000 | 10/09/07 12:43 |
| BSD | QC409718 | | 1.000 | 1.016 | 102 | 80-120 | 1 | 20 | 1.000 | 10/09/07 13:01 |
| MS | QC409771 | 0.07299 | 2.500 | 2.705 | 105 | 80-120 | | | 5.000 | 10/09/07 17:55 |
| MSD | QC409772 | | 2.500 | 2.863 | 112 | 80-120 | 6 | 20 | 5.000 | 10/09/07 18:12 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-14-SS-53' | Batch#: | 130516 |
| Matrix: | Soil | Sampled: | 10/08/07 11:00 |
| Units: | mg/Kg | Received: | 10/09/07 |
| Basis: | as received | | |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198195-001 | ND | 0.5 | 10/13/07 22:09 |
| BLANK | QC410418 | ND | 0.5 | 10/13/07 21:17 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198195 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Field ID: | B-8-SS-68' | Diln Fac: | 1.000 |
| MSS Lab ID: | 198234-002 | Batch#: | 130516 |
| Matrix: | Soil | Sampled: | 10/09/07 13:15 |
| Units: | mg/Kg | Received: | 10/10/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| BS | QC410419 | | 10.00 | 10.16 | 102 | 80-120 | | | 10/13/07 21:34 |
| BSD | QC410420 | | 10.00 | 9.861 | 99 | 80-120 | 3 | 20 | 10/13/07 21:52 |
| MS | QC410421 | 0.1512 | 5.000 | 5.225 | 101 | 50-120 | | | 10/13/07 23:19 |
| MSD | QC410422 | | 5.000 | 5.266 | 102 | 50-120 | 1 | 30 | 10/13/07 23:36 |

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198195

# Chain of Custody Record

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/8/07 |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS 9X3169 |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | |
| Project Name: Cloverdale Project | ☐ 1 week | | |
| Site: Cloverdale, Ca | ☐ 2 days | | |
| C&T-WO-07-002 | ☐ 1 day | | |

1827-15 - I
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

| Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filtered Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-14-SS-53' | 10/8/07 | 11:00 | poly | SO | 1 | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| B-14-GW-45' | 10/8/07 | 9:45 | VOA | GW | 3 | | ✓ | | | | | | | |
| | | | VOA | | 3 | | | | | ✓ | | | | |
| | | | 1L amber | | 2 | | | | ✓ | | | | | |
| | | | 500 ml poly | | 2 | | | ✓ | | | | | | non-filtered. |
| | | | 250 ml poly | | 1 | | | | | | ✓ | | | |
| Trip Blank | 10/8/07 | | VOA | AQ | 1 | | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Weiss Associates | 10/8/07 15:00 | [signature] | C&T | 10-9-07 1054 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

Curtis & Tompkins, Ltd.

# COOLER RECEIPT CHECKLIST

Login#: 198195 Date Received: 10-9-07 Number of Coolers: 1
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10-9-07 By (print): Faith Nichols (sign) Faith L

1. Did cooler come with a shipping slip (airbill, etc.)? ..... (YES) NO
If YES, enter carrier name and airbill number: UPS 1Z 832 32E 01 4383 1212
2. Were custody seals on outside of cooler? ..... YES (NO)
How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap, wet ice
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... (YES) NO
Type of ice: Wet Temperature: No temp blank, All cold
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-9-07 By (print): Faith Nichols (sign) Faith L

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
If YES, give details below.
Who was called? _____ By whom? _____ Date: _____

Additional Comments:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-8-SS-0.0' | 198234-001 |
| B-8-SS-68' | 198234-002 |
| B-8-GW-+1.25' | 198234-003 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/12/2007
Project Manager

Signature: _____ Date: 11/15/2007
Operations Manager

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# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198234** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/10/07** |
| Samples Received: | **10/10/07** |

This hardcopy data package contains sample and QC results for two soil samples and one water sample, requested for the above referenced project on 10/10/07. The samples were received on ice and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
Matrix spikes were not reported for batch 130426 because the parent sample required reanalysis in another batch. Methylene chloride was detected above the RL in B-8-SS-0.0' (lab # 198234-001); this analyte is a common laboratory contaminant. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Soil:**
No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-8-GW-+1.25' | Batch#: | 130446 |
| Matrix: | Water | Sampled: | 10/09/07 |
| Units: | ug/L | Received: | 10/10/07 |
| Diln Fac: | 1.000 | | |

Type: SAMPLE Analyzed: 10/12/07
Lab ID: 198234-003

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 95 | 73-134 |
| Bromofluorobenzene (FID) | 101 | 77-140 |

Type: BLANK Analyzed: 10/11/07
Lab ID: QC410139

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 99 | 73-134 |
| Bromofluorobenzene (FID) | 100 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410142 | Batch#: | 130446 |
| Matrix: | Water | Analyzed: | 10/11/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 861.2 | 86 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 101 | 73-134 |
| Bromofluorobenzene (FID) | 93 | 77-140 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130446 |
| MSS Lab ID: | 198226-010 | Sampled: | 10/09/07 |
| Matrix: | Water | Received: | 10/09/07 |
| Units: | ug/L | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC410143

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 14.85 | 2,000 | 1,810 | 90 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 103 | 73-134 |
| Bromofluorobenzene (FID) | 101 | 77-140 |

Type: MSD Lab ID: QC410144

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,737 | 86 | 72-120 | 4 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 107 | 73-134 |
| Bromofluorobenzene (FID) | 104 | 77-140 |

RPD= Relative Percent Difference

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | mg/Kg | Batch#: | 130542 |
| Basis: | as received | Received: | 10/10/07 |

Field ID: B-8-SS-0.0' Sampled: 10/08/07
Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198234-001

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 101 | 71-132 |
| Bromofluorobenzene (FID) | 92 | 69-145 |

Field ID: B-8-SS-68' Sampled: 10/09/07
Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198234-002

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.99 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 91 | 71-132 |
| Bromofluorobenzene (FID) | 85 | 69-145 |

Type: BLANK Analyzed: 10/15/07
Lab ID: QC410537

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 94 | 69-145 |

ND= Not Detected
RL= Reporting Limit

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC410538 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130542 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 5.000 | 4.895 | 98 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 119 | 71-132 |
| Bromofluorobenzene (FID) | 94 | 69-145 |

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 198322-002 | Batch#: | 130542 |
| Matrix: | Soil | Sampled: | 10/11/07 |
| Units: | mg/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/15/07 |

Type: MS Lab ID: QC410539

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | <0.07746 | 10.42 | 6.979 | 67 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 132 | 71-132 |
| Bromofluorobenzene (FID) | 100 | 69-145 |

Type: MSD Lab ID: QC410540

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 10.20 | 6.200 | 61 | 43-120 | 10 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 127 | 71-132 |
| Bromofluorobenzene (FID) | 95 | 69-145 |

RPD= Relative Percent Difference

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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-8-GW-+1.25' | Sampled: | 10/09/07 |
| Matrix: | Water | Received: | 10/10/07 |
| Units: | ug/L | Prepared: | 10/14/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/17/07 |
| Batch#: | 130519 | | |

Type: SAMPLE Lab ID: 198234-003

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | 180 Y | 50 | |
| Motor Oil C24-C36 | ND | 300 | 64 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 108 | 61-133 |

Type: BLANK Lab ID: QC410432

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 56 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 106 | 61-133 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

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Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410433 | Batch#: | 130519 |
| Matrix: | Water | Prepared: | 10/14/07 |
| Units: | ug/L | Analyzed: | 10/17/07 |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,489 | 100 | 58-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 112 | 61-133 |

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Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130519 |
| MSS Lab ID: | 198177-007 | Sampled: | 10/08/07 |
| Matrix: | Water | Received: | 10/08/07 |
| Units: | ug/L | Prepared: | 10/14/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/18/07 |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410434

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | 63.44 | 2,500 | 2,047 | 79 | 58-129 |

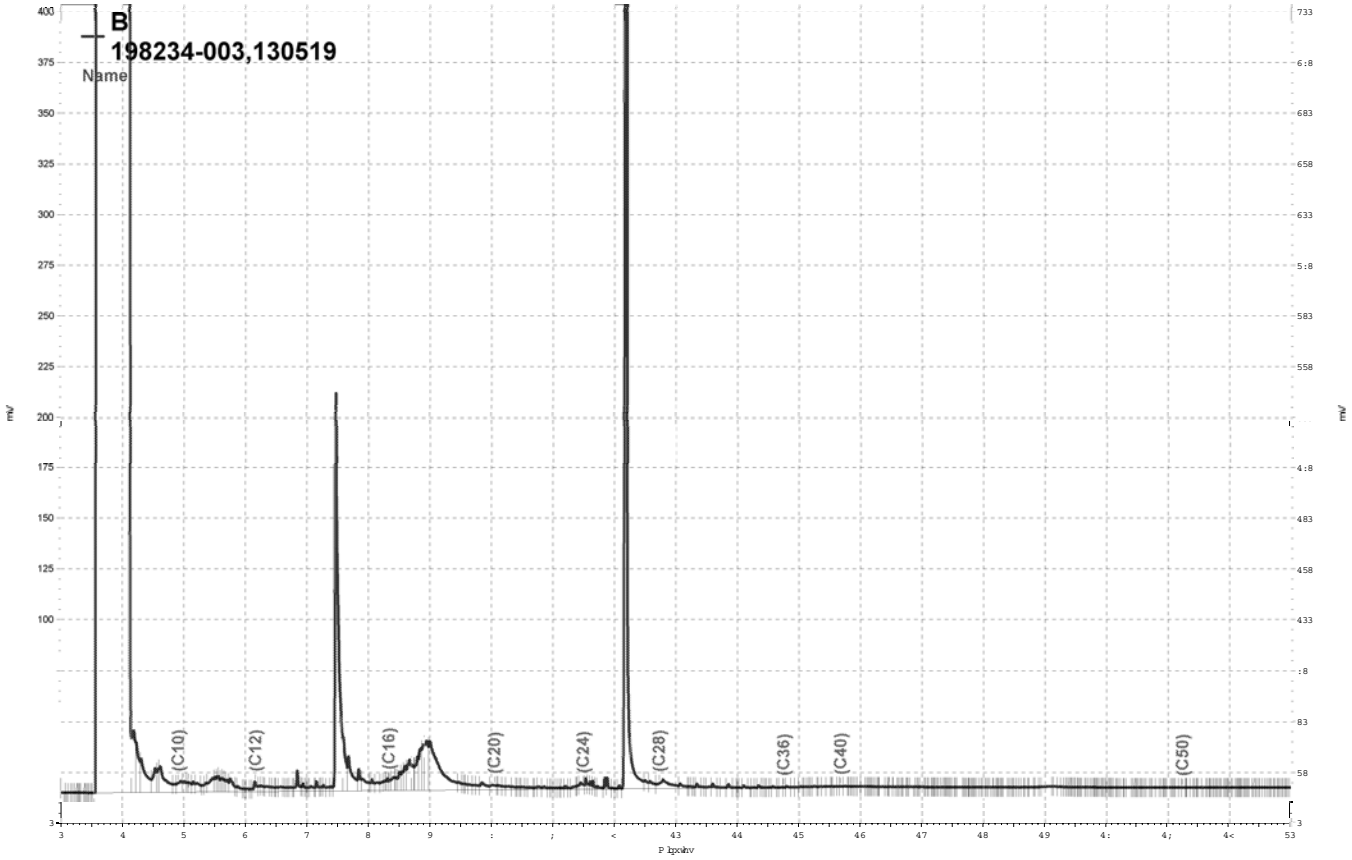
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 77 | 61-133 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410435

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,547 | 99 | 58-129 | 22 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 99 | 61-133 |

RPD= Relative Percent Difference

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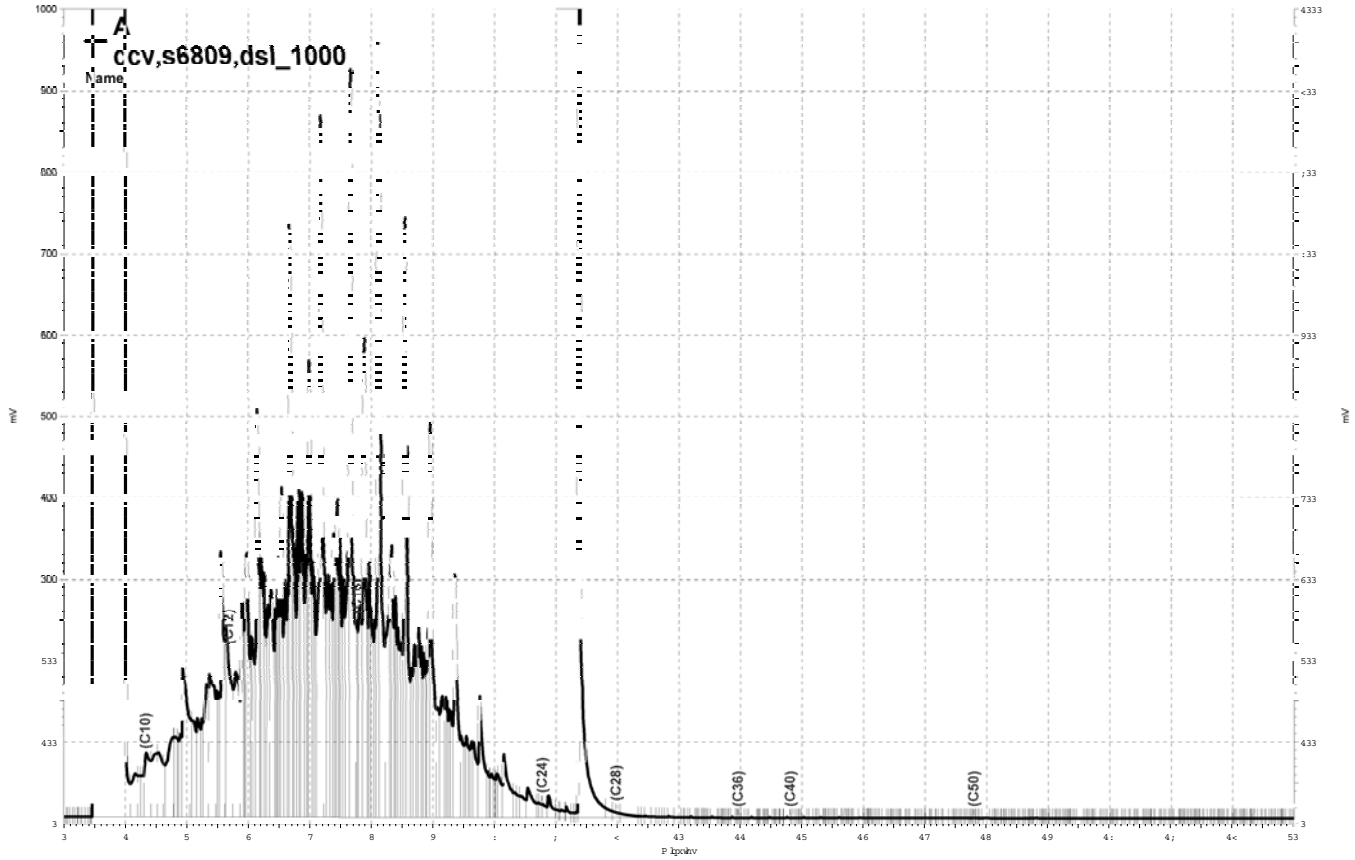


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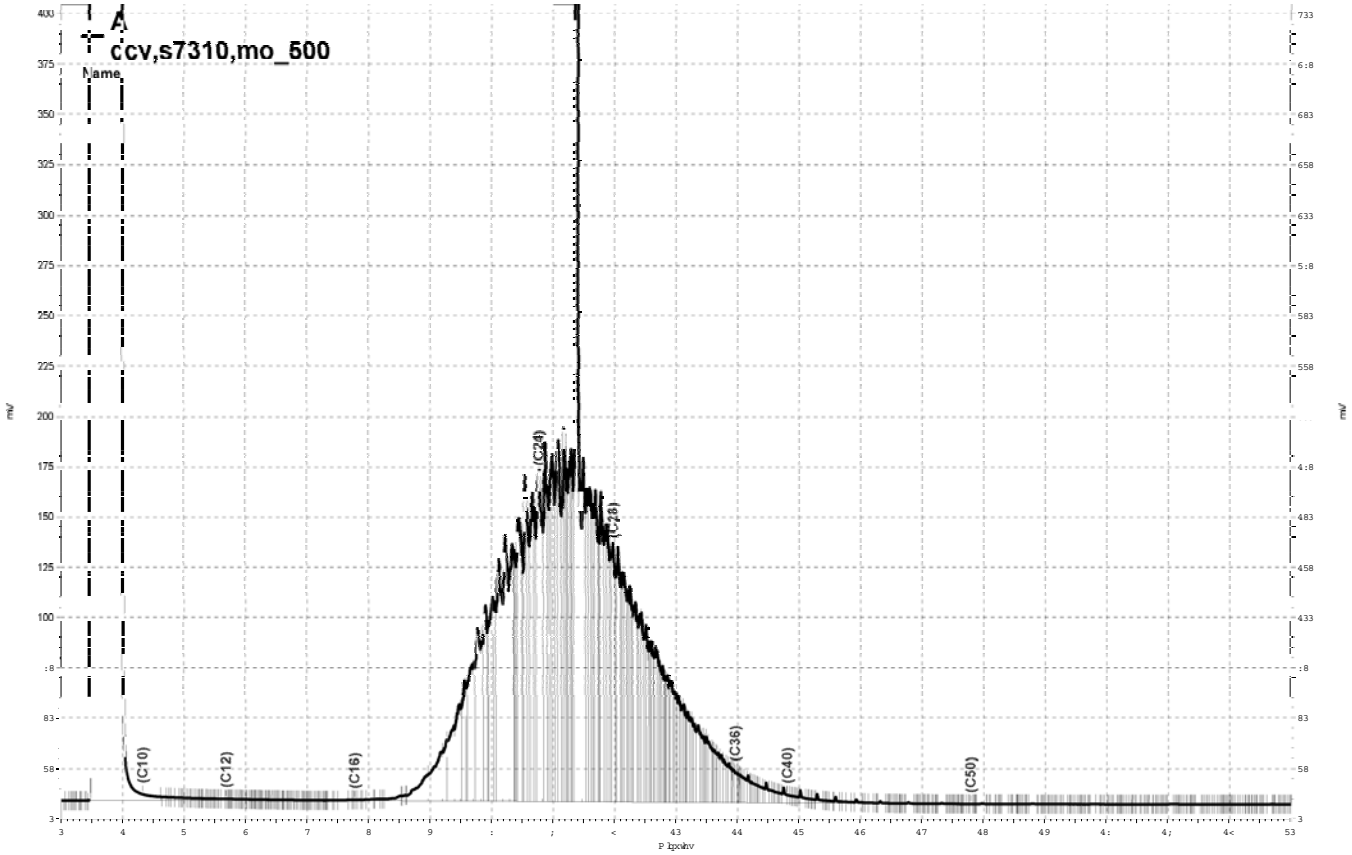


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# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130512 |
| Units: | mg/Kg | Received: | 10/10/07 |
| Basis: | as received | Prepared: | 10/13/07 |

| | | | |
|---|---|---|---|
| Field ID: | B-8-SS-0.0' | Diln Fac: | 25.00 |
| Type: | SAMPLE | Sampled: | 10/08/07 |
| Lab ID: | 198234-001 | Analyzed: | 10/16/07 |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 29 Y | 25 |
| Motor Oil C24-C36 | 240 | 120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | DO | 46-128 |

| | | | |
|---|---|---|---|
| Field ID: | B-8-SS-68' | Diln Fac: | 1.000 |
| Type: | SAMPLE | Sampled: | 10/09/07 |
| Lab ID: | 198234-002 | Cleanup Method: | EPA 3630C |

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | 17 Y | 1.0 | 10/15/07 |
| Diesel C10-C24 (SGCU) | 13 Y | 1.0 | 11/02/07 |
| Motor Oil C24-C36 | 11 | 5.0 | 10/15/07 |
| Motor Oil C24-C36 (SGCU) | 8.9 | 5.0 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 102 | 46-128 | 10/15/07 |
| Hexacosane (SGCU) | 100 | 46-128 | 11/02/07 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410400 | Cleanup Method: | EPA 3630C |

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Diesel C10-C24 | ND | 0.99 | 10/15/07 |
| Diesel C10-C24 (SGCU) | ND | 0.99 | 10/16/07 |
| Motor Oil C24-C36 | ND | 5.0 | 10/15/07 |
| Motor Oil C24-C36 (SGCU) | ND | 5.0 | 10/16/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 98 | 46-128 | 10/15/07 |
| Hexacosane (SGCU) | 88 | 46-128 | 10/16/07 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
DO= Diluted Out
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410401 | Batch#: | 130512 |
| Matrix: | Soil | Prepared: | 10/13/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.77 | 36.17 | 73 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 77 | 46-128 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130512 |
| MSS Lab ID: | 198070-001 | Sampled: | 10/02/07 |
| Matrix: | Soil | Received: | 10/03/07 |
| Units: | mg/Kg | Prepared: | 10/13/07 |
| Basis: | as received | Analyzed: | 10/16/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC410402

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 0.5333 | 49.99 | 46.40 | 92 | 31-150 |

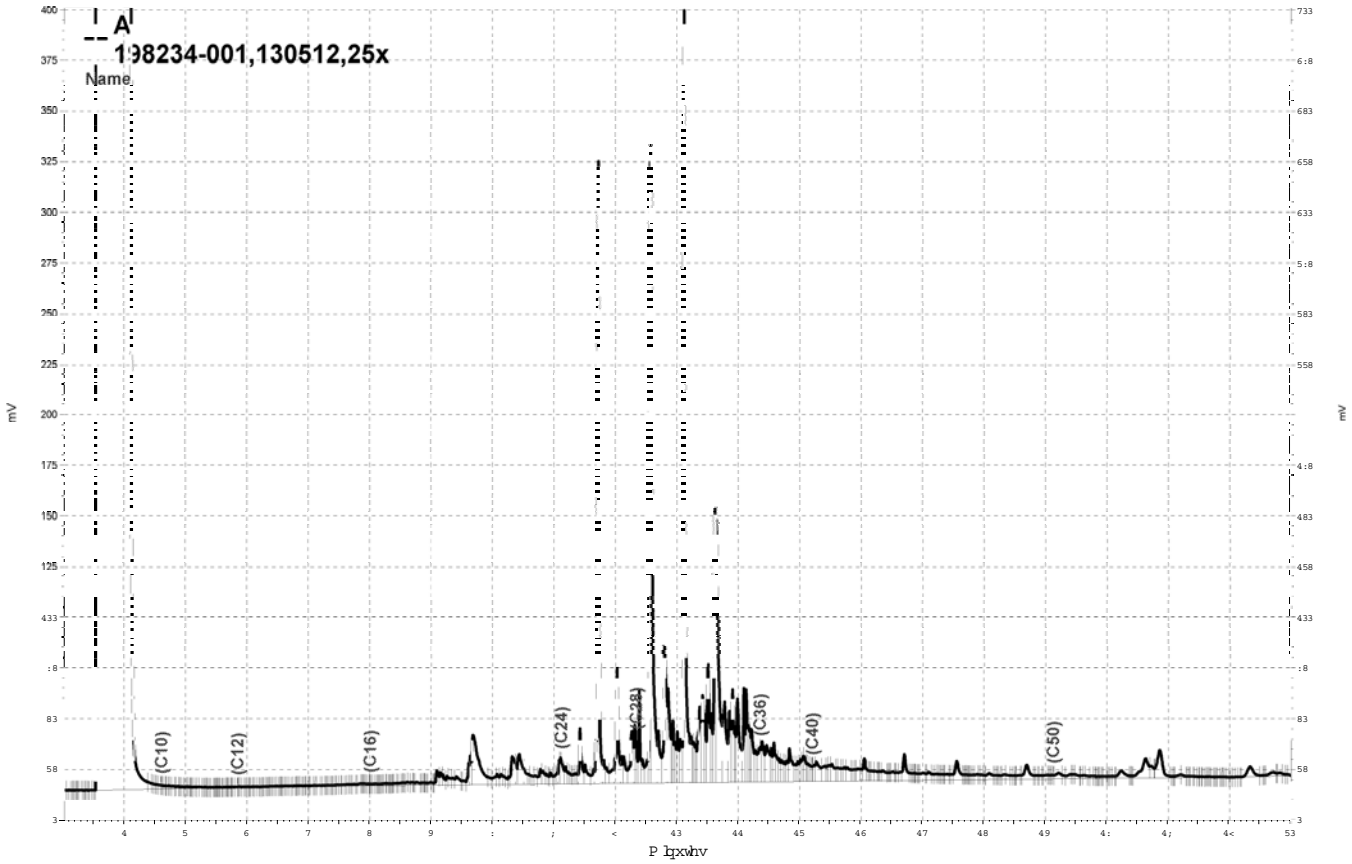
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 102 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC410403

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 49.60 | 41.26 | 82 | 31-150 | 11 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 89 | 46-128 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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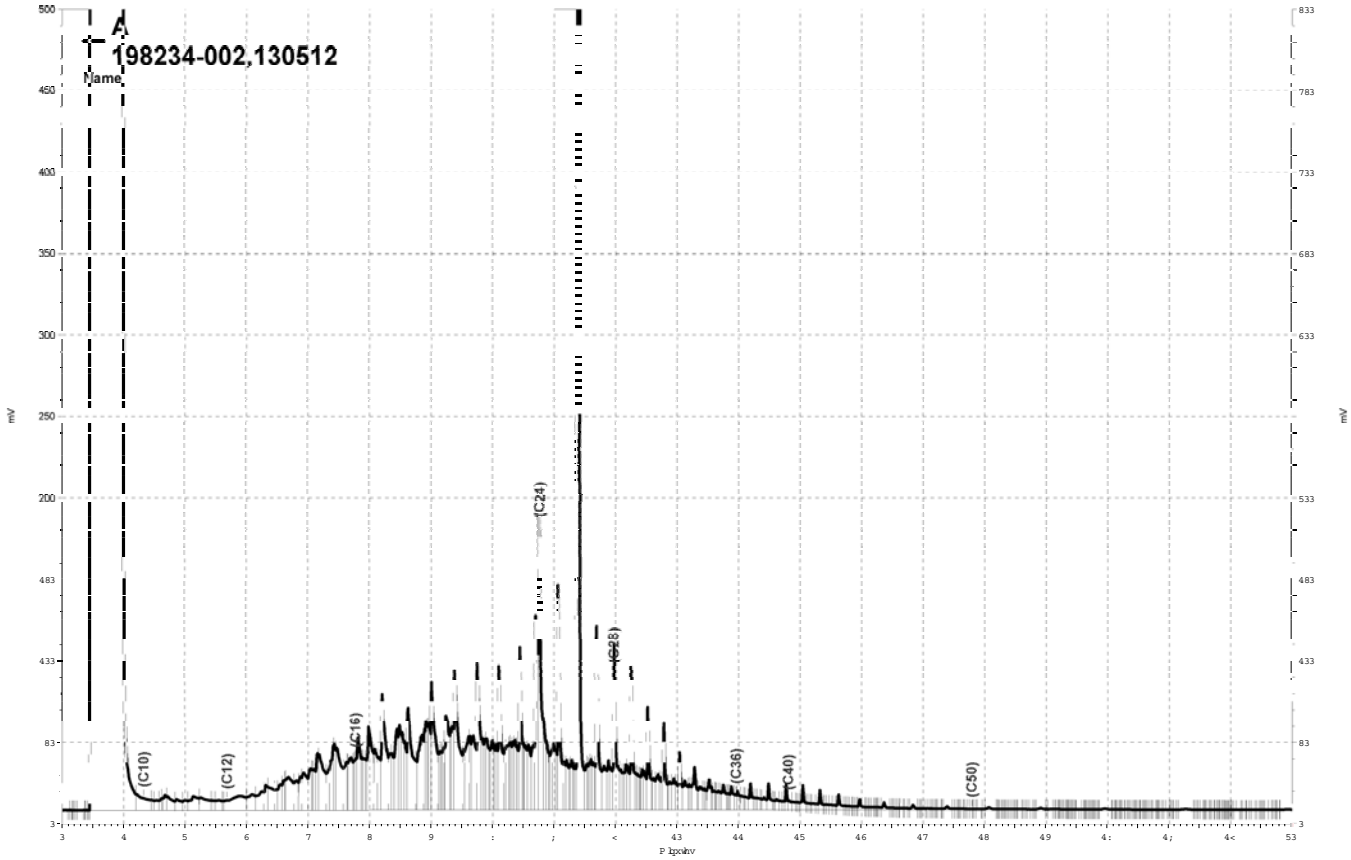


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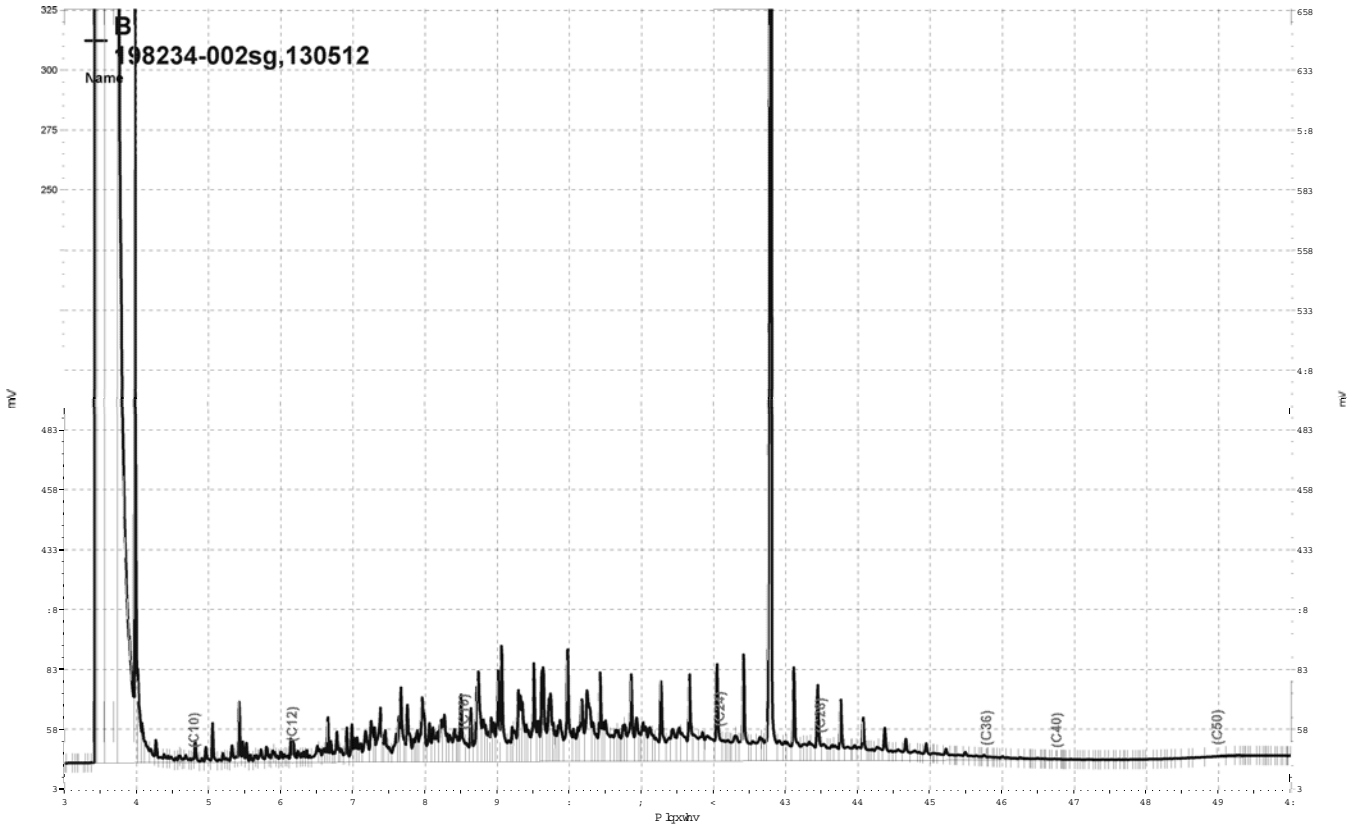


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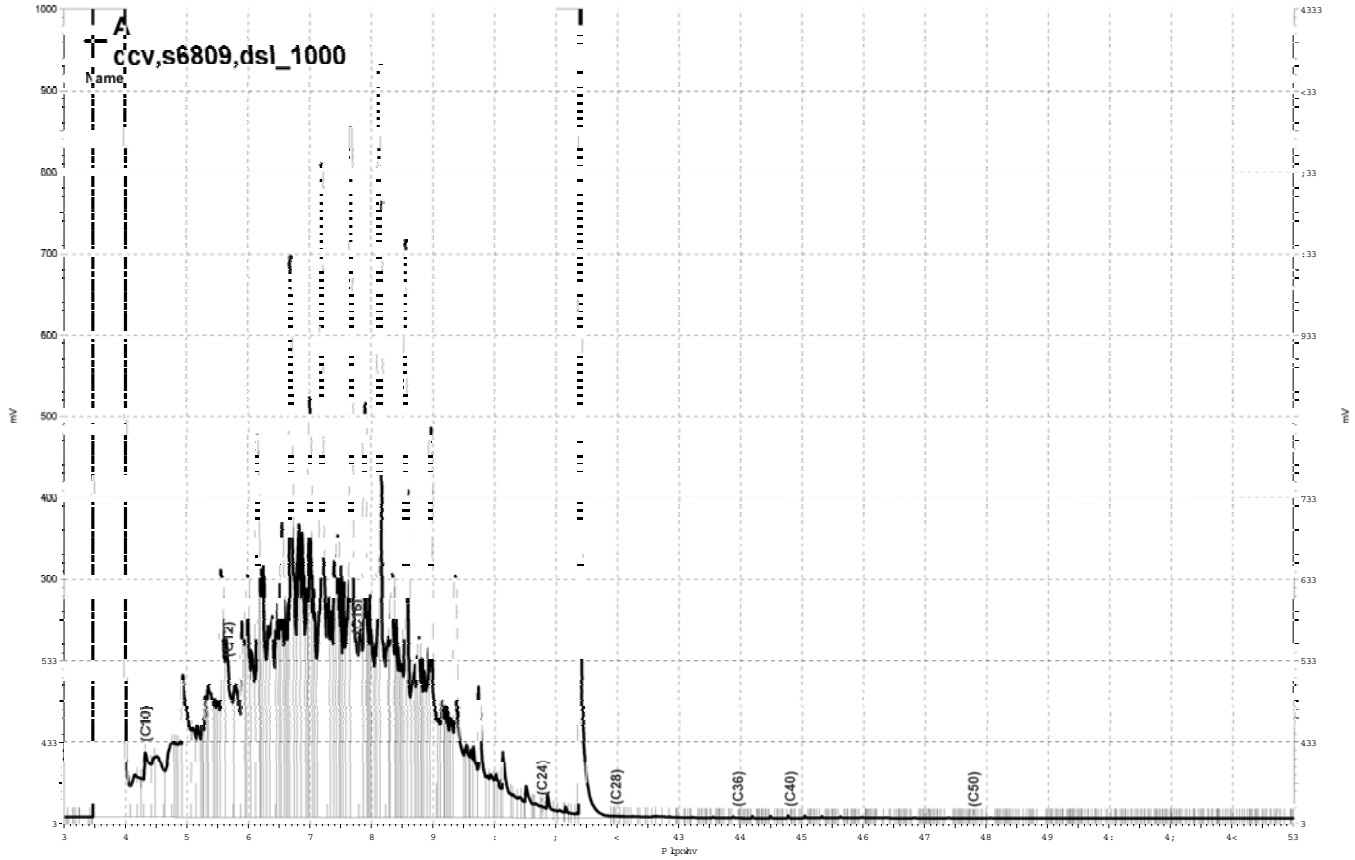


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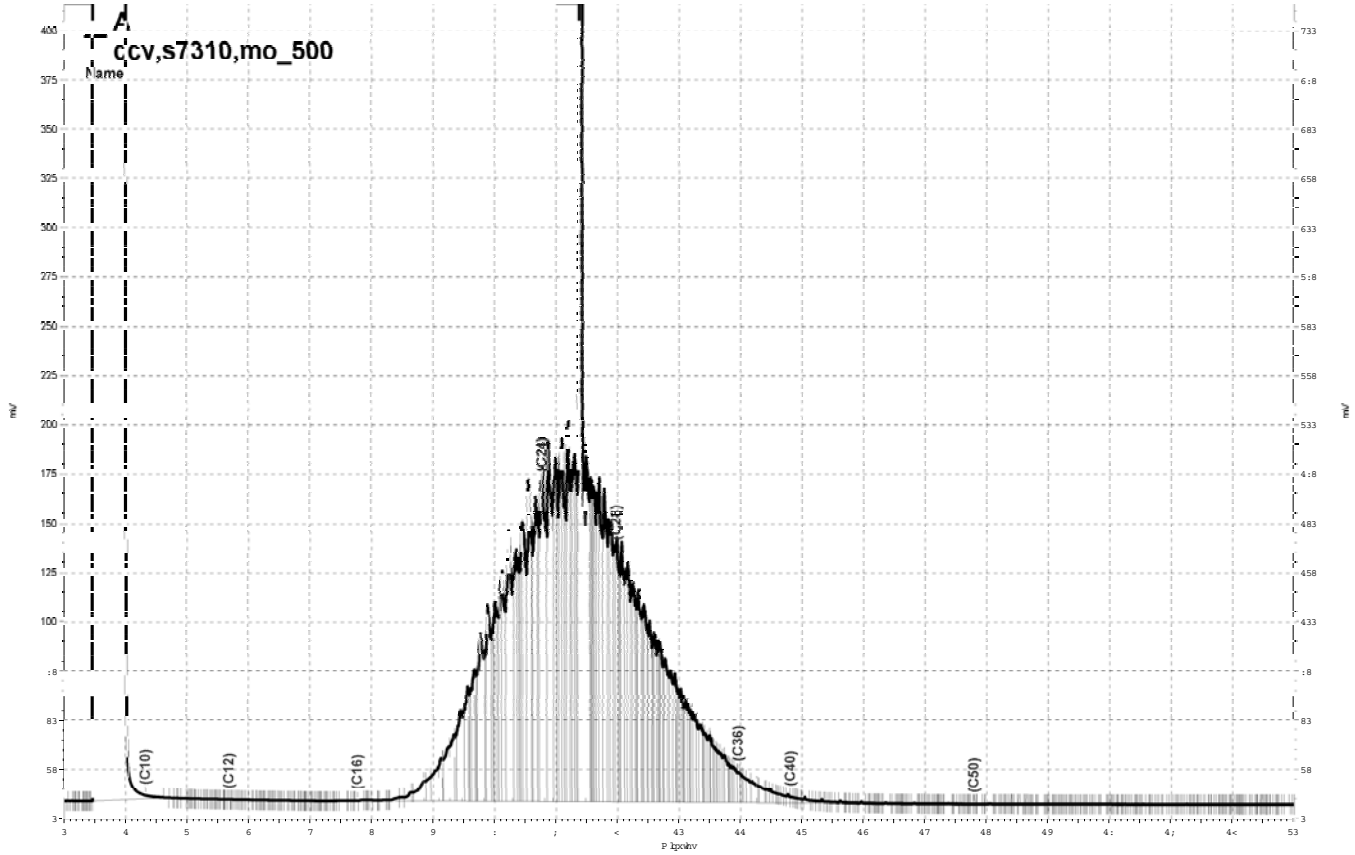


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Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-8-GW-+1.25' | Batch#: | 130459 |
| Lab ID: | 198234-003 | Sampled: | 10/09/07 |
| Matrix: | Water | Received: | 10/10/07 |
| Units: | ug/L | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-8-GW-+1.25' | Batch#: | 130459 |
| Lab ID: | 198234-003 | Sampled: | 10/09/07 |
| Matrix: | Water | Received: | 10/10/07 |
| Units: | ug/L | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-122 |
| 1,2-Dichloroethane-d4 | 122 | 74-137 |
| Toluene-d8 | 104 | 80-120 |
| Bromofluorobenzene | 104 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410186 | Batch#: | 130459 |
| Matrix: | Water | Analyzed: | 10/12/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410186 | Batch#: | 130459 |
| Matrix: | Water | Analyzed: | 10/12/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 103 | 80-122 |
| 1,2-Dichloroethane-d4 | 113 | 74-137 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 100 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410187 | Batch#: | 130459 |
| Matrix: | Water | Analyzed: | 10/12/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 28.45 | 114 | 80-133 |
| Benzene | 25.00 | 26.41 | 106 | 80-120 |
| Trichloroethene | 25.00 | 29.83 | 119 | 80-120 |
| Toluene | 25.00 | 26.93 | 108 | 80-122 |
| Chlorobenzene | 25.00 | 25.30 | 101 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 104 | 80-122 |
| 1,2-Dichloroethane-d4 | 112 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130459 |
| MSS Lab ID: | 198188-008 | Sampled: | 10/08/07 |
| Matrix: | Water | Received: | 10/08/07 |
| Units: | ug/L | Analyzed: | 10/16/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC410312

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.09386 | 25.00 | 26.85 | 107 | 80-141 |
| Benzene | <0.2500 | 25.00 | 24.88 | 100 | 80-123 |
| Trichloroethene | <0.1151 | 25.00 | 26.30 | 105 | 73-129 |
| Toluene | <0.1338 | 25.00 | 25.55 | 102 | 80-124 |
| Chlorobenzene | <0.1569 | 25.00 | 24.93 | 100 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 101 | 74-137 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 104 | 80-120 |

Type: MSD Lab ID: QC410313

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 26.10 | 104 | 80-141 | 3 | 20 |
| Benzene | 25.00 | 23.57 | 94 | 80-123 | 5 | 20 |
| Trichloroethene | 25.00 | 25.17 | 101 | 73-129 | 4 | 20 |
| Toluene | 25.00 | 23.97 | 96 | 80-124 | 6 | 20 |
| Chlorobenzene | 25.00 | 23.88 | 96 | 80-120 | 4 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 102 | 74-137 |
| Toluene-d8 | 95 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-8-SS-0.0' | Diln Fac: | 0.9434 |
| Lab ID: | 198234-001 | Batch#: | 130465 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | ug/Kg | Received: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.4 |
| Chloromethane | ND | 9.4 |
| Vinyl Chloride | ND | 9.4 |
| Bromomethane | ND | 9.4 |
| Chloroethane | ND | 9.4 |
| Trichlorofluoromethane | ND | 4.7 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.7 |
| 1,1-Dichloroethene | ND | 4.7 |
| Methylene Chloride | 71 | 19 |
| Carbon Disulfide | ND | 4.7 |
| MTBE | ND | 4.7 |
| trans-1,2-Dichloroethene | ND | 4.7 |
| Vinyl Acetate | ND | 47 |
| 1,1-Dichloroethane | ND | 4.7 |
| 2-Butanone | ND | 9.4 |
| cis-1,2-Dichloroethene | ND | 4.7 |
| 2,2-Dichloropropane | ND | 4.7 |
| Chloroform | ND | 4.7 |
| Bromochloromethane | ND | 4.7 |
| 1,1,1-Trichloroethane | ND | 4.7 |
| 1,1-Dichloropropene | ND | 4.7 |
| Carbon Tetrachloride | ND | 4.7 |
| 1,2-Dichloroethane | ND | 4.7 |
| Benzene | ND | 4.7 |
| Trichloroethene | ND | 4.7 |
| 1,2-Dichloropropane | ND | 4.7 |
| Bromodichloromethane | ND | 4.7 |
| Dibromomethane | ND | 4.7 |
| 4-Methyl-2-Pentanone | ND | 9.4 |
| cis-1,3-Dichloropropene | ND | 4.7 |
| Toluene | ND | 4.7 |
| trans-1,3-Dichloropropene | ND | 4.7 |
| 1,1,2-Trichloroethane | ND | 4.7 |
| 2-Hexanone | ND | 9.4 |
| 1,3-Dichloropropane | ND | 4.7 |
| Tetrachloroethene | ND | 4.7 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-8-SS-0.0' | Diln Fac: | 0.9434 |
| Lab ID: | 198234-001 | Batch#: | 130465 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | ug/Kg | Received: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.7 |
| 1,2-Dibromoethane | ND | 4.7 |
| Chlorobenzene | ND | 4.7 |
| 1,1,1,2-Tetrachloroethane | ND | 4.7 |
| Ethylbenzene | ND | 4.7 |
| m,p-Xylenes | ND | 4.7 |
| o-Xylene | ND | 4.7 |
| Styrene | ND | 4.7 |
| Bromoform | ND | 4.7 |
| Isopropylbenzene | ND | 4.7 |
| 1,1,2,2-Tetrachloroethane | ND | 4.7 |
| 1,2,3-Trichloropropane | ND | 4.7 |
| Propylbenzene | ND | 4.7 |
| Bromobenzene | ND | 4.7 |
| 1,3,5-Trimethylbenzene | ND | 4.7 |
| 2-Chlorotoluene | ND | 4.7 |
| 4-Chlorotoluene | ND | 4.7 |
| tert-Butylbenzene | ND | 4.7 |
| 1,2,4-Trimethylbenzene | ND | 4.7 |
| sec-Butylbenzene | ND | 4.7 |
| para-Isopropyl Toluene | ND | 4.7 |
| 1,3-Dichlorobenzene | ND | 4.7 |
| 1,4-Dichlorobenzene | ND | 4.7 |
| n-Butylbenzene | ND | 4.7 |
| 1,2-Dichlorobenzene | ND | 4.7 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.7 |
| 1,2,4-Trichlorobenzene | ND | 4.7 |
| Hexachlorobutadiene | ND | 4.7 |
| Naphthalene | ND | 4.7 |
| 1,2,3-Trichlorobenzene | ND | 4.7 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 123 | 80-124 |
| 1,2-Dichloroethane-d4 | 123 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 103 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-8-SS-68' | Diln Fac: | 0.9434 |
| Lab ID: | 198234-002 | Batch#: | 130426 |
| Matrix: | Soil | Sampled: | 10/09/07 |
| Units: | ug/Kg | Received: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/11/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.4 |
| Chloromethane | ND | 9.4 |
| Vinyl Chloride | ND | 9.4 |
| Bromomethane | ND | 9.4 |
| Chloroethane | ND | 9.4 |
| Trichlorofluoromethane | ND | 4.7 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.7 |
| 1,1-Dichloroethene | ND | 4.7 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.7 |
| MTBE | ND | 4.7 |
| trans-1,2-Dichloroethene | ND | 4.7 |
| Vinyl Acetate | ND | 47 |
| 1,1-Dichloroethane | ND | 4.7 |
| 2-Butanone | ND | 9.4 |
| cis-1,2-Dichloroethene | ND | 4.7 |
| 2,2-Dichloropropane | ND | 4.7 |
| Chloroform | ND | 4.7 |
| Bromochloromethane | ND | 4.7 |
| 1,1,1-Trichloroethane | ND | 4.7 |
| 1,1-Dichloropropene | ND | 4.7 |
| Carbon Tetrachloride | ND | 4.7 |
| 1,2-Dichloroethane | ND | 4.7 |
| Benzene | ND | 4.7 |
| Trichloroethene | ND | 4.7 |
| 1,2-Dichloropropane | ND | 4.7 |
| Bromodichloromethane | ND | 4.7 |
| Dibromomethane | ND | 4.7 |
| 4-Methyl-2-Pentanone | ND | 9.4 |
| cis-1,3-Dichloropropene | ND | 4.7 |
| Toluene | ND | 4.7 |
| trans-1,3-Dichloropropene | ND | 4.7 |
| 1,1,2-Trichloroethane | ND | 4.7 |
| 2-Hexanone | ND | 9.4 |
| 1,3-Dichloropropane | ND | 4.7 |
| Tetrachloroethene | ND | 4.7 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-8-SS-68' | Diln Fac: | 0.9434 |
| Lab ID: | 198234-002 | Batch#: | 130426 |
| Matrix: | Soil | Sampled: | 10/09/07 |
| Units: | ug/Kg | Received: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/11/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.7 |
| 1,2-Dibromoethane | ND | 4.7 |
| Chlorobenzene | ND | 4.7 |
| 1,1,1,2-Tetrachloroethane | ND | 4.7 |
| Ethylbenzene | ND | 4.7 |
| m,p-Xylenes | ND | 4.7 |
| o-Xylene | ND | 4.7 |
| Styrene | ND | 4.7 |
| Bromoform | ND | 4.7 |
| Isopropylbenzene | ND | 4.7 |
| 1,1,2,2-Tetrachloroethane | ND | 4.7 |
| 1,2,3-Trichloropropane | ND | 4.7 |
| Propylbenzene | ND | 4.7 |
| Bromobenzene | ND | 4.7 |
| 1,3,5-Trimethylbenzene | ND | 4.7 |
| 2-Chlorotoluene | ND | 4.7 |
| 4-Chlorotoluene | ND | 4.7 |
| tert-Butylbenzene | ND | 4.7 |
| 1,2,4-Trimethylbenzene | ND | 4.7 |
| sec-Butylbenzene | ND | 4.7 |
| para-Isopropyl Toluene | ND | 4.7 |
| 1,3-Dichlorobenzene | ND | 4.7 |
| 1,4-Dichlorobenzene | ND | 4.7 |
| n-Butylbenzene | ND | 4.7 |
| 1,2-Dichlorobenzene | ND | 4.7 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.7 |
| 1,2,4-Trichlorobenzene | ND | 4.7 |
| Hexachlorobutadiene | ND | 4.7 |
| Naphthalene | ND | 4.7 |
| 1,2,3-Trichlorobenzene | ND | 4.7 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 119 | 80-124 |
| 1,2-Dichloroethane-d4 | 117 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC410040 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130426 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC410040 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130426 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 107 | 80-124 |
| 1,2-Dichloroethane-d4 | 100 | 79-136 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC410041 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130426 |
| Units: | ug/Kg | Analyzed: | 10/11/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 50.00 | 51.51 | 103 | 74-131 |
| Benzene | 50.00 | 48.97 | 98 | 77-121 |
| Trichloroethene | 50.00 | 52.76 | 106 | 77-121 |
| Toluene | 50.00 | 50.52 | 101 | 79-122 |
| Chlorobenzene | 50.00 | 48.85 | 98 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 101 | 80-124 |
| 1,2-Dichloroethane-d4 | 98 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 99 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC410204 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130465 |
| Units: | ug/Kg | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC410204 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130465 |
| Units: | ug/Kg | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 112 | 80-124 |
| 1,2-Dichloroethane-d4 | 107 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC410205 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130465 |
| Units: | ug/Kg | Analyzed: | 10/12/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 50.00 | 51.88 | 104 | 74-131 |
| Benzene | 50.00 | 50.79 | 102 | 77-121 |
| Trichloroethene | 50.00 | 54.80 | 110 | 77-121 |
| Toluene | 50.00 | 51.88 | 104 | 79-122 |
| Chlorobenzene | 50.00 | 48.98 | 98 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 108 | 80-124 |
| 1,2-Dichloroethane-d4 | 109 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 97 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130465 |
| MSS Lab ID: | 198291-002 | Sampled: | 10/11/07 |
| Matrix: | Soil | Received: | 10/11/07 |
| Units: | ug/Kg | Analyzed: | 10/12/07 |
| Basis: | as received | | |

Type: MS Diln Fac: 0.8065
Lab ID: QC410228

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.3248 | 40.32 | 28.06 | 70 | 61-145 |
| Benzene | <0.4187 | 40.32 | 28.55 | 71 | 57-123 |
| Trichloroethene | 5.261 | 40.32 | 36.21 | 77 | 52-141 |
| Toluene | <0.4532 | 40.32 | 28.56 | 71 | 53-126 |
| Chlorobenzene | <0.2924 | 40.32 | 26.79 | 66 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 108 | 80-124 |
| 1,2-Dichloroethane-d4 | 107 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 99 | 80-122 |

Type: MSD Diln Fac: 0.8197
Lab ID: QC410229

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 40.98 | 32.17 | 78 | 61-145 | 12 | 26 |
| Benzene | 40.98 | 32.68 | 80 | 57-123 | 12 | 25 |
| Trichloroethene | 40.98 | 41.53 | 88 | 52-141 | 12 | 26 |
| Toluene | 40.98 | 32.59 | 80 | 53-126 | 12 | 27 |
| Chlorobenzene | 40.98 | 30.47 | 74 | 49-121 | 11 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 109 | 80-124 |
| 1,2-Dichloroethane-d4 | 106 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 98 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-8-SS-0.0' | Basis: | as received |
| Lab ID: | 198234-001 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | mg/Kg | Received: | 10/10/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 1.4 | 0.50 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.1 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Barium | 130 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.36 | 0.10 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Chromium | 92 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Cobalt | 22 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Copper | 26 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Lead | 7.3 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.049 | 0.020 | 130479 | 10/12/07 | 10/12/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Nickel | 130 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Selenium | ND | 0.50 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Vanadium | 57 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Zinc | 48 | 1.0 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-8-SS-68' | Basis: | as received |
| Lab ID: | 198234-002 | Diln Fac: | 1.000 |
| Matrix: | Soil | Sampled: | 10/09/07 |
| Units: | mg/Kg | Received: | 10/10/07 |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | 0.64 | 0.50 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.6 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Barium | 110 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.41 | 0.10 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Chromium | 120 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Cobalt | 12 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Copper | 45 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Lead | 8.2 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.26 | 0.020 | 130479 | 10/12/07 | 10/12/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Nickel | 48 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.8 | 0.50 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Vanadium | 41 | 0.25 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |
| Zinc | 60 | 1.0 | 130413 | 10/10/07 | 10/11/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC409975 | Batch#: | 130413 |
| Matrix: | Soil | Prepared: | 10/10/07 |
| Units: | mg/Kg | Analyzed: | 10/11/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | ND | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.25 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 130413 |
| Units: | mg/Kg | Prepared: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC409976

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 93.26 | 93 | 80-120 |
| Arsenic | 50.00 | 50.44 | 101 | 80-120 |
| Barium | 100.0 | 96.97 | 97 | 80-120 |
| Beryllium | 2.500 | 2.545 | 102 | 80-120 |
| Cadmium | 10.00 | 9.809 | 98 | 80-120 |
| Chromium | 100.0 | 94.41 | 94 | 80-120 |
| Cobalt | 25.00 | 23.25 | 93 | 80-120 |
| Copper | 12.50 | 11.75 | 94 | 80-120 |
| Lead | 100.0 | 93.54 | 94 | 80-120 |
| Molybdenum | 20.00 | 19.68 | 98 | 80-120 |
| Nickel | 25.00 | 23.53 | 94 | 80-120 |
| Selenium | 50.00 | 48.37 | 97 | 80-120 |
| Silver | 10.00 | 9.099 | 91 | 80-120 |
| Thallium | 50.00 | 47.57 | 95 | 80-120 |
| Vanadium | 25.00 | 23.42 | 94 | 80-120 |
| Zinc | 25.00 | 23.74 | 95 | 80-120 |

Type: BSD Lab ID: QC409977

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 95.05 | 95 | 80-120 | 2 | 20 |
| Arsenic | 50.00 | 51.12 | 102 | 80-120 | 1 | 20 |
| Barium | 100.0 | 99.14 | 99 | 80-120 | 2 | 20 |
| Beryllium | 2.500 | 2.610 | 104 | 80-120 | 3 | 20 |
| Cadmium | 10.00 | 10.07 | 101 | 80-120 | 3 | 20 |
| Chromium | 100.0 | 96.29 | 96 | 80-120 | 2 | 20 |
| Cobalt | 25.00 | 23.84 | 95 | 80-120 | 3 | 20 |
| Copper | 12.50 | 12.00 | 96 | 80-120 | 2 | 20 |
| Lead | 100.0 | 96.50 | 97 | 80-120 | 3 | 20 |
| Molybdenum | 20.00 | 20.00 | 100 | 80-120 | 2 | 20 |
| Nickel | 25.00 | 24.07 | 96 | 80-120 | 2 | 20 |
| Selenium | 50.00 | 49.23 | 98 | 80-120 | 2 | 20 |
| Silver | 10.00 | 9.258 | 93 | 80-120 | 2 | 20 |
| Thallium | 50.00 | 48.46 | 97 | 80-120 | 2 | 20 |
| Vanadium | 25.00 | 23.86 | 95 | 80-120 | 2 | 20 |
| Zinc | 25.00 | 24.26 | 97 | 80-120 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130413 |
| MSS Lab ID: | 198257-001 | Sampled: | 10/10/07 |
| Matrix: | Soil | Received: | 10/10/07 |
| Units: | mg/Kg | Prepared: | 10/10/07 |
| Basis: | as received | Analyzed: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC409978

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 1.602 | 89.29 | 50.52 | 55 | 1-122 |
| Arsenic | 4.196 | 44.64 | 50.42 | 104 | 72-120 |
| Barium | 35.92 | 89.29 | 123.7 | 98 | 49-139 |
| Beryllium | 0.1547 | 2.232 | 2.436 | 102 | 80-120 |
| Cadmium | 0.07861 | 8.929 | 8.636 | 96 | 74-120 |
| Chromium | 28.72 | 89.29 | 109.5 | 91 | 65-120 |
| Cobalt | 4.997 | 22.32 | 25.47 | 92 | 60-120 |
| Copper | 12.08 | 11.16 | 19.36 | 65 | 47-146 |
| Lead | 20.74 | 89.29 | 101.0 | 90 | 53-123 |
| Molybdenum | <0.02165 | 17.86 | 16.97 | 95 | 66-120 |
| Nickel | 30.85 | 22.32 | 48.44 | 79 | 43-142 |
| Selenium | 0.2938 | 44.64 | 44.20 | 98 | 71-120 |
| Silver | 0.03701 | 8.929 | 8.511 | 95 | 66-120 |
| Thallium | <0.03334 | 44.64 | 40.38 | 90 | 62-120 |
| Vanadium | 22.21 | 22.32 | 42.80 | 92 | 52-139 |
| Zinc | 39.89 | 22.32 | 65.01 | 113 | 42-147 |

Type: MSD Lab ID: QC409979

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 89.29 | 49.45 | 54 | 1-122 | 2 | 30 |
| Arsenic | 44.64 | 50.41 | 104 | 72-120 | 0 | 20 |
| Barium | 89.29 | 122.9 | 97 | 49-139 | 1 | 23 |
| Beryllium | 2.232 | 2.467 | 104 | 80-120 | 1 | 20 |
| Cadmium | 8.929 | 8.719 | 97 | 74-120 | 1 | 20 |
| Chromium | 89.29 | 110.1 | 91 | 65-120 | 1 | 20 |
| Cobalt | 22.32 | 25.07 | 90 | 60-120 | 2 | 24 |
| Copper | 11.16 | 20.95 | 79 | 47-146 | 8 | 21 |
| Lead | 89.29 | 108.2 | 98 | 53-123 | 7 | 28 |
| Molybdenum | 17.86 | 17.06 | 96 | 66-120 | 1 | 20 |
| Nickel | 22.32 | 48.15 | 78 | 43-142 | 1 | 26 |
| Selenium | 44.64 | 44.51 | 99 | 71-120 | 1 | 20 |
| Silver | 8.929 | 8.578 | 96 | 66-120 | 1 | 20 |
| Thallium | 44.64 | 40.69 | 91 | 62-120 | 1 | 20 |
| Vanadium | 22.32 | 43.33 | 95 | 52-139 | 1 | 20 |
| Zinc | 22.32 | 64.59 | 111 | 42-147 | 1 | 27 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410274 | Batch#: | 130479 |
| Matrix: | Soil | Prepared: | 10/12/07 |
| Units: | mg/Kg | Analyzed: | 10/12/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130479 |
| Units: | mg/Kg | Prepared: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC410275 | 0.5000 | 0.5120 | 102 | 80-120 | | |
| BSD | QC410276 | 0.5000 | 0.5130 | 103 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | B-8-SS-0.0' | Batch#: | 130479 |
| MSS Lab ID: | 198234-001 | Sampled: | 10/08/07 |
| Matrix: | Soil | Received: | 10/10/07 |
| Units: | mg/Kg | Prepared: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410278 | 0.04902 | 0.3906 | 0.4617 | 106 | 70-143 | | |
| MSD | QC410279 | | 0.3906 | 0.4352 | 99 | 70-143 | 6 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-8-GW-+1.25' | Diln Fac: | 1.000 |
| Lab ID: | 198234-003 | Sampled: | 10/09/07 |
| Matrix: | Filtrate | Received: | 10/10/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Barium | 54 | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130467 | 10/12/07 | 10/12/07 | METHOD | EPA 7470A |
| Molybdenum | 130 | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130423 | 10/11/07 | 10/11/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410023 | Batch#: | 130423 |
| Matrix: | Water | Prepared: | 10/11/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Analyzed |
|---|---|---|---|
| Antimony | ND | 10 | 10/11/07 |
| Arsenic | ND | 6.1 | 10/11/07 |
| Barium | ND | 5.0 | 10/11/07 |
| Beryllium | ND | 2.0 | 10/11/07 |
| Cadmium | ND | 5.0 | 10/11/07 |
| Chromium | ND | 5.0 | 10/11/07 |
| Cobalt | ND | 5.0 | 10/11/07 |
| Copper | ND | 5.0 | 10/11/07 |
| Lead | ND | 3.0 | 10/11/07 |
| Molybdenum | ND | 5.0 | 10/11/07 |
| Nickel | ND | 5.0 | 10/11/07 |
| Selenium | ND | 10 | 10/11/07 |
| Silver | ND | 5.0 | 10/12/07 |
| Thallium | ND | 10 | 10/11/07 |
| Vanadium | ND | 5.0 | 10/11/07 |
| Zinc | ND | 20 | 10/11/07 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130423 |
| Units: | ug/L | Prepared: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC410024

| Analyte | Spiked | Result | %REC | Limits | Analyzed |
|---|---|---|---|---|---|
| Antimony | 500.0 | 466.7 | 93 | 80-120 | 10/11/07 |
| Arsenic | 100.0 | 95.38 | 95 | 80-120 | 10/11/07 |
| Barium | 2,000 | 1,928 | 96 | 80-120 | 10/11/07 |
| Beryllium | 50.00 | 51.88 | 104 | 80-120 | 10/11/07 |
| Cadmium | 50.00 | 51.19 | 102 | 80-120 | 10/11/07 |
| Chromium | 200.0 | 192.9 | 96 | 80-120 | 10/11/07 |
| Cobalt | 500.0 | 478.6 | 96 | 80-120 | 10/11/07 |
| Copper | 250.0 | 238.5 | 95 | 80-120 | 10/11/07 |
| Lead | 100.0 | 96.36 | 96 | 80-120 | 10/11/07 |
| Molybdenum | 400.0 | 387.9 | 97 | 80-120 | 10/11/07 |
| Nickel | 500.0 | 481.8 | 96 | 80-120 | 10/11/07 |
| Selenium | 100.0 | 95.34 | 95 | 80-120 | 10/11/07 |
| Silver | 50.00 | 50.68 | 101 | 80-120 | 10/12/07 |
| Thallium | 100.0 | 90.77 | 91 | 80-120 | 10/11/07 |
| Vanadium | 500.0 | 488.5 | 98 | 80-120 | 10/11/07 |
| Zinc | 500.0 | 494.1 | 99 | 80-120 | 10/11/07 |

Type: BSD Lab ID: QC410025

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | 500.0 | 468.4 | 94 | 80-120 | 0 | 20 | 10/11/07 |
| Arsenic | 100.0 | 96.36 | 96 | 80-120 | 1 | 20 | 10/11/07 |
| Barium | 2,000 | 1,915 | 96 | 80-120 | 1 | 20 | 10/11/07 |
| Beryllium | 50.00 | 51.33 | 103 | 80-120 | 1 | 20 | 10/11/07 |
| Cadmium | 50.00 | 50.78 | 102 | 80-120 | 1 | 20 | 10/11/07 |
| Chromium | 200.0 | 190.6 | 95 | 80-120 | 1 | 20 | 10/11/07 |
| Cobalt | 500.0 | 466.2 | 93 | 80-120 | 3 | 20 | 10/11/07 |
| Copper | 250.0 | 235.1 | 94 | 80-120 | 1 | 20 | 10/11/07 |
| Lead | 100.0 | 96.57 | 97 | 80-120 | 0 | 20 | 10/11/07 |
| Molybdenum | 400.0 | 387.9 | 97 | 80-120 | 0 | 20 | 10/11/07 |
| Nickel | 500.0 | 477.1 | 95 | 80-120 | 1 | 20 | 10/11/07 |
| Selenium | 100.0 | 97.32 | 97 | 80-120 | 2 | 20 | 10/11/07 |
| Silver | 50.00 | 47.21 | 94 | 80-120 | 7 | 20 | 10/12/07 |
| Thallium | 100.0 | 89.65 | 90 | 80-120 | 1 | 20 | 10/11/07 |
| Vanadium | 500.0 | 482.1 | 96 | 80-120 | 1 | 20 | 10/11/07 |
| Zinc | 500.0 | 487.7 | 98 | 80-120 | 1 | 20 | 10/11/07 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130423 |
| MSS Lab ID: | 198264-001 | Sampled: | 10/10/07 |
| Matrix: | Water | Received: | 10/10/07 |
| Units: | ug/L | Prepared: | 10/11/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC410026

| Analyte | MSS Result | Spiked | Result | %REC | Limits | Analyzed |
|---|---|---|---|---|---|---|
| Antimony | 3.905 | 500.0 | 463.6 | 92 | 80-120 | 10/11/07 |
| Arsenic | 6.011 | 100.0 | 104.4 | 98 | 80-127 | 10/11/07 |
| Barium | 80.40 | 2,000 | 1,962 | 94 | 80-120 | 10/11/07 |
| Beryllium | 0.1085 | 50.00 | 50.96 | 102 | 80-120 | 10/11/07 |
| Cadmium | <0.1091 | 50.00 | 49.76 | 100 | 80-120 | 10/11/07 |
| Chromium | 21.10 | 200.0 | 196.4 | 88 | 80-120 | 10/11/07 |
| Cobalt | 8.736 | 500.0 | 467.5 | 92 | 80-120 | 10/11/07 |
| Copper | 41.85 | 250.0 | 278.7 | 95 | 80-120 | 10/11/07 |
| Lead | 42.63 | 100.0 | 133.9 | 91 | 76-120 | 10/11/07 |
| Molybdenum | 1.071 | 400.0 | 381.1 | 95 | 80-120 | 10/11/07 |
| Nickel | 79.58 | 500.0 | 513.8 | 87 | 80-120 | 10/11/07 |
| Selenium | <1.469 | 100.0 | 93.90 | 94 | 80-128 | 10/11/07 |
| Silver | <0.7459 | 50.00 | 47.52 | 95 | 73-122 | 10/12/07 |
| Thallium | <1.616 | 100.0 | 83.08 | 83 | 78-120 | 10/11/07 |
| Vanadium | 11.71 | 500.0 | 485.4 | 95 | 80-120 | 10/11/07 |
| Zinc | 173.8 | 500.0 | 641.9 | 94 | 80-123 | 10/11/07 |

Type: MSD Lab ID: QC410027

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | 500.0 | 462.5 | 92 | 80-120 | 0 | 20 | 10/11/07 |
| Arsenic | 100.0 | 102.3 | 96 | 80-127 | 2 | 20 | 10/11/07 |
| Barium | 2,000 | 1,938 | 93 | 80-120 | 1 | 20 | 10/11/07 |
| Beryllium | 50.00 | 49.63 | 99 | 80-120 | 3 | 20 | 10/11/07 |
| Cadmium | 50.00 | 48.50 | 97 | 80-120 | 3 | 20 | 10/11/07 |
| Chromium | 200.0 | 191.7 | 85 | 80-120 | 2 | 20 | 10/11/07 |
| Cobalt | 500.0 | 456.4 | 90 | 80-120 | 2 | 20 | 10/11/07 |
| Copper | 250.0 | 273.1 | 93 | 80-120 | 2 | 20 | 10/11/07 |
| Lead | 100.0 | 131.7 | 89 | 76-120 | 2 | 20 | 10/11/07 |
| Molybdenum | 400.0 | 375.8 | 94 | 80-120 | 1 | 20 | 10/11/07 |
| Nickel | 500.0 | 501.7 | 84 | 80-120 | 2 | 20 | 10/11/07 |
| Selenium | 100.0 | 91.10 | 91 | 80-128 | 3 | 20 | 10/11/07 |
| Silver | 50.00 | 46.88 | 94 | 73-122 | 1 | 20 | 10/12/07 |
| Thallium | 100.0 | 83.98 | 84 | 78-120 | 1 | 20 | 10/11/07 |
| Vanadium | 500.0 | 472.9 | 92 | 80-120 | 3 | 20 | 10/11/07 |
| Zinc | 500.0 | 626.2 | 90 | 80-123 | 2 | 20 | 10/11/07 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130467 |
| Lab ID: | QC410211 | Prepared: | 10/12/07 |
| Matrix: | Filtrate | Analyzed: | 10/12/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130467 |
| Matrix: | Filtrate | Prepared: | 10/12/07 |
| Units: | ug/L | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC410212 | 5.000 | 5.070 | 101 | 80-120 | | |
| BSD | QC410213 | 5.000 | 5.050 | 101 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130467 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/04/07 |
| MSS Lab ID: | 198120-001 | Received: | 10/04/07 |
| Matrix: | Filtrate | Prepared: | 10/12/07 |
| Units: | ug/L | Analyzed: | 10/12/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410215 | <0.05879 | 5.000 | 4.650 | 93 | 79-125 | | |
| MSD | QC410216 | | 5.000 | 4.590 | 92 | 79-125 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-8-GW-+1.25' | Batch#: | 130399 |
| Matrix: | Water | Sampled: | 10/09/07 07:40 |
| Units: | mg/L | Received: | 10/10/07 |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198234-003 | 1.7 | 0.05 | 10/11/07 01:53 |
| BLANK | QC409933 | ND | 0.05 | 10/10/07 13:24 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130399 |
| MSS Lab ID: | 198240-015 | Sampled: | 10/08/07 15:25 |
| Matrix: | Water | Received: | 10/10/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC409934 | | 1.000 | 1.033 | 103 | 80-120 | | | 1.000 | 10/10/07 22:41 |
| BSD | QC409935 | | 1.000 | 1.036 | 104 | 80-120 | 0 | 20 | 1.000 | 10/10/07 22:58 |
| MS | QC410166 | 1.598 | 25.00 | 27.44 | 103 | 80-120 | | | 50.00 | 10/11/07 19:07 |
| MSD | QC410167 | | 25.00 | 27.30 | 103 | 80-120 | 1 | 20 | 50.00 | 10/11/07 19:25 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-8-SS-68' | Batch#: | 130516 |
| Matrix: | Soil | Sampled: | 10/09/07 13:15 |
| Units: | mg/Kg | Received: | 10/10/07 |
| Basis: | as received | | |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198234-002 | ND | 0.5 | 10/13/07 22:44 |
| BLANK | QC410418 | ND | 0.5 | 10/13/07 21:17 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198234 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Field ID: | B-8-SS-68' | Diln Fac: | 1.000 |
| MSS Lab ID: | 198234-002 | Batch#: | 130516 |
| Matrix: | Soil | Sampled: | 10/09/07 13:15 |
| Units: | mg/Kg | Received: | 10/10/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| BS | QC410419 | | 10.00 | 10.16 | 102 | 80-120 | | | 10/13/07 21:34 |
| BSD | QC410420 | | 10.00 | 9.861 | 99 | 80-120 | 3 | 20 | 10/13/07 21:52 |
| MS | QC410421 | 0.1512 | 5.000 | 5.225 | 101 | 50-120 | | | 10/13/07 23:19 |
| MSD | QC410422 | | 5.000 | 5.266 | 102 | 50-120 | 1 | 30 | 10/13/07 23:36 |

RPD= Relative Percent Difference

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198234

# Chain of Custody Record

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/9/07 |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS - 9X3169 |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | |
| Project Name: Cloverdale Project | ☐ 1 week | | |
| Site: Cloverdale, Ca | ☐ 2 days | | |
| C&T-WO-07-002 | ☐ 1 day | | |

1827-15 - J
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

| Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-8-55-0.0' | 10/8/07 | 15:30 | | SO | 1 | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| B-8-55-68' | 10/9/07 | 13:15 | | SO | 1 | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| B-8-GW-+1.25' | 10/9/07 | 07:40 | VOA | GW | 3 | ✓ | | | | | | | |
| | | | VOA | | 3 | | | | ✓ | | | | |
| | | | 1L poly | | 2 | | | ✓ | | | | | |
| | | | 750 ml poly | | 1 | ✓ | ✓ | | | | | | |
| ↓ | ↓ | ↓ | 500 ml poly | ↓ | 1 | | | | | ✓ | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Trip Blank | 10/9/07 | | VOA | AQ | | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For _____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Weiss Associates | 10/9/07, 15:00 | [signature] | C&T | 10-10-07 1050 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

# COOLER RECEIPT CHECKLIST

Login#: 198234 Date Received: 10-10-07 Number of Coolers: 1
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10-10-07 By (print): Faith Nichols (sign) Faith

1. Did cooler come with a shipping slip (airbill, etc.)? (YES) NO
   If YES, enter carrier name and airbill number: UPS 1Z 832 32E 01 4339 1682 7
2. Were custody seals on outside of cooler? YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO N/A
4. Were custody papers dry and intact when received? (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? (YES) NO
6. Did you sign the custody papers in the appropriate place? (YES) NO
7. Was project identifiable from custody papers? (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap, Voa foam
9. If required, was sufficient ice used? Samples should be <=6 degrees C. (YES) NO
   Type of ice: Wet Temperature: No temp blank, All cold
10. Were Encore sampling devices present in the cooler? YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-10-07 By (print): Faith Nichols (sign) Faith

1. Did all bottles arrive unbroken? (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? (YES) NO
3. Did bottle labels agree with custody papers? (YES) NO
4. Were appropriate containers used for the tests indicated? (YES) NO
5. Were correct preservatives added to samples? (YES) NO
6. Was sufficient amount of sample sent for tests indicated? (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below. (YES) NO
8. Was the client contacted concerning this sample delivery? YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
Trip Blank listed on COC but not in cooler

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-9-SS-0.0 | 198317-001 |
| B-9-GW-25 | 198317-002 |
| B-7-GW-41 | 198317-003 |
| B-14-SS-0.0 | 198317-004 |
| B-7-SS-0.0 | 198317-005 |
| B-7-SS-47 | 198317-006 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/05/2007
Project Manager

Signature: _____ Date: 11/05/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198317** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/18/07** |
| Samples Received: | **10/12/07** |

This hardcopy data package contains sample and QC results for three soil samples and two water samples, requested for the above referenced project on 10/18/07. The samples were received cool, but above 6 degrees C, and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
High recoveries were observed for trichloroethene in the MS/MSD for batch 130460; the parent sample was not a project sample, the LCS was within limits, the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated samples. Low surrogate recoveries were observed for dibromofluoromethane in the MS/MSD for batch 130460; the parent sample was not a project sample. High surrogate recoveries were also observed for dibromofluoromethane in B-9-SS-0.0 (lab # 198317-001), B-14-SS-0.0 (lab # 198317-004), and B-7-SS-0.0 (lab # 198317-005); no target analytes were detected in these samples. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A) Soil:**
Low recovery was observed for copper in the MSD for batch 130500; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Filtrate:**
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198317** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/18/07** |
| Samples Received: | **10/12/07** |

**Ion Chromatography (EPA 300.0):**
No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130550 |
| Units: | ug/L | Sampled: | 10/11/07 |
| Diln Fac: | 1.000 | Received: | 10/12/07 |

Field ID: B-9-GW-25 Lab ID: 198317-002
Type: SAMPLE Analyzed: 10/16/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 92 | 73-134 |
| Bromofluorobenzene (FID) | 103 | 77-140 |

Field ID: B-7-GW-41 Lab ID: 198317-003
Type: SAMPLE Analyzed: 10/15/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 89 | 73-134 |
| Bromofluorobenzene (FID) | 99 | 77-140 |

Type: BLANK Analyzed: 10/15/07
Lab ID: QC410566

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 96 | 73-134 |
| Bromofluorobenzene (FID) | 102 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC410567 | Batch#: | 130550 |
| Matrix: | Water | Analyzed: | 10/15/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 906.3 | 91 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 105 | 73-134 |
| Bromofluorobenzene (FID) | 104 | 77-140 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130550 |
| MSS Lab ID: | 198263-003 | Sampled: | 10/10/07 |
| Matrix: | Water | Received: | 10/10/07 |
| Units: | ug/L | Analyzed: | 10/15/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC410568

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 57.12 | 2,000 | 1,788 | 87 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 113 | 73-134 |
| Bromofluorobenzene (FID) | 108 | 77-140 |

Type: MSD Lab ID: QC410569

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,722 | 83 | 72-120 | 4 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 114 | 73-134 |
| Bromofluorobenzene (FID) | 108 | 77-140 |

RPD= Relative Percent Difference

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# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Dil'n Fac: | 1.000 |
| Units: | mg/Kg | Batch#: | 130542 |
| Basis: | as received | Received: | 10/12/07 |

Field ID: B-9-SS-0.0 Sampled: 10/11/07
Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198317-001

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.93 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 98 | 71-132 |
| Bromofluorobenzene (FID) | 94 | 69-145 |

Field ID: B-14-SS-0.0 Sampled: 10/08/07
Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198317-004

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.1 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 101 | 71-132 |
| Bromofluorobenzene (FID) | 97 | 69-145 |

Field ID: B-7-SS-0.0 Sampled: 10/11/07
Type: SAMPLE Analyzed: 10/16/07
Lab ID: 198317-005

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 94 | 71-132 |
| Bromofluorobenzene (FID) | 88 | 69-145 |

Type: BLANK Analyzed: 10/15/07
Lab ID: QC410537

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 94 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC410538 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130542 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 5.000 | 4.895 | 98 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 119 | 71-132 |
| Bromofluorobenzene (FID) | 94 | 69-145 |

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Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 198322-002 | Batch#: | 130542 |
| Matrix: | Soil | Sampled: | 10/11/07 |
| Units: | mg/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/15/07 |

Type: MS Lab ID: QC410539

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | <0.07746 | 10.42 | 6.979 | 67 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 132 | 71-132 |
| Bromofluorobenzene (FID) | 100 | 69-145 |

Type: MSD Lab ID: QC410540

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 10.20 | 6.200 | 61 | 43-120 | 10 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 127 | 71-132 |
| Bromofluorobenzene (FID) | 95 | 69-145 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Sampled: | 10/11/07 |
| Units: | ug/L | Received: | 10/12/07 |
| Diln Fac: | 1.000 | Prepared: | 10/24/07 |
| Batch#: | 130895 | Analyzed: | 10/25/07 |

Field ID: B-9-GW-25 Lab ID: 198317-002
Type: SAMPLE

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | 57 Y | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 110 | 61-133 |

Field ID: B-7-GW-41 Lab ID: 198317-003
Type: SAMPLE

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 106 | 61-133 |

Type: BLANK Lab ID: QC412019

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 64 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 120 | 61-133 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC412020 | Batch#: | 130895 |
| Matrix: | Water | Prepared: | 10/24/07 |
| Units: | ug/L | Analyzed: | 10/25/07 |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,162 | 86 | 58-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 93 | 61-133 |

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Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130895 |
| MSS Lab ID: | 198501-001 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Prepared: | 10/24/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/25/07 |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC412021

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | <15.44 | 2,500 | 2,058 | 82 | 58-129 |

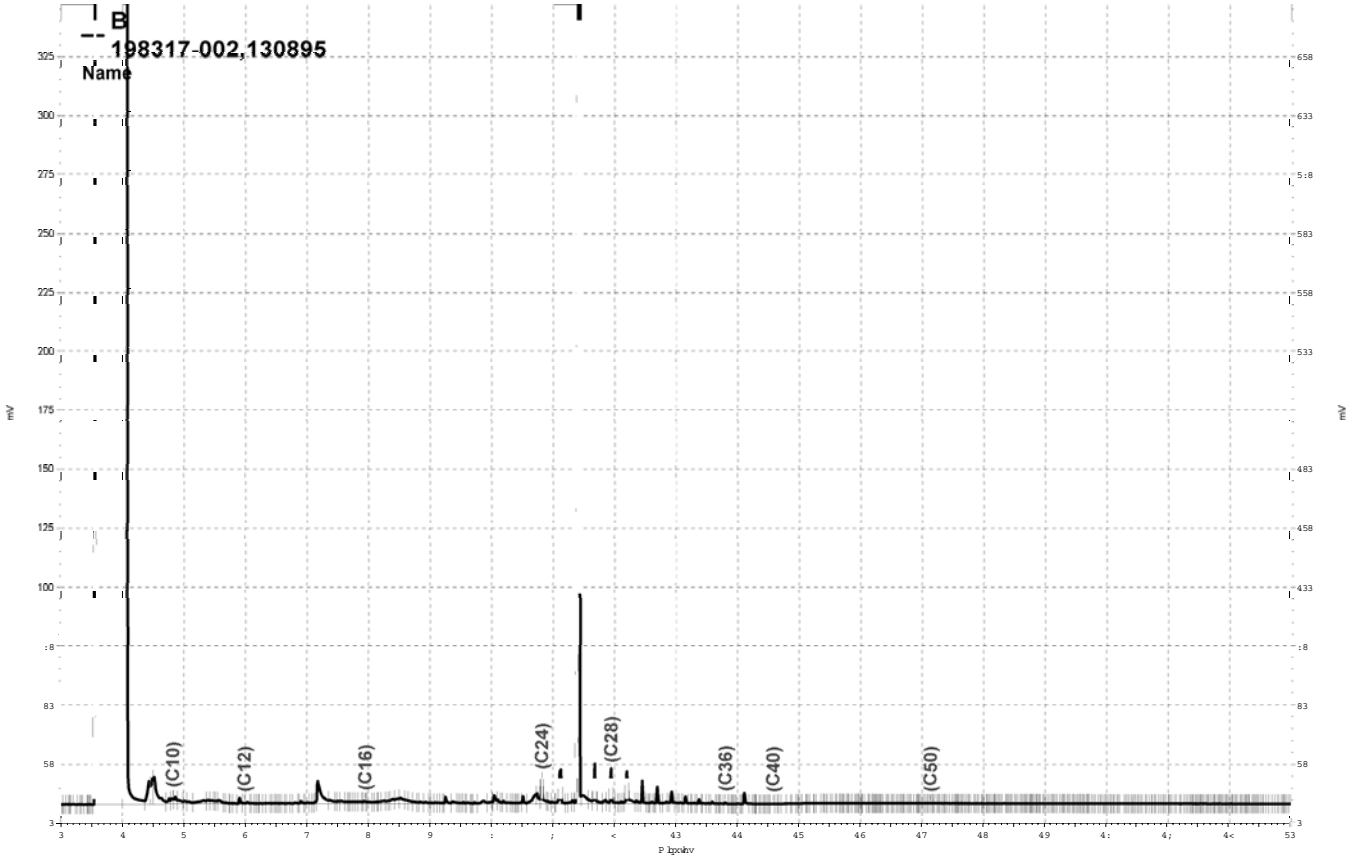
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 110 | 61-133 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC412022

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,045 | 82 | 58-129 | 1 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 108 | 61-133 |

RPD= Relative Percent Difference

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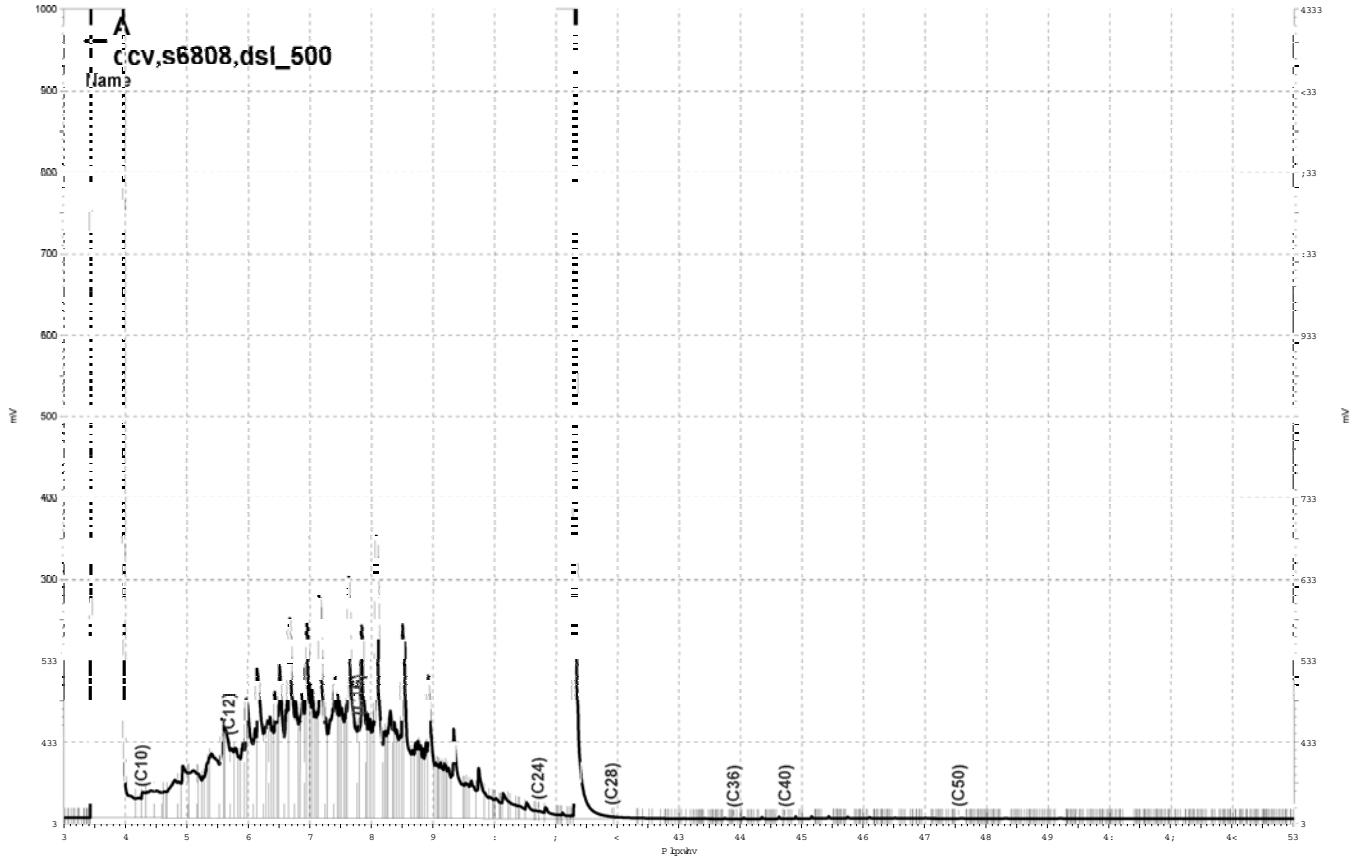


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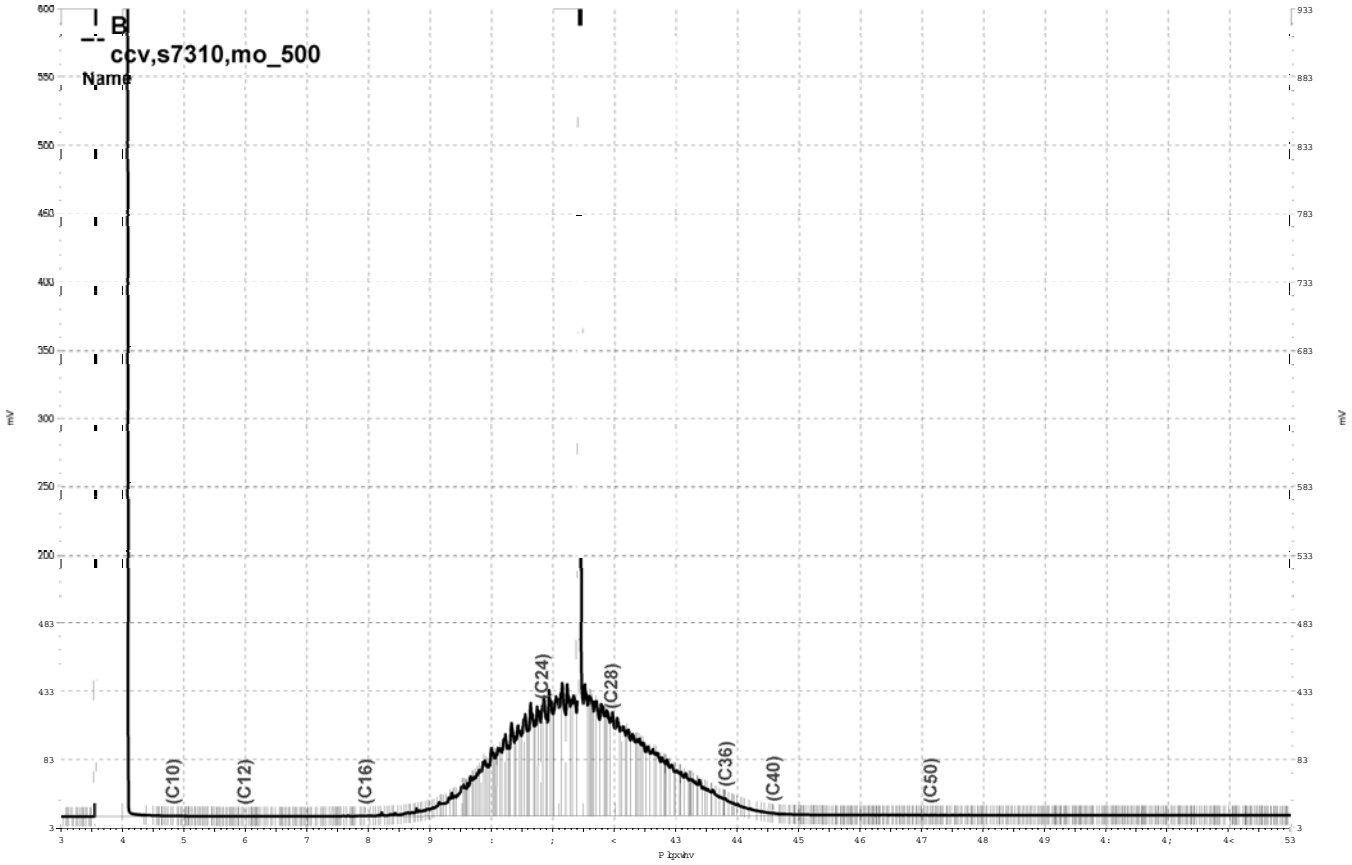


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Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 8015B |
| Project#: | 379-1827-15-02 | | |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | mg/Kg | Received: | 10/12/07 |
| Basis: | as received | | |

| | | | |
|---|---|---|---|
| Field ID: | B-9-SS-0.0 | Sampled: | 10/11/07 |
| Type: | SAMPLE | Prepared: | 10/23/07 |
| Lab ID: | 198317-001 | Analyzed: | 10/24/07 |
| Batch#: | 130866 | Prep: | SHAKER TABLE |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 15 Y | 1.0 |
| Motor Oil C24-C36 | 81 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 91 | 46-128 |

| | | | |
|---|---|---|---|
| Field ID: | B-14-SS-0.0 | Sampled: | 10/08/07 |
| Type: | SAMPLE | Prepared: | 10/22/07 |
| Lab ID: | 198317-004 | Analyzed: | 10/23/07 |
| Batch#: | 130813 | Prep: | EPA 3550B |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 28 Y | 1.0 |
| Motor Oil C24-C36 | 140 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 101 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 8015B |
| Project#: | 379-1827-15-02 | | |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | mg/Kg | Received: | 10/12/07 |
| Basis: | as received | | |

| | | | |
|---|---|---|---|
| Field ID: | B-7-SS-0.0 | Sampled: | 10/11/07 |
| Type: | SAMPLE | Prepared: | 10/23/07 |
| Lab ID: | 198317-005 | Analyzed: | 10/24/07 |
| Batch#: | 130866 | Prep: | SHAKER TABLE |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 28 Y | 0.99 |
| Motor Oil C24-C36 | 140 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 85 | 46-128 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Prepared: | 10/22/07 |
| Lab ID: | QC411666 | Analyzed: | 10/23/07 |
| Batch#: | 130813 | Prep: | EPA 3550B |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 101 | 46-128 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Prepared: | 10/23/07 |
| Lab ID: | QC411906 | Analyzed: | 10/24/07 |
| Batch#: | 130866 | Prep: | SHAKER TABLE |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 92 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC411667 | Batch#: | 130813 |
| Matrix: | Soil | Prepared: | 10/22/07 |
| Units: | mg/Kg | Analyzed: | 10/23/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 49.95 | 50.99 | 102 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 109 | 46-128 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-14-SS-0.0 | Batch#: | 130813 |
| MSS Lab ID: | 198317-004 | Sampled: | 10/08/07 |
| Matrix: | Soil | Received: | 10/12/07 |
| Units: | mg/Kg | Prepared: | 10/22/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC411668

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | 27.92 | 50.00 | 68.00 | 80 | 31-150 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 95 | 46-128 |

Type: MSD Lab ID: QC411669

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 49.70 | 69.48 | 84 | 31-150 | 3 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 106 | 46-128 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC411907 | Batch#: | 130866 |
| Matrix: | Soil | Prepared: | 10/23/07 |
| Units: | mg/Kg | Analyzed: | 10/25/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 49.87 | 38.21 | 77 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 76 | 46-128 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | SHAKER TABLE |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130866 |
| MSS Lab ID: | 198326-001 | Sampled: | 10/12/07 |
| Matrix: | Soil | Received: | 10/12/07 |
| Units: | mg/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/25/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC411908

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | 0.2374 | 49.90 | 36.01 | 72 | 31-150 |

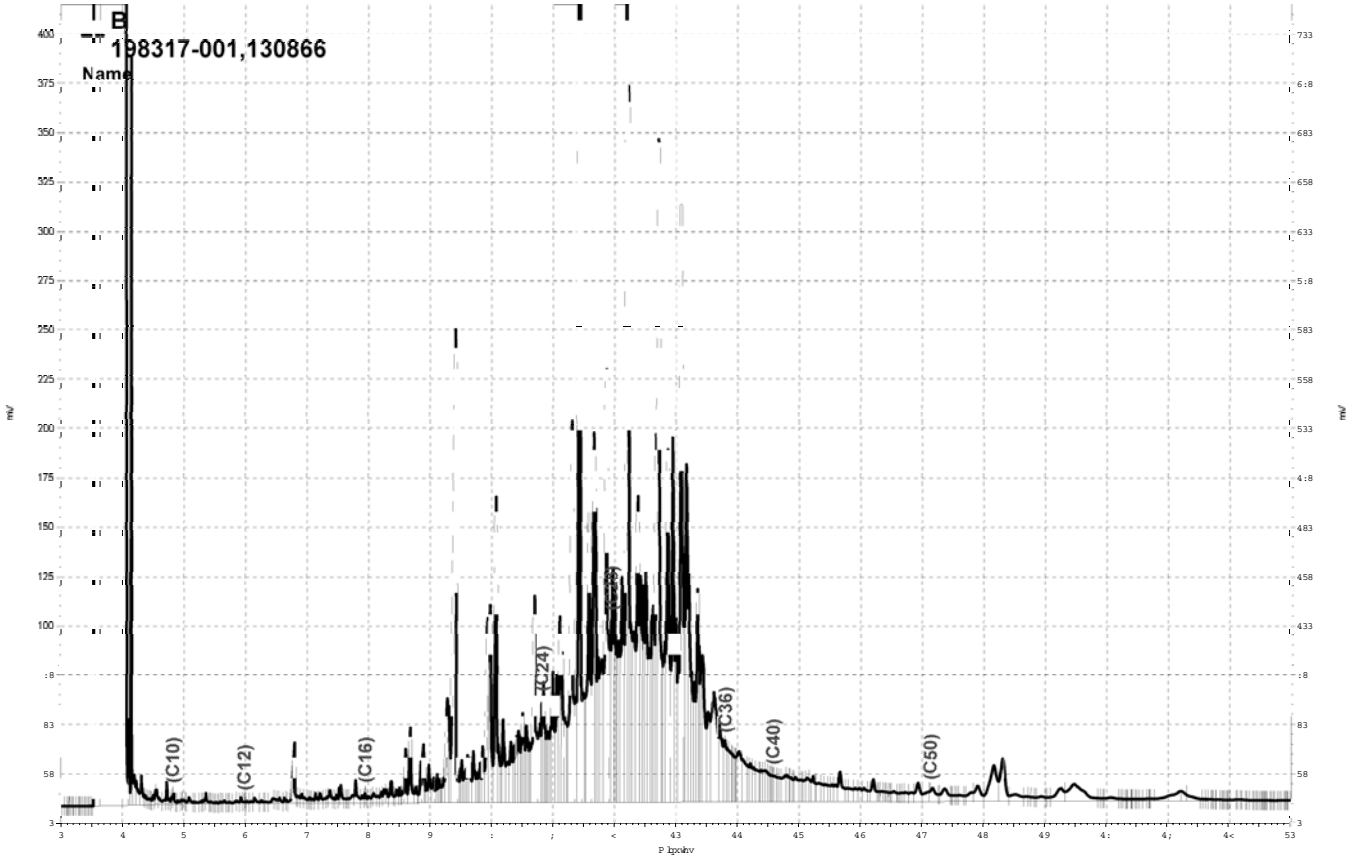
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 77 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC411909

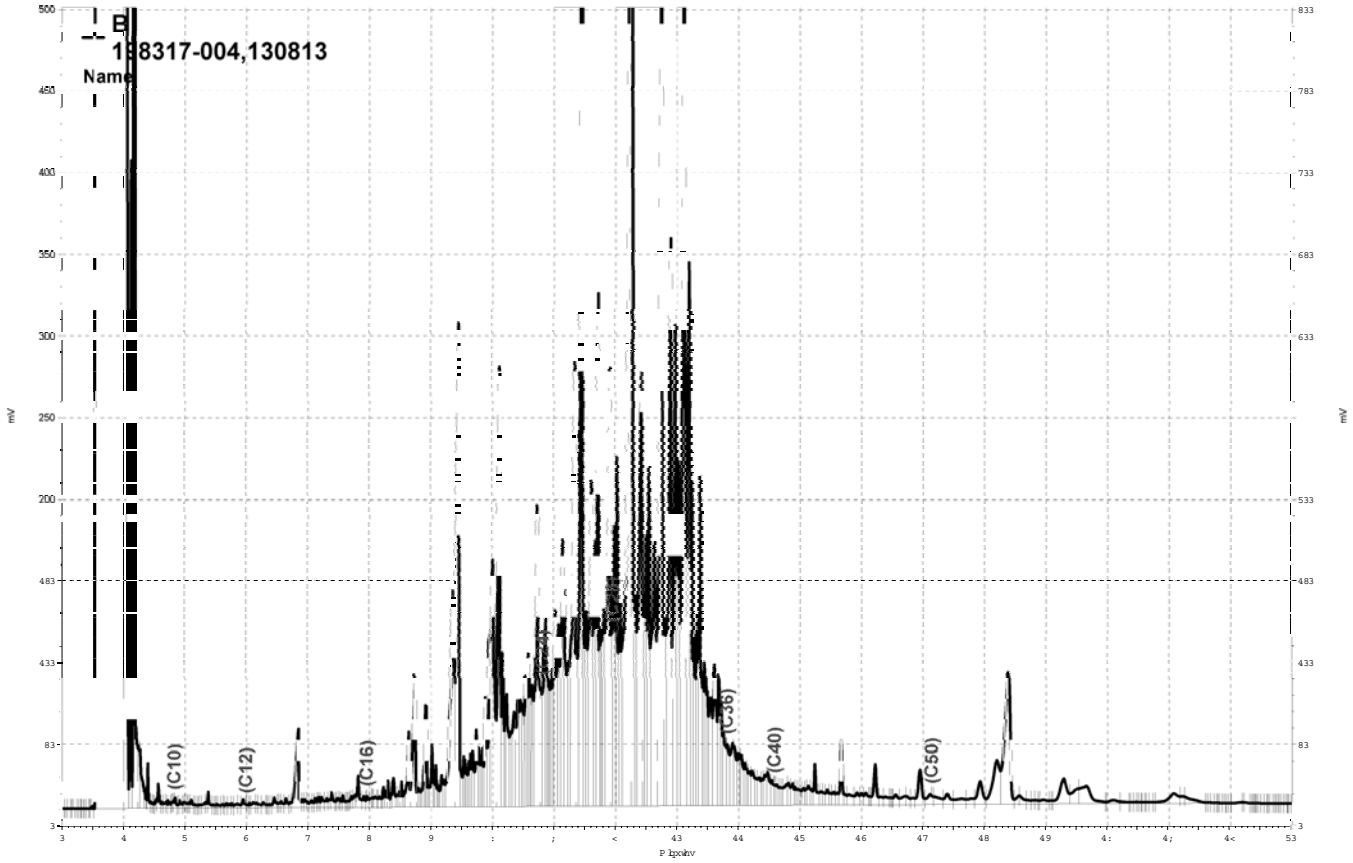
| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 49.75 | 38.62 | 77 | 31-150 | 7 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 81 | 46-128 |

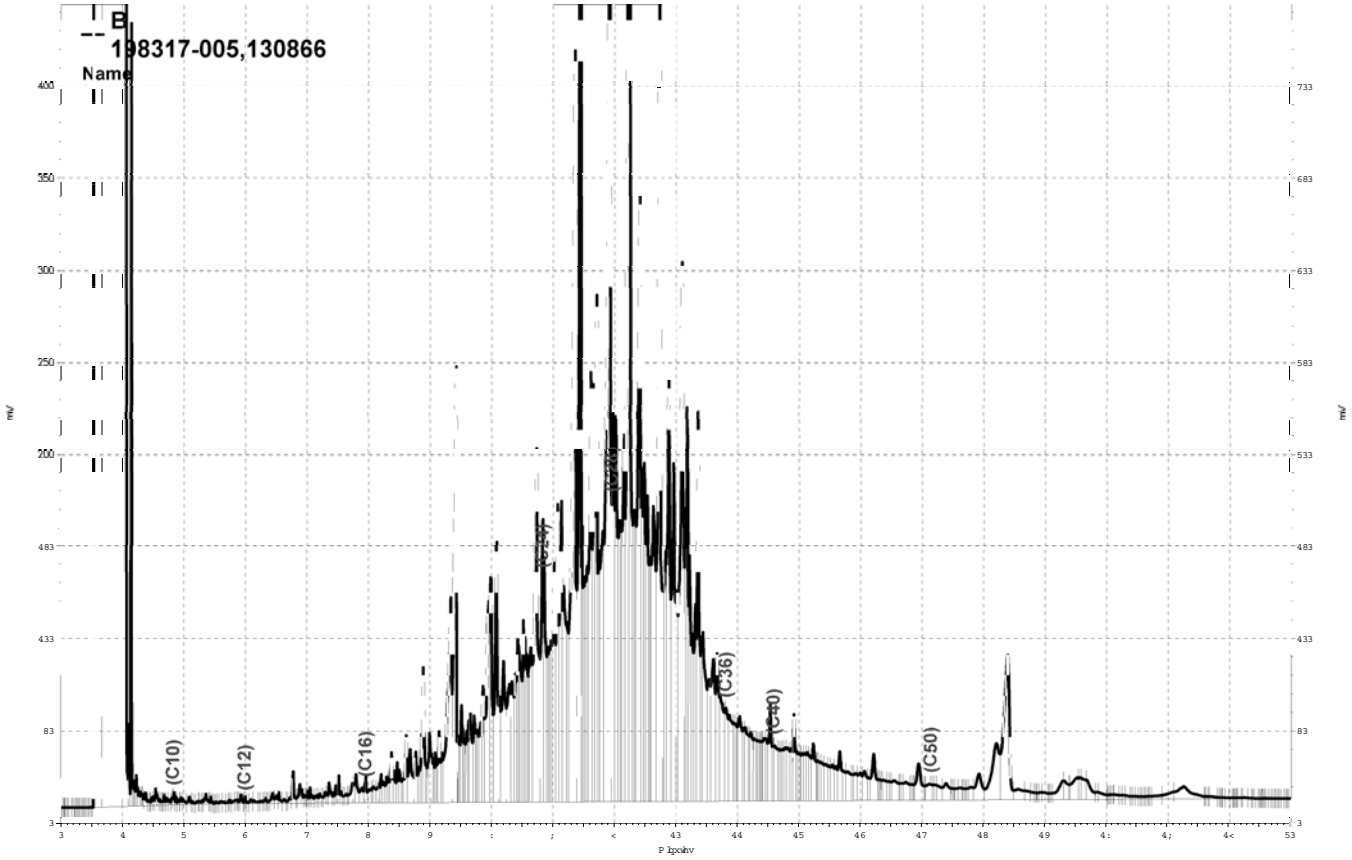
RPD= Relative Percent Difference



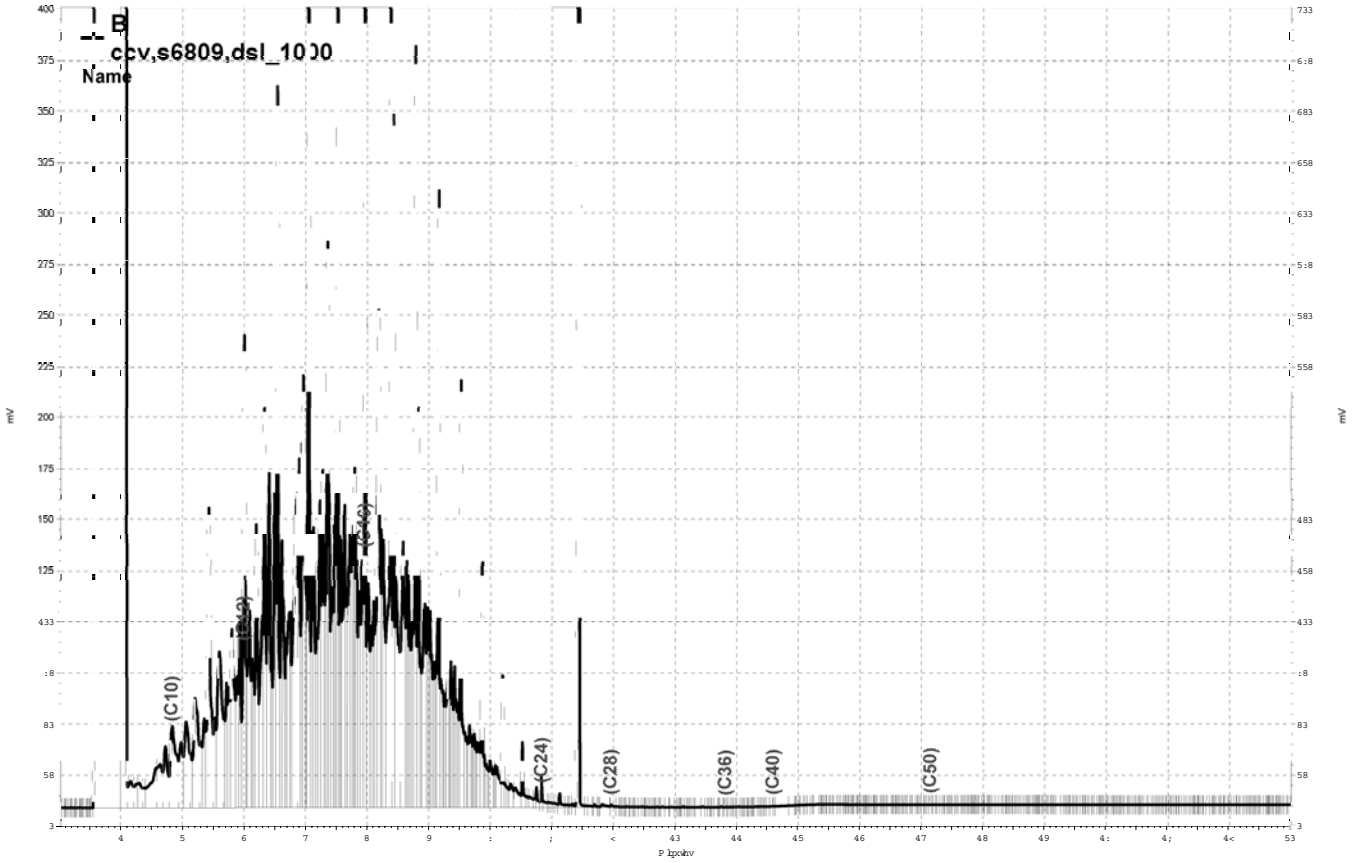

_Olp vjgulyh_h}fkurp_SurmfwvJF48E_Gdwd_5<:e33:/E



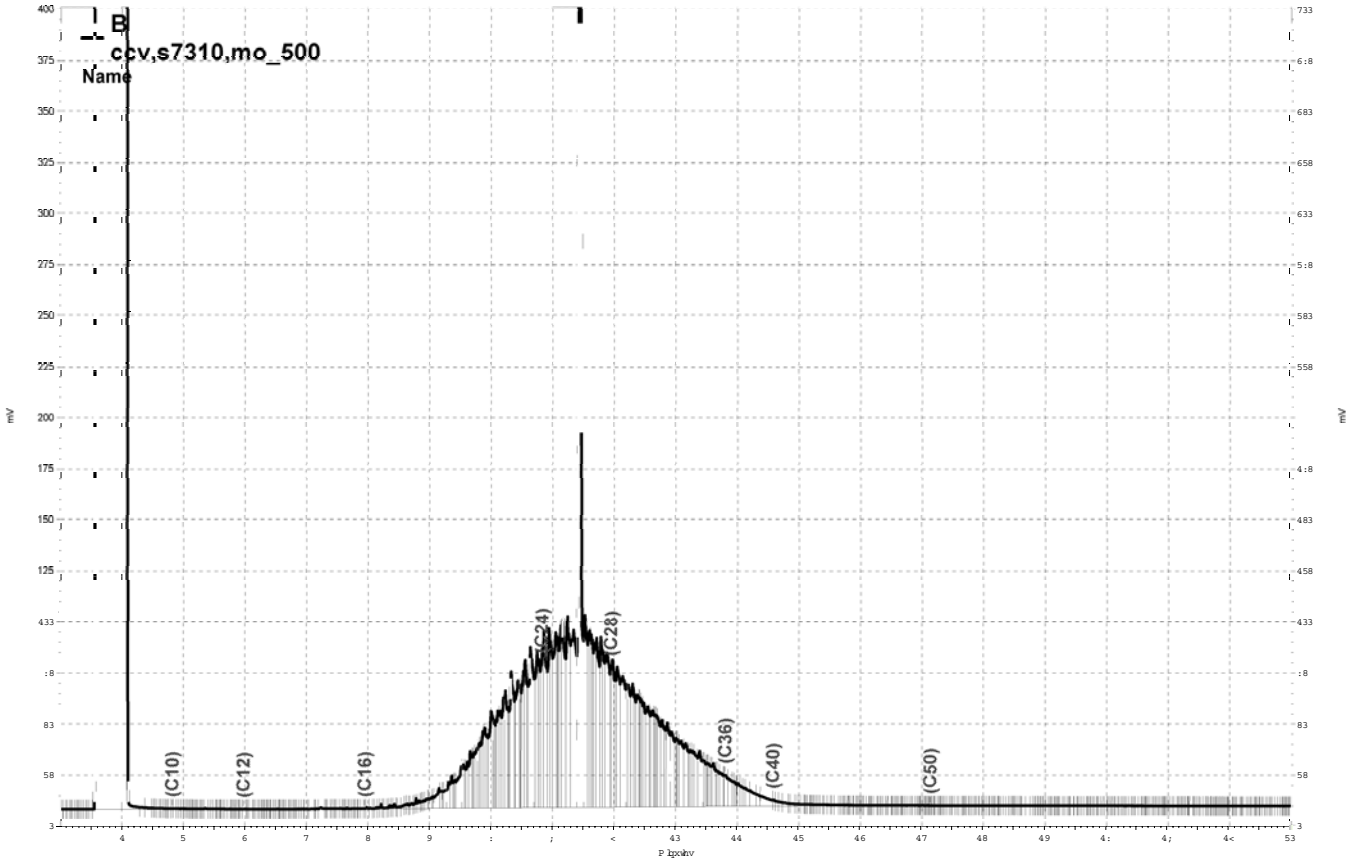

_Olpvjgulyh_h}fkurp_SurmfwJF48E_Gdwd_5<8e367/E




_Olpvjgulyh_h}fkurp_SurmfwvJF48E_Gdwd_5<:e33;/E




_Olp vjgulyh_h}fkurp_SurmfwvJF48E_Gdwd_5<8e35:/E




_Olpvjgulyh_h}fkurp_SurmfwvJF48E_Gdwd_5<8e35;/E

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-9-GW-25 | Batch#: | 130530 |
| Lab ID: | 198317-002 | Sampled: | 10/11/07 |
| Matrix: | Water | Received: | 10/12/07 |
| Units: | ug/L | Analyzed: | 10/15/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-9-GW-25 | Batch#: | 130530 |
| Lab ID: | 198317-002 | Sampled: | 10/11/07 |
| Matrix: | Water | Received: | 10/12/07 |
| Units: | ug/L | Analyzed: | 10/15/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 101 | 74-137 |
| Toluene-d8 | 94 | 80-120 |
| Bromofluorobenzene | 101 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-7-GW-41 | Batch#: | 130530 |
| Lab ID: | 198317-003 | Sampled: | 10/11/07 |
| Matrix: | Water | Received: | 10/12/07 |
| Units: | ug/L | Analyzed: | 10/15/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-7-GW-41 | Batch#: | 130530 |
| Lab ID: | 198317-003 | Sampled: | 10/11/07 |
| Matrix: | Water | Received: | 10/12/07 |
| Units: | ug/L | Analyzed: | 10/15/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 97 | 80-122 |
| 1,2-Dichloroethane-d4 | 100 | 74-137 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410481 | Batch#: | 130530 |
| Matrix: | Water | Analyzed: | 10/15/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 2-Chloroethylvinylether | ND | 10 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410481 | Batch#: | 130530 |
| Matrix: | Water | Analyzed: | 10/15/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Tetrachloroethene | ND | 0.5 |
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 0.5 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 0.5 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 98 | 80-122 |
| 1,2-Dichloroethane-d4 | 101 | 74-137 |
| Toluene-d8 | 96 | 80-120 |
| Bromofluorobenzene | 107 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Water | Batch#: | 130530 |
| Units: | ug/L | Analyzed: | 10/15/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC410482

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 25.31 | 101 | 80-133 |
| Benzene | 25.00 | 23.31 | 93 | 80-120 |
| Trichloroethene | 25.00 | 25.09 | 100 | 80-120 |
| Toluene | 25.00 | 23.03 | 92 | 80-122 |
| Chlorobenzene | 25.00 | 22.92 | 92 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 100 | 80-122 |
| 1,2-Dichloroethane-d4 | 94 | 74-137 |
| Toluene-d8 | 94 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

Type: BSD Lab ID: QC410483

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 27.06 | 108 | 80-133 | 7 | 20 |
| Benzene | 25.00 | 24.76 | 99 | 80-120 | 6 | 20 |
| Trichloroethene | 25.00 | 26.23 | 105 | 80-120 | 4 | 20 |
| Toluene | 25.00 | 25.30 | 101 | 80-122 | 9 | 20 |
| Chlorobenzene | 25.00 | 25.11 | 100 | 80-120 | 9 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 99 | 80-122 |
| 1,2-Dichloroethane-d4 | 97 | 74-137 |
| Toluene-d8 | 95 | 80-120 |
| Bromofluorobenzene | 106 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-9-SS-0.0 | Diln Fac: | 0.8772 |
| Lab ID: | 198317-001 | Batch#: | 130460 |
| Matrix: | Soil | Sampled: | 10/11/07 |
| Units: | ug/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 8.8 |
| Chloromethane | ND | 8.8 |
| Vinyl Chloride | ND | 8.8 |
| Bromomethane | ND | 8.8 |
| Chloroethane | ND | 8.8 |
| Trichlorofluoromethane | ND | 4.4 |
| Acetone | ND | 22 |
| Freon 113 | ND | 4.4 |
| 1,1-Dichloroethene | ND | 4.4 |
| Methylene Chloride | ND | 18 |
| Carbon Disulfide | ND | 4.4 |
| MTBE | ND | 4.4 |
| trans-1,2-Dichloroethene | ND | 4.4 |
| Vinyl Acetate | ND | 44 |
| 1,1-Dichloroethane | ND | 4.4 |
| 2-Butanone | ND | 8.8 |
| cis-1,2-Dichloroethene | ND | 4.4 |
| 2,2-Dichloropropane | ND | 4.4 |
| Chloroform | ND | 4.4 |
| Bromochloromethane | ND | 4.4 |
| 1,1,1-Trichloroethane | ND | 4.4 |
| 1,1-Dichloropropene | ND | 4.4 |
| Carbon Tetrachloride | ND | 4.4 |
| 1,2-Dichloroethane | ND | 4.4 |
| Benzene | ND | 4.4 |
| Trichloroethene | ND | 4.4 |
| 1,2-Dichloropropane | ND | 4.4 |
| Bromodichloromethane | ND | 4.4 |
| Dibromomethane | ND | 4.4 |
| 4-Methyl-2-Pentanone | ND | 8.8 |
| cis-1,3-Dichloropropene | ND | 4.4 |
| Toluene | ND | 4.4 |
| trans-1,3-Dichloropropene | ND | 4.4 |
| 1,1,2-Trichloroethane | ND | 4.4 |
| 2-Hexanone | ND | 8.8 |
| 1,3-Dichloropropane | ND | 4.4 |
| Tetrachloroethene | ND | 4.4 |
| Dibromochloromethane | ND | 4.4 |
| 1,2-Dibromoethane | ND | 4.4 |
| Chlorobenzene | ND | 4.4 |
| 1,1,1,2-Tetrachloroethane | ND | 4.4 |
| Ethylbenzene | ND | 4.4 |
| m,p-Xylenes | ND | 4.4 |
| o-Xylene | ND | 4.4 |
| Styrene | ND | 4.4 |
| Bromoform | ND | 4.4 |
| Isopropylbenzene | ND | 4.4 |
| 1,1,2,2-Tetrachloroethane | ND | 4.4 |
| 1,2,3-Trichloropropane | ND | 4.4 |
| Propylbenzene | ND | 4.4 |
| Bromobenzene | ND | 4.4 |
| 1,3,5-Trimethylbenzene | ND | 4.4 |
| 2-Chlorotoluene | ND | 4.4 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-9-SS-0.0 | Dil'n Fac: | 0.8772 |
| Lab ID: | 198317-001 | Batch#: | 130460 |
| Matrix: | Soil | Sampled: | 10/11/07 |
| Units: | ug/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.4 |
| tert-Butylbenzene | ND | 4.4 |
| 1,2,4-Trimethylbenzene | ND | 4.4 |
| sec-Butylbenzene | ND | 4.4 |
| para-Isopropyl Toluene | ND | 4.4 |
| 1,3-Dichlorobenzene | ND | 4.4 |
| 1,4-Dichlorobenzene | ND | 4.4 |
| n-Butylbenzene | ND | 4.4 |
| 1,2-Dichlorobenzene | ND | 4.4 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.4 |
| 1,2,4-Trichlorobenzene | ND | 4.4 |
| Hexachlorobutadiene | ND | 4.4 |
| Naphthalene | ND | 4.4 |
| 1,2,3-Trichlorobenzene | ND | 4.4 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 139 * | 80-124 |
| 1,2-Dichloroethane-d4 | 118 | 79-136 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 91 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-14-SS-0.0 | Diln Fac: | 0.9091 |
| Lab ID: | 198317-004 | Batch#: | 130460 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | ug/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.1 |
| Chloromethane | ND | 9.1 |
| Vinyl Chloride | ND | 9.1 |
| Bromomethane | ND | 9.1 |
| Chloroethane | ND | 9.1 |
| Trichlorofluoromethane | ND | 4.5 |
| Acetone | ND | 23 |
| Freon 113 | ND | 4.5 |
| 1,1-Dichloroethene | ND | 4.5 |
| Methylene Chloride | ND | 18 |
| Carbon Disulfide | ND | 4.5 |
| MTBE | ND | 4.5 |
| trans-1,2-Dichloroethene | ND | 4.5 |
| Vinyl Acetate | ND | 45 |
| 1,1-Dichloroethane | ND | 4.5 |
| 2-Butanone | ND | 9.1 |
| cis-1,2-Dichloroethene | ND | 4.5 |
| 2,2-Dichloropropane | ND | 4.5 |
| Chloroform | ND | 4.5 |
| Bromochloromethane | ND | 4.5 |
| 1,1,1-Trichloroethane | ND | 4.5 |
| 1,1-Dichloropropene | ND | 4.5 |
| Carbon Tetrachloride | ND | 4.5 |
| 1,2-Dichloroethane | ND | 4.5 |
| Benzene | ND | 4.5 |
| Trichloroethene | ND | 4.5 |
| 1,2-Dichloropropane | ND | 4.5 |
| Bromodichloromethane | ND | 4.5 |
| Dibromomethane | ND | 4.5 |
| 4-Methyl-2-Pentanone | ND | 9.1 |
| cis-1,3-Dichloropropene | ND | 4.5 |
| Toluene | ND | 4.5 |
| trans-1,3-Dichloropropene | ND | 4.5 |
| 1,1,2-Trichloroethane | ND | 4.5 |
| 2-Hexanone | ND | 9.1 |
| 1,3-Dichloropropane | ND | 4.5 |
| Tetrachloroethene | ND | 4.5 |
| Dibromochloromethane | ND | 4.5 |
| 1,2-Dibromoethane | ND | 4.5 |
| Chlorobenzene | ND | 4.5 |
| 1,1,1,2-Tetrachloroethane | ND | 4.5 |
| Ethylbenzene | ND | 4.5 |
| m,p-Xylenes | ND | 4.5 |
| o-Xylene | ND | 4.5 |
| Styrene | ND | 4.5 |
| Bromoform | ND | 4.5 |
| Isopropylbenzene | ND | 4.5 |
| 1,1,2,2-Tetrachloroethane | ND | 4.5 |
| 1,2,3-Trichloropropane | ND | 4.5 |
| Propylbenzene | ND | 4.5 |
| Bromobenzene | ND | 4.5 |
| 1,3,5-Trimethylbenzene | ND | 4.5 |
| 2-Chlorotoluene | ND | 4.5 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-14-SS-0.0 | Dil'n Fac: | 0.9091 |
| Lab ID: | 198317-004 | Batch#: | 130460 |
| Matrix: | Soil | Sampled: | 10/08/07 |
| Units: | ug/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.5 |
| tert-Butylbenzene | ND | 4.5 |
| 1,2,4-Trimethylbenzene | ND | 4.5 |
| sec-Butylbenzene | ND | 4.5 |
| para-Isopropyl Toluene | ND | 4.5 |
| 1,3-Dichlorobenzene | ND | 4.5 |
| 1,4-Dichlorobenzene | ND | 4.5 |
| n-Butylbenzene | ND | 4.5 |
| 1,2-Dichlorobenzene | ND | 4.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.5 |
| 1,2,4-Trichlorobenzene | ND | 4.5 |
| Hexachlorobutadiene | ND | 4.5 |
| Naphthalene | ND | 4.5 |
| 1,2,3-Trichlorobenzene | ND | 4.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 143 * | 80-124 |
| 1,2-Dichloroethane-d4 | 118 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 90 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-7-SS-0.0 | Diln Fac: | 0.9259 |
| Lab ID: | 198317-005 | Batch#: | 130460 |
| Matrix: | Soil | Sampled: | 10/11/07 |
| Units: | ug/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.3 |
| Chloromethane | ND | 9.3 |
| Vinyl Chloride | ND | 9.3 |
| Bromomethane | ND | 9.3 |
| Chloroethane | ND | 9.3 |
| Trichlorofluoromethane | ND | 4.6 |
| Acetone | ND | 23 |
| Freon 113 | ND | 4.6 |
| 1,1-Dichloroethene | ND | 4.6 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.6 |
| MTBE | ND | 4.6 |
| trans-1,2-Dichloroethene | ND | 4.6 |
| Vinyl Acetate | ND | 46 |
| 1,1-Dichloroethane | ND | 4.6 |
| 2-Butanone | ND | 9.3 |
| cis-1,2-Dichloroethene | ND | 4.6 |
| 2,2-Dichloropropane | ND | 4.6 |
| Chloroform | ND | 4.6 |
| Bromochloromethane | ND | 4.6 |
| 1,1,1-Trichloroethane | ND | 4.6 |
| 1,1-Dichloropropene | ND | 4.6 |
| Carbon Tetrachloride | ND | 4.6 |
| 1,2-Dichloroethane | ND | 4.6 |
| Benzene | ND | 4.6 |
| Trichloroethene | ND | 4.6 |
| 1,2-Dichloropropane | ND | 4.6 |
| Bromodichloromethane | ND | 4.6 |
| Dibromomethane | ND | 4.6 |
| 4-Methyl-2-Pentanone | ND | 9.3 |
| cis-1,3-Dichloropropene | ND | 4.6 |
| Toluene | ND | 4.6 |
| trans-1,3-Dichloropropene | ND | 4.6 |
| 1,1,2-Trichloroethane | ND | 4.6 |
| 2-Hexanone | ND | 9.3 |
| 1,3-Dichloropropane | ND | 4.6 |
| Tetrachloroethene | ND | 4.6 |
| Dibromochloromethane | ND | 4.6 |
| 1,2-Dibromoethane | ND | 4.6 |
| Chlorobenzene | ND | 4.6 |
| 1,1,1,2-Tetrachloroethane | ND | 4.6 |
| Ethylbenzene | ND | 4.6 |
| m,p-Xylenes | ND | 4.6 |
| o-Xylene | ND | 4.6 |
| Styrene | ND | 4.6 |
| Bromoform | ND | 4.6 |
| Isopropylbenzene | ND | 4.6 |
| 1,1,2,2-Tetrachloroethane | ND | 4.6 |
| 1,2,3-Trichloropropane | ND | 4.6 |
| Propylbenzene | ND | 4.6 |
| Bromobenzene | ND | 4.6 |
| 1,3,5-Trimethylbenzene | ND | 4.6 |
| 2-Chlorotoluene | ND | 4.6 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-7-SS-0.0 | Diln Fac: | 0.9259 |
| Lab ID: | 198317-005 | Batch#: | 130460 |
| Matrix: | Soil | Sampled: | 10/11/07 |
| Units: | ug/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.6 |
| tert-Butylbenzene | ND | 4.6 |
| 1,2,4-Trimethylbenzene | ND | 4.6 |
| sec-Butylbenzene | ND | 4.6 |
| para-Isopropyl Toluene | ND | 4.6 |
| 1,3-Dichlorobenzene | ND | 4.6 |
| 1,4-Dichlorobenzene | ND | 4.6 |
| n-Butylbenzene | ND | 4.6 |
| 1,2-Dichlorobenzene | ND | 4.6 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.6 |
| 1,2,4-Trichlorobenzene | ND | 4.6 |
| Hexachlorobutadiene | ND | 4.6 |
| Naphthalene | ND | 4.6 |
| 1,2,3-Trichlorobenzene | ND | 4.6 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 146 * | 80-124 |
| 1,2-Dichloroethane-d4 | 116 | 79-136 |
| Toluene-d8 | 98 | 80-120 |
| Bromofluorobenzene | 91 | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC410188 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130460 |
| Units: | ug/Kg | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC410188 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130460 |
| Units: | ug/Kg | Analyzed: | 10/12/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 116 | 80-124 |
| 1,2-Dichloroethane-d4 | 106 | 79-136 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 94 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC410189 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130460 |
| Units: | ug/Kg | Analyzed: | 10/12/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 25.17 | 101 | 74-131 |
| Benzene | 25.00 | 26.73 | 107 | 77-121 |
| Trichloroethene | 25.00 | 25.46 | 102 | 77-121 |
| Toluene | 25.00 | 26.50 | 106 | 79-122 |
| Chlorobenzene | 25.00 | 26.34 | 105 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 97 | 80-124 |
| 1,2-Dichloroethane-d4 | 101 | 79-136 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 93 | 80-122 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 0.9804 |
| MSS Lab ID: | 198338-002 | Batch#: | 130460 |
| Matrix: | Soil | Sampled: | 10/12/07 |
| Units: | ug/Kg | Received: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/12/07 |

Type: MS Lab ID: QC410334

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.4287 | 49.02 | 68.57 | 140 | 61-145 |
| Benzene | <0.2988 | 49.02 | 48.28 | 98 | 57-123 |
| Trichloroethene | 3.725 | 49.02 | 89.47 | 175 * | 52-141 |
| Toluene | <0.4049 | 49.02 | 46.51 | 95 | 53-126 |
| Chlorobenzene | <0.2737 | 49.02 | 42.27 | 86 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 16 * | 80-124 |
| 1,2-Dichloroethane-d4 | 117 | 79-136 |
| Toluene-d8 | 107 | 80-120 |
| Bromofluorobenzene | 91 | 80-122 |

Type: MSD Lab ID: QC410335

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 49.02 | 70.56 | 144 | 61-145 | 3 | 26 |
| Benzene | 49.02 | 44.26 | 90 | 57-123 | 9 | 25 |
| Trichloroethene | 49.02 | 87.83 | 172 * | 52-141 | 2 | 26 |
| Toluene | 49.02 | 42.18 | 86 | 53-126 | 10 | 27 |
| Chlorobenzene | 49.02 | 38.79 | 79 | 49-121 | 9 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 19 * | 80-124 |
| 1,2-Dichloroethane-d4 | 108 | 79-136 |
| Toluene-d8 | 104 | 80-120 |
| Bromofluorobenzene | 91 | 80-122 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-9-SS-0.0 | Diln Fac: | 1.000 |
| Lab ID: | 198317-001 | Sampled: | 10/11/07 |
| Matrix: | Soil | Received: | 10/12/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

| Analyte | Result | RL | Batch# | Prepared | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | 1.2 | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.8 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Barium | 73 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.35 | 0.10 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Chromium | 77 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Cobalt | 18 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Copper | 18 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Lead | 14 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.39 | 0.020 | 130532 | 10/15/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Nickel | 94 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.8 | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Vanadium | 45 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Zinc | 30 | 1.0 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-14-SS-0.0 | Diln Fac: | 1.000 |
| Lab ID: | 198317-004 | Sampled: | 10/08/07 |
| Matrix: | Soil | Received: | 10/12/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

| Analyte | Result | RL | Batch# | Prepared | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | 1.6 | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.1 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Barium | 140 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.41 | 0.10 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Chromium | 100 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Cobalt | 19 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Copper | 28 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Lead | 6.4 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.18 | 0.020 | 130532 | 10/15/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Nickel | 200 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.0 | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Vanadium | 49 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Zinc | 47 | 1.0 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-7-SS-0.0 | Diln Fac: | 1.000 |
| Lab ID: | 198317-005 | Sampled: | 10/11/07 |
| Matrix: | Soil | Received: | 10/12/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

| Analyte | Result | RL | Batch# | Prepared | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | 1.4 | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Arsenic | 6.8 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Barium | 200 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.45 | 0.10 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Chromium | 40 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Cobalt | 12 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Copper | 42 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Lead | 10 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.21 | 0.020 | 130532 | 10/15/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Nickel | 61 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.8 | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Vanadium | 45 | 0.25 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |
| Zinc | 120 | 1.0 | 130500 | 10/12/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410351 | Batch#: | 130500 |
| Matrix: | Soil | Prepared: | 10/12/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | ND | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.25 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 130500 |
| Units: | mg/Kg | Prepared: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/15/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC410352

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 94.98 | 95 | 80-120 |
| Arsenic | 50.00 | 50.03 | 100 | 80-120 |
| Barium | 100.0 | 96.35 | 96 | 80-120 |
| Beryllium | 2.500 | 2.474 | 99 | 80-120 |
| Cadmium | 10.00 | 9.921 | 99 | 80-120 |
| Chromium | 100.0 | 93.79 | 94 | 80-120 |
| Cobalt | 25.00 | 23.11 | 92 | 80-120 |
| Copper | 12.50 | 11.49 | 92 | 80-120 |
| Lead | 100.0 | 94.47 | 94 | 80-120 |
| Molybdenum | 20.00 | 19.25 | 96 | 80-120 |
| Nickel | 25.00 | 23.40 | 94 | 80-120 |
| Selenium | 50.00 | 49.01 | 98 | 80-120 |
| Silver | 10.00 | 8.980 | 90 | 80-120 |
| Thallium | 50.00 | 46.70 | 93 | 80-120 |
| Vanadium | 25.00 | 23.39 | 94 | 80-120 |
| Zinc | 25.00 | 23.77 | 95 | 80-120 |

Type: BSD Lab ID: QC410353

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 94.66 | 95 | 80-120 | 0 | 20 |
| Arsenic | 50.00 | 49.68 | 99 | 80-120 | 1 | 20 |
| Barium | 100.0 | 95.32 | 95 | 80-120 | 1 | 20 |
| Beryllium | 2.500 | 2.430 | 97 | 80-120 | 2 | 20 |
| Cadmium | 10.00 | 9.776 | 98 | 80-120 | 1 | 20 |
| Chromium | 100.0 | 92.29 | 92 | 80-120 | 2 | 20 |
| Cobalt | 25.00 | 22.72 | 91 | 80-120 | 2 | 20 |
| Copper | 12.50 | 11.36 | 91 | 80-120 | 1 | 20 |
| Lead | 100.0 | 93.00 | 93 | 80-120 | 2 | 20 |
| Molybdenum | 20.00 | 19.17 | 96 | 80-120 | 0 | 20 |
| Nickel | 25.00 | 23.08 | 92 | 80-120 | 1 | 20 |
| Selenium | 50.00 | 48.42 | 97 | 80-120 | 1 | 20 |
| Silver | 10.00 | 8.791 | 88 | 80-120 | 2 | 20 |
| Thallium | 50.00 | 46.31 | 93 | 80-120 | 1 | 20 |
| Vanadium | 25.00 | 23.14 | 93 | 80-120 | 1 | 20 |
| Zinc | 25.00 | 23.21 | 93 | 80-120 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130500 |
| MSS Lab ID: | 198322-002 | Sampled: | 10/11/07 |
| Matrix: | Soil | Received: | 10/12/07 |
| Units: | mg/Kg | Prepared: | 10/12/07 |
| Basis: | as received | Analyzed: | 10/15/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC410354

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 1.352 | 93.46 | 40.57 | 42 | 1-122 |
| Arsenic | 22.61 | 46.73 | 61.39 | 83 | 72-120 |
| Barium | 35.51 | 93.46 | 115.8 | 86 | 49-139 |
| Beryllium | 0.4424 | 2.336 | 2.517 | 89 | 80-120 |
| Cadmium | 0.1353 | 9.346 | 8.051 | 85 | 74-120 |
| Chromium | 47.33 | 93.46 | 122.4 | 80 | 65-120 |
| Cobalt | 8.656 | 23.36 | 29.58 | 90 | 60-120 |
| Copper | 37.14 | 11.68 | 47.97 | 93 | 47-146 |
| Lead | 16.91 | 93.46 | 90.70 | 79 | 53-123 |
| Molybdenum | 0.1949 | 18.69 | 14.75 | 78 | 66-120 |
| Nickel | 46.31 | 23.36 | 64.49 | 78 | 43-142 |
| Selenium | 2.213 | 46.73 | 41.64 | 84 | 71-120 |
| Silver | 0.1486 | 9.346 | 7.916 | 83 | 66-120 |
| Thallium | 0.08405 | 46.73 | 35.49 | 76 | 62-120 |
| Vanadium | 54.00 | 23.36 | 71.59 | 75 | 52-139 |
| Zinc | 75.47 | 23.36 | 95.24 | 85 | 42-147 |

Type: MSD Lab ID: QC410355

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 98.04 | 41.98 | 41 | 1-122 | 1 | 30 |
| Arsenic | 49.02 | 70.65 | 98 | 72-120 | 11 | 20 |
| Barium | 98.04 | 120.3 | 87 | 49-139 | 0 | 23 |
| Beryllium | 2.451 | 2.564 | 87 | 80-120 | 2 | 20 |
| Cadmium | 9.804 | 8.616 | 87 | 74-120 | 2 | 20 |
| Chromium | 98.04 | 127.5 | 82 | 65-120 | 1 | 20 |
| Cobalt | 24.51 | 28.47 | 81 | 60-120 | 7 | 24 |
| Copper | 12.25 | 40.20 | 25 * | 47-146 | 19 | 21 |
| Lead | 98.04 | 93.06 | 78 | 53-123 | 1 | 28 |
| Molybdenum | 19.61 | 15.72 | 79 | 66-120 | 2 | 20 |
| Nickel | 24.51 | 65.76 | 79 | 43-142 | 0 | 26 |
| Selenium | 49.02 | 44.01 | 85 | 71-120 | 1 | 20 |
| Silver | 9.804 | 8.407 | 84 | 66-120 | 1 | 20 |
| Thallium | 49.02 | 37.62 | 77 | 62-120 | 1 | 20 |
| Vanadium | 24.51 | 74.55 | 84 | 52-139 | 3 | 20 |
| Zinc | 24.51 | 93.54 | 74 | 42-147 | 3 | 27 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410486 | Batch#: | 130532 |
| Matrix: | Soil | Prepared: | 10/15/07 |
| Units: | mg/Kg | Analyzed: | 10/15/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130532 |
| Units: | mg/Kg | Prepared: | 10/15/07 |
| Basis: | as received | Analyzed: | 10/15/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC410487 | 0.5000 | 0.5090 | 102 | 80-120 | | |
| BSD | QC410488 | 0.5000 | 0.5090 | 102 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130532 |
| MSS Lab ID: | 198315-001 | Sampled: | 10/12/07 |
| Matrix: | Soil | Received: | 10/12/07 |
| Units: | mg/Kg | Prepared: | 10/15/07 |
| Basis: | as received | Analyzed: | 10/15/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410490 | 0.05662 | 0.4237 | 0.5059 | 106 | 70-143 | | |
| MSD | QC410491 | | 0.3731 | 0.4299 | 100 | 70-143 | 5 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 2.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130532 |
| MSS Lab ID: | 198322-002 | Sampled: | 10/11/07 |
| Matrix: | Soil | Received: | 10/12/07 |
| Units: | mg/Kg | Prepared: | 10/15/07 |
| Basis: | as received | Analyzed: | 10/15/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410493 | 0.6085 | 0.5000 | 1.040 | 86 | 70-143 | | |
| MSD | QC410494 | | 0.4167 | 1.008 | 96 | 70-143 | 5 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-9-GW-25 | Diln Fac: | 1.000 |
| Lab ID: | 198317-002 | Sampled: | 10/11/07 |
| Matrix: | Filtrate | Received: | 10/12/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Barium | 61 | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130568 | 10/16/07 | 10/16/07 | METHOD | EPA 7470A |
| Molybdenum | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-7-GW-41 | Diln Fac: | 1.000 |
| Lab ID: | 198317-003 | Sampled: | 10/11/07 |
| Matrix: | Filtrate | Received: | 10/12/07 |
| Units: | ug/L | | |

| Analyte | Result | RL | Batch# | Prepared | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Barium | 51 | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130568 | 10/16/07 | 10/16/07 | METHOD | EPA 7470A |
| Molybdenum | 170 | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130536 | 10/15/07 | 10/15/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC410504 | Batch#: | 130536 |
| Matrix: | Filtrate | Prepared: | 10/15/07 |
| Units: | ug/L | Analyzed: | 10/15/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 6.1 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.0 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Filtrate | Batch#: | 130536 |
| Units: | ug/L | Prepared: | 10/15/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/15/07 |

Type: BS Lab ID: QC410505

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 475.5 | 95 | 80-120 |
| Arsenic | 100.0 | 104.7 | 105 | 80-120 |
| Barium | 2,000 | 1,984 | 99 | 80-120 |
| Beryllium | 50.00 | 53.30 | 107 | 80-120 |
| Cadmium | 50.00 | 52.82 | 106 | 80-120 |
| Chromium | 200.0 | 200.8 | 100 | 80-120 |
| Cobalt | 500.0 | 507.4 | 101 | 80-120 |
| Copper | 250.0 | 249.4 | 100 | 80-120 |
| Lead | 100.0 | 94.22 | 94 | 80-120 |
| Molybdenum | 400.0 | 394.5 | 99 | 80-120 |
| Nickel | 500.0 | 512.5 | 103 | 80-120 |
| Selenium | 100.0 | 102.6 | 103 | 80-120 |
| Silver | 50.00 | 49.18 | 98 | 80-120 |
| Thallium | 100.0 | 102.8 | 103 | 80-120 |
| Vanadium | 500.0 | 500.0 | 100 | 80-120 |
| Zinc | 500.0 | 532.6 | 107 | 80-120 |

Type: BSD Lab ID: QC410506

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 483.4 | 97 | 80-120 | 2 | 20 |
| Arsenic | 100.0 | 103.6 | 104 | 80-120 | 1 | 20 |
| Barium | 2,000 | 2,022 | 101 | 80-120 | 2 | 20 |
| Beryllium | 50.00 | 53.30 | 107 | 80-120 | 0 | 20 |
| Cadmium | 50.00 | 52.03 | 104 | 80-120 | 2 | 20 |
| Chromium | 200.0 | 201.0 | 101 | 80-120 | 0 | 20 |
| Cobalt | 500.0 | 505.2 | 101 | 80-120 | 0 | 20 |
| Copper | 250.0 | 247.3 | 99 | 80-120 | 1 | 20 |
| Lead | 100.0 | 93.72 | 94 | 80-120 | 1 | 20 |
| Molybdenum | 400.0 | 401.6 | 100 | 80-120 | 2 | 20 |
| Nickel | 500.0 | 510.3 | 102 | 80-120 | 0 | 20 |
| Selenium | 100.0 | 101.6 | 102 | 80-120 | 1 | 20 |
| Silver | 50.00 | 49.24 | 98 | 80-120 | 0 | 20 |
| Thallium | 100.0 | 101.1 | 101 | 80-120 | 2 | 20 |
| Vanadium | 500.0 | 498.7 | 100 | 80-120 | 0 | 20 |
| Zinc | 500.0 | 527.3 | 105 | 80-120 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130536 |
| MSS Lab ID: | 198302-001 | Sampled: | 10/10/07 |
| Matrix: | Filtrate | Received: | 10/11/07 |
| Units: | ug/L | Prepared: | 10/15/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/15/07 |

Type: MS Lab ID: QC410507

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 4.032 | 500.0 | 493.4 | 98 | 80-120 |
| Arsenic | <2.042 | 100.0 | 97.28 | 97 | 80-127 |
| Barium | 180.0 | 2,000 | 2,192 | 101 | 80-120 |
| Beryllium | 0.04621 | 50.00 | 55.38 | 111 | 80-120 |
| Cadmium | 0.5448 | 50.00 | 53.09 | 105 | 80-120 |
| Chromium | 0.9431 | 200.0 | 202.2 | 101 | 80-120 |
| Cobalt | <0.3034 | 500.0 | 501.2 | 100 | 80-120 |
| Copper | <0.8535 | 250.0 | 260.3 | 104 | 80-120 |
| Lead | <0.6892 | 100.0 | 94.98 | 95 | 76-120 |
| Molybdenum | 0.9750 | 400.0 | 406.5 | 101 | 80-120 |
| Nickel | 0.7170 | 500.0 | 504.9 | 101 | 80-120 |
| Selenium | <1.469 | 100.0 | 104.1 | 104 | 80-128 |
| Silver | <0.7459 | 50.00 | 50.82 | 102 | 73-122 |
| Thallium | 1.823 | 100.0 | 101.3 | 99 | 78-120 |
| Vanadium | <1.034 | 500.0 | 508.4 | 102 | 80-120 |
| Zinc | 7.894 | 500.0 | 537.1 | 106 | 80-123 |

Type: MSD Lab ID: QC410508

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 487.5 | 97 | 80-120 | 1 | 20 |
| Arsenic | 100.0 | 93.05 | 93 | 80-127 | 4 | 20 |
| Barium | 2,000 | 2,143 | 98 | 80-120 | 2 | 20 |
| Beryllium | 50.00 | 53.51 | 107 | 80-120 | 3 | 20 |
| Cadmium | 50.00 | 51.54 | 102 | 80-120 | 3 | 20 |
| Chromium | 200.0 | 196.5 | 98 | 80-120 | 3 | 20 |
| Cobalt | 500.0 | 485.7 | 97 | 80-120 | 3 | 20 |
| Copper | 250.0 | 251.4 | 101 | 80-120 | 3 | 20 |
| Lead | 100.0 | 93.63 | 94 | 76-120 | 1 | 20 |
| Molybdenum | 400.0 | 397.1 | 99 | 80-120 | 2 | 20 |
| Nickel | 500.0 | 489.5 | 98 | 80-120 | 3 | 20 |
| Selenium | 100.0 | 100.7 | 101 | 80-128 | 3 | 20 |
| Silver | 50.00 | 49.22 | 98 | 73-122 | 3 | 20 |
| Thallium | 100.0 | 99.93 | 98 | 78-120 | 1 | 20 |
| Vanadium | 500.0 | 492.9 | 99 | 80-120 | 3 | 20 |
| Zinc | 500.0 | 521.6 | 103 | 80-123 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130568 |
| Lab ID: | QC410640 | Prepared: | 10/16/07 |
| Matrix: | Filtrate | Analyzed: | 10/16/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130568 |
| Matrix: | Filtrate | Prepared: | 10/16/07 |
| Units: | ug/L | Analyzed: | 10/16/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC410641 | 5.000 | 4.980 | 100 | 80-120 | | |
| BSD | QC410642 | 5.000 | 4.920 | 98 | 80-120 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130568 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/10/07 |
| MSS Lab ID: | 198285-008 | Received: | 10/11/07 |
| Matrix: | Filtrate | Prepared: | 10/16/07 |
| Units: | ug/L | Analyzed: | 10/16/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410644 | <0.04502 | 5.000 | 5.260 | 105 | 79-125 | | |
| MSD | QC410645 | | 5.000 | 5.130 | 103 | 79-125 | 3 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130568 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/08/07 |
| MSS Lab ID: | 198183-003 | Received: | 10/08/07 |
| Matrix: | Filtrate | Prepared: | 10/16/07 |
| Units: | ug/L | Analyzed: | 10/16/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC410647 | 0.1740 | 5.000 | 5.610 | 109 | 79-125 | | |
| MSD | QC410648 | | 5.000 | 5.520 | 107 | 79-125 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Batch#: | 130485 |
| Matrix: | Water | Received: | 10/12/07 |
| Units: | mg/L | | |

| Field ID | Type | Lab ID | Result | RL | Diln Fac | Sampled | Analyzed |
|---|---|---|---|---|---|---|---|
| B-9-GW-25 | SAMPLE | 198317-002 | 7.8 | 0.25 | 5.000 | 10/11/07 11:15 | 10/12/07 22:17 |
| B-7-GW-41 | SAMPLE | 198317-003 | ND | 0.05 | 1.000 | 10/11/07 12:00 | 10/12/07 18:14 |
| | BLANK | QC410304 | ND | 0.05 | 1.000 | | 10/12/07 12:50 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198317 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130485 |
| MSS Lab ID: | 198294-007 | Sampled: | 10/11/07 09:33 |
| Matrix: | Water | Received: | 10/11/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC410305 | | 1.000 | 1.013 | 101 | 80-120 | | | 1.000 | 10/13/07 00:18 |
| BSD | QC410306 | | 1.000 | 0.9591 | 96 | 80-120 | 5 | 20 | 1.000 | 10/13/07 00:36 |
| MS | QC410323 | <0.2338 | 500.0 | 521.5 | 104 | 80-120 | | | 1,000 | 10/13/07 00:53 |
| MSD | QC410324 | | 500.0 | 486.0 | 97 | 80-120 | 7 | 20 | 1,000 | 10/13/07 01:11 |

RPD= Relative Percent Difference

198317

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

# Chain of Custody Record

| | | | | |
|---|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/12/07 | 1827-15 – K |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: n/a | 1 of 1 COCs |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | | Job No. 379-1827-15-02 |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | | SDG No. |
| Project Name: Cloverdale Project | ☐ 1 week | | | |
| Site: Cloverdale, Ca | ☐ 2 days | | | |
| C&T-WO-07-002 | ☐ 1 day | | | |

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Filtered Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | B-9-SS-0.0- | 10/11/07 | | G | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| -2 | B-9-GW-25- | 10/11/07 | 11:15 | VOA | GW | 3 | | ✓ | | | | | | | |
| | | ↓ | ↓ | VOA | GW | 3 | | | | | ✓ | | | | |
| | | | | 1L amber | GW | 2 | | | | ✓ | | | | | |
| | | | | 750ml poly | GW | 1 | ✓ | | ✓ | | | | | | |
| | | ↓ | ↓ | 500ml poly | GW | 1 | | | | | | ✓ | | | |
| -3 | B-7-GW-41- | 10/11/07 | 12:00 | VOA | GW | 6 | | ✓ | | | ✓ | | | | |
| | | ↓ | ↓ | 1L amber | GW | 2 | | | | ✓ | | | | | |
| | | | | 750ml poly | GW | 1 | ✓ | | ✓ | | | | | | |
| | | ↓ | ↓ | 500ml poly | GW | 1 | | | | | | ✓ | | | |
| -4 | B-14-SS-0.0- | 10/8/07 | | G | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| -5 | B-7-SS-0.0- | 10/11/07 | | G | | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| 10/12/07 -6 | Trip Blank | 10/11/07 | | VOA | AQ | 1 | | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For _____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Robert K. [signature] | Weiss Associates | 10/12/07 13:10 | [signature] | C&T | 10/12/07 1310 |
| | | | | | |
| | | | | | |

Curtis & Tompkins, Ltd.

# COOLER RECEIPT CHECKLIST

Login#: 19831 7 Date Received: 10/12 Number of Coolers: 1
Client: Weiss Associates Project: Cloverdale Project

A. Preliminary Examination Phase
Date Opened: 10/12 By (print): Ken Wang (sign) K Wang

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
   If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? ..... YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO NA
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bottles in ice
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES (NO)
   Type of ice: wet Temperature: 11°C
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10/12 By (print): K Wellbrock (sign) K Wellbrock

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... * YES NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... * (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below. ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
B3: COC mentions trip blank - none sent; extra soil sent, added to job on hold
B5: Added HNO3 to Metals filtrate of B7-GW-25 → B-7-55-47 10/9/07 1700

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-16-GW-45' | 198519-001 |
| B-8A-GW-70' | 198519-002 |
| B-9-GW-30.8' | 198519-003 |
| TRIP BLANK | 198519-004 |
| B-12-SS-0.0'-NORTH 2.5 | 198519-005 |
| B-12-SS-0.0'-NORTH 5.0 | 198519-006 |
| B-12-SS-0.0'-SOUTH 2.5 | 198519-007 |
| B-12-SS-0.0'-SOUTH 5.0 | 198519-008 |
| B-12-SS-0.0'-EAST 2.5 | 198519-009 |
| B-12-SS-0.0'-EAST 5.0 | 198519-010 |
| B-12-SS-0.0'-WEST 2.5 | 198519-011 |
| B-12-SS-0.0'-WEST 5.0 | 198519-012 |
| B-4-GW-2.5' | 198519-013 |
| B-16-SS-0.0' | 198519-014 |
| B-16-SS-55' | 198519-015 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/15/2007
Project Manager

Signature: _____ Date: 11/15/2007
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198519** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/18/07** |
| Samples Received: | **10/18/07** |

This hardcopy data package contains sample and QC results for ten soil samples and four water samples, requested for the above referenced project on 10/18/07. The samples were received cold and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:**
High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the MS/MSD for batch 130720; the parent sample was not a project sample. B-8A-GW-70' (lab # 198519-002) had pH greater than 2. No other analytical problems were encountered.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:**
High surrogate recovery was observed for trifluorotoluene (FID) in the MSD for batch 130787; the corresponding bromofluorobenzene (FID) surrogate recovery was within limits, and the parent sample was not a project sample. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Water:**
No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B) Soil:**
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Water:**
B-8A-GW-70' (lab # 198519-002) had pH greater than 2. No other analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B) Soil:**
Low recovery was observed for chlorobenzene in the MSD of B-16-SS-55' (lab # 198519-015); the BS/BSD were within limits, and the associated RPD was within limits. High surrogate recovery was observed for bromofluorobenzene in B-16-SS-0.0' (lab # 198519-014); no target analytes were detected in the sample. No other analytical problems were encountered.

**Pesticides (EPA 8081A):**
No analytical problems were encountered.

**Polychlorinated Biphenyls (PCBs) (EPA 8082):**
No analytical problems were encountered.

**Metals (EPA 6010B and EPA 7470A) Water:**
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198519** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/18/07** |
| Samples Received: | **10/18/07** |

**Metals (EPA 6010B and EPA 7471A) Soil:**
Low recoveries were observed for many analytes in the MS/MSD of B-16-SS-0.0' (lab # 198519-014); the BS/BSD were within limits. High RPD was observed for copper; the RPD was acceptable in the BS/BSD. No other analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Water:**
No analytical problems were encountered.

**Ion Chromatography (EPA 300.0) Soil:**
No analytical problems were encountered.

**Asbestos PLM (EPA 600/R-93-116):**
Forensic Analytical in Hayward, CA performed the analysis. Please see the Forensic Analytical case narrative.

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130720 |
| Units: | ug/L | Sampled: | 10/17/07 |
| Diln Fac: | 1.000 | Received: | 10/18/07 |

Field ID: B-16-GW-45' Lab ID: 198519-001
Type: SAMPLE Analyzed: 10/20/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 112 | 73-134 |
| Bromofluorobenzene (FID) | 106 | 77-140 |

Field ID: B-8A-GW-70' Lab ID: 198519-002
Type: SAMPLE Analyzed: 10/20/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 114 | 73-134 |
| Bromofluorobenzene (FID) | 105 | 77-140 |

Field ID: B-9-GW-30.8' Lab ID: 198519-003
Type: SAMPLE Analyzed: 10/20/07

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 111 | 73-134 |
| Bromofluorobenzene (FID) | 101 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 130720 |
| Units: | ug/L | Sampled: | 10/17/07 |
| Diln Fac: | 1.000 | Received: | 10/18/07 |

| | | | |
|---|---|---|---|
| Field ID: | B-4-GW-2.5' | Lab ID: | 198519-013 |
| Type: | SAMPLE | Analyzed: | 10/20/07 |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 109 | 73-134 |
| Bromofluorobenzene (FID) | 102 | 77-140 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/19/07 |
| Lab ID: | QC411293 | | |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 101 | 73-134 |
| Bromofluorobenzene (FID) | 89 | 77-140 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC411295 | Batch#: | 130720 |
| Matrix: | Water | Analyzed: | 10/19/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 879.0 | 88 | 79-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 114 | 73-134 |
| Bromofluorobenzene (FID) | 113 | 77-140 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130720 |
| MSS Lab ID: | 198508-001 | Sampled: | 10/15/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/20/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC411296

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 39.71 | 2,000 | 1,921 | 94 | 72-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 147 * | 73-134 |
| Bromofluorobenzene (FID) | 148 * | 77-140 |

Type: MSD Lab ID: QC411297

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,894 | 93 | 72-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 142 * | 73-134 |
| Bromofluorobenzene (FID) | 141 * | 77-140 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Dil'n Fac: | 1.000 |
| Units: | mg/Kg | Received: | 10/18/07 |
| Basis: | as received | | |

| | | | |
|---|---|---|---|
| Field ID: | B-16-SS-0.0' | Batch#: | 130723 |
| Type: | SAMPLE | Sampled: | 10/16/07 |
| Lab ID: | 198519-014 | Analyzed: | 10/19/07 |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 94 | 71-132 |
| Bromofluorobenzene (FID) | 84 | 69-145 |

| | | | |
|---|---|---|---|
| Field ID: | B-16-SS-55' | Batch#: | 130787 |
| Type: | SAMPLE | Sampled: | 10/17/07 |
| Lab ID: | 198519-015 | Analyzed: | 10/22/07 |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 1.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 90 | 71-132 |
| Bromofluorobenzene (FID) | 75 | 69-145 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Batch#: | 130723 |
| Lab ID: | QC411305 | Analyzed: | 10/19/07 |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 91 | 71-132 |
| Bromofluorobenzene (FID) | 83 | 69-145 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Batch#: | 130787 |
| Lab ID: | QC411551 | Analyzed: | 10/22/07 |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 0.20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 94 | 71-132 |
| Bromofluorobenzene (FID) | 90 | 69-145 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC411307 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130723 |
| Units: | mg/Kg | Analyzed: | 10/19/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1.000 | 0.9188 | 92 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 100 | 71-132 |
| Bromofluorobenzene (FID) | 91 | 69-145 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 198507-001 | Batch#: | 130723 |
| Matrix: | Soil | Sampled: | 10/16/07 |
| Units: | mg/Kg | Received: | 10/18/07 |
| Basis: | as received | Analyzed: | 10/19/07 |

Type: MS Lab ID: QC411308

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 0.1014 | 9.901 | 7.967 | 79 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 113 | 71-132 |
| Bromofluorobenzene (FID) | 107 | 69-145 |

Type: MSD Lab ID: QC411309

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 10.20 | 7.676 | 74 | 43-120 | 7 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 109 | 71-132 |
| Bromofluorobenzene (FID) | 100 | 69-145 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Basis: | as received |
| Lab ID: | QC411552 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130787 |
| Units: | mg/Kg | Analyzed: | 10/22/07 |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 5.000 | 4.595 | 92 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 114 | 71-132 |
| Bromofluorobenzene (FID) | 93 | 69-145 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Volatile Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Diln Fac: | 1.000 |
| MSS Lab ID: | 198548-013 | Batch#: | 130787 |
| Matrix: | Soil | Sampled: | 10/18/07 |
| Units: | mg/Kg | Received: | 10/19/07 |
| Basis: | as received | Analyzed: | 10/22/07 |

Type: MS Lab ID: QC411553

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 0.2089 | 9.709 | 7.534 | 75 | 43-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 125 | 71-132 |
| Bromofluorobenzene (FID) | 97 | 69-145 |

Type: MSD Lab ID: QC411554

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 9.804 | 8.358 | 83 | 43-120 | 9 | 25 |

| Surrogate | %REC | Limits |
|---|---|---|
| Trifluorotoluene (FID) | 133 * | 71-132 |
| Bromofluorobenzene (FID) | 102 | 69-145 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Sampled: | 10/17/07 |
| Units: | ug/L | Received: | 10/18/07 |
| Diln Fac: | 1.000 | Prepared: | 10/24/07 |
| Batch#: | 130895 | | |

Field ID: B-16-GW-45' Lab ID: 198519-001
Type: SAMPLE Cleanup Method: EPA 3630C

| Analyte | Result | RL | MDL | Analyzed |
|---|---|---|---|---|
| Diesel C10-C24 | 390 Y | 50 | | 10/25/07 |
| Diesel C10-C24 (SGCU) | ND | 50 | | 11/01/07 |
| Motor Oil C24-C36 | 220 J | 300 | 56 | 10/25/07 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 130 | 11/01/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 94 | 61-133 | 10/25/07 |
| Hexacosane (SGCU) | 94 | 61-133 | 11/01/07 |

Field ID: B-8A-GW-70' Lab ID: 198519-002
Type: SAMPLE Cleanup Method: EPA 3630C

| Analyte | Result | RL | MDL | Analyzed |
|---|---|---|---|---|
| Diesel C10-C24 | 350 Y | 50 | | 10/25/07 |
| Diesel C10-C24 (SGCU) | 170 Y | 50 | | 11/02/07 |
| Motor Oil C24-C36 | 170 J | 300 | 85 | 10/25/07 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 130 | 11/02/07 |

| Surrogate | %REC | Limits | Analyzed |
|---|---|---|---|
| Hexacosane | 99 | 61-133 | 10/25/07 |
| Hexacosane (SGCU) | 78 | 61-133 | 11/02/07 |

Field ID: B-9-GW-30.8' Lab ID: 198519-003
Type: SAMPLE Analyzed: 10/25/07

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 64 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 114 | 61-133 |

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Sampled: | 10/17/07 |
| Units: | ug/L | Received: | 10/18/07 |
| Diln Fac: | 1.000 | Prepared: | 10/24/07 |
| Batch#: | 130895 | | |

| | | | |
|---|---|---|---|
| Field ID: | B-4-GW-2.5' | Lab ID: | 198519-013 |
| Type: | SAMPLE | Analyzed: | 10/25/07 |

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | 81 J | 300 | 64 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 117 | 61-133 |

| | | | |
|---|---|---|---|
| Type: | BLANK | Analyzed: | 10/25/07 |
| Lab ID: | QC412019 | Cleanup Method: | EPA 3630C |

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Diesel C10-C24 (SGCU) | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 64 |
| Motor Oil C24-C36 (SGCU) | ND | 300 | 64 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 120 | 61-133 |
| Hexacosane (SGCU) | 100 | 61-133 |

J= Estimated value
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC412020 | Batch#: | 130895 |
| Matrix: | Water | Prepared: | 10/24/07 |
| Units: | ug/L | Analyzed: | 10/25/07 |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,162 | 86 | 58-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 93 | 61-133 |

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130895 |
| MSS Lab ID: | 198501-001 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Prepared: | 10/24/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/25/07 |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC412021

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | <15.44 | 2,500 | 2,058 | 82 | 58-129 |

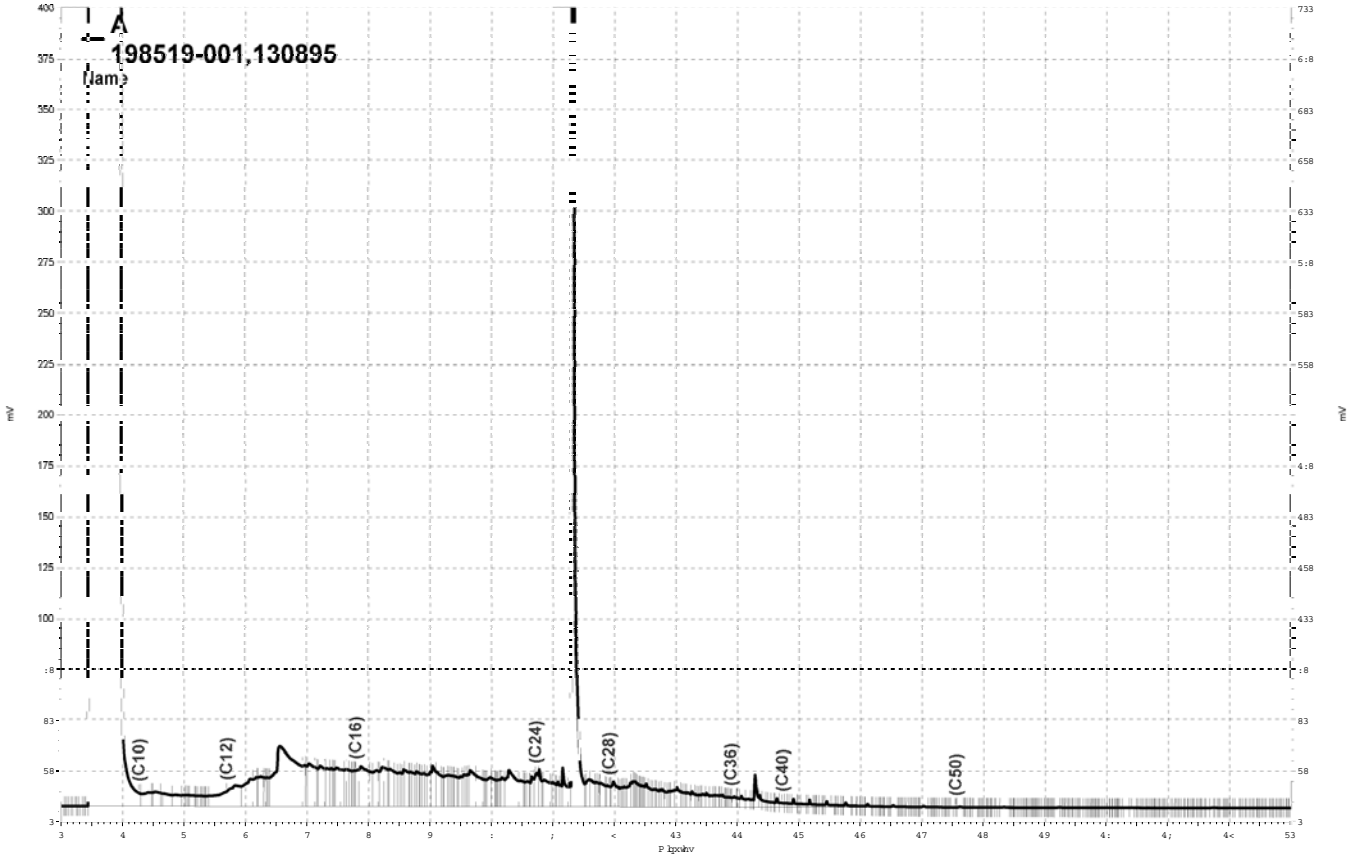
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 110 | 61-133 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC412022

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 (SGCU) | 2,500 | 2,045 | 82 | 58-129 | 1 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane (SGCU) | 108 | 61-133 |

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

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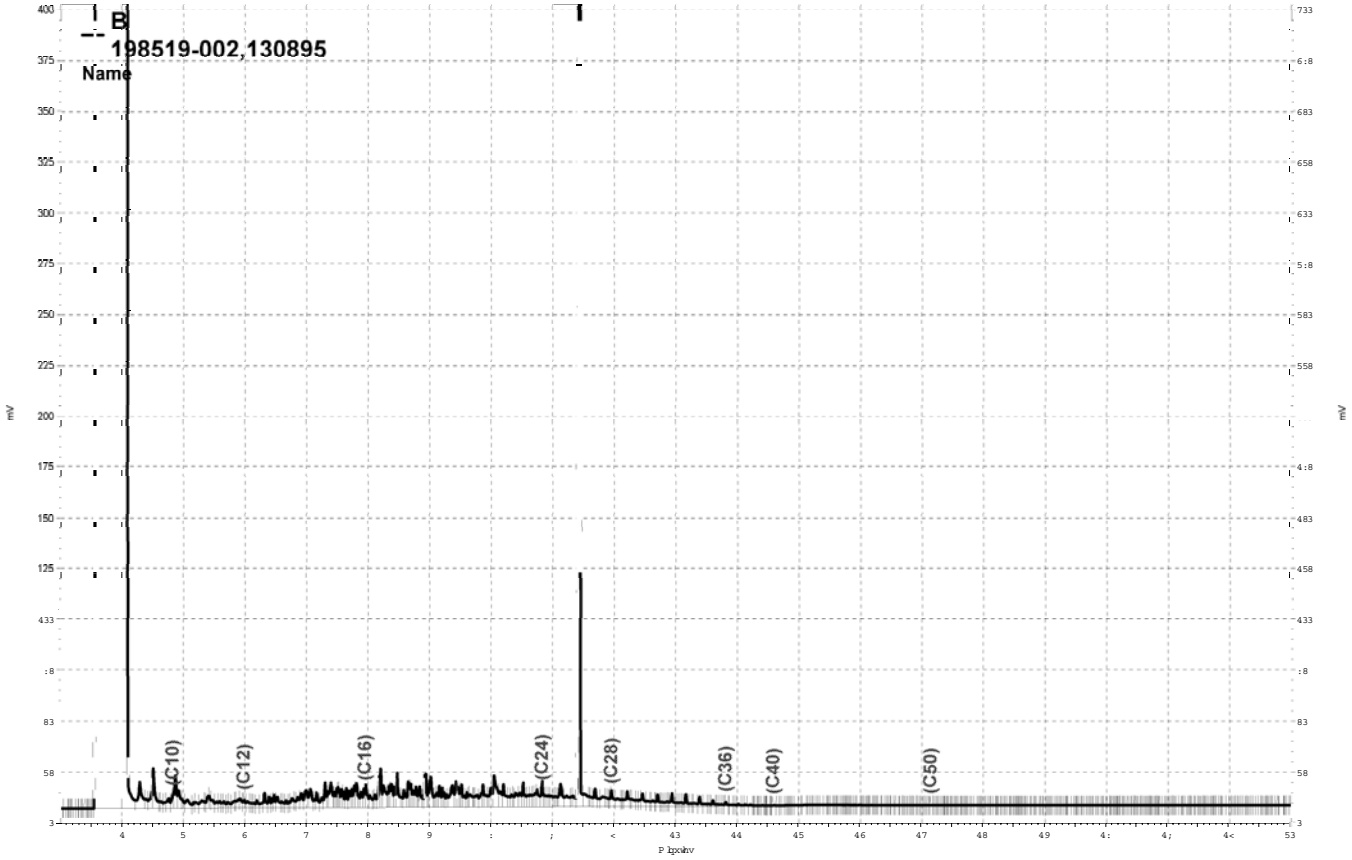


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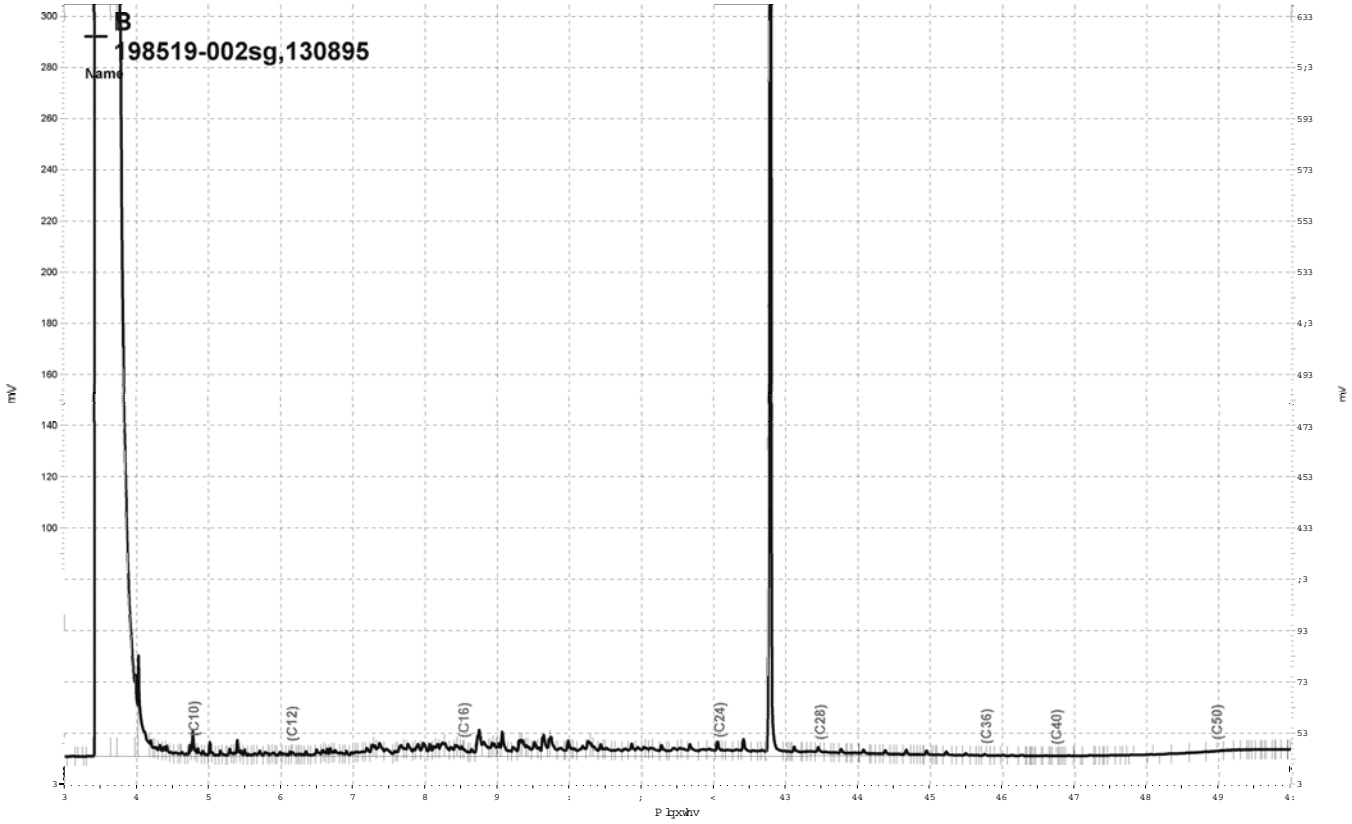


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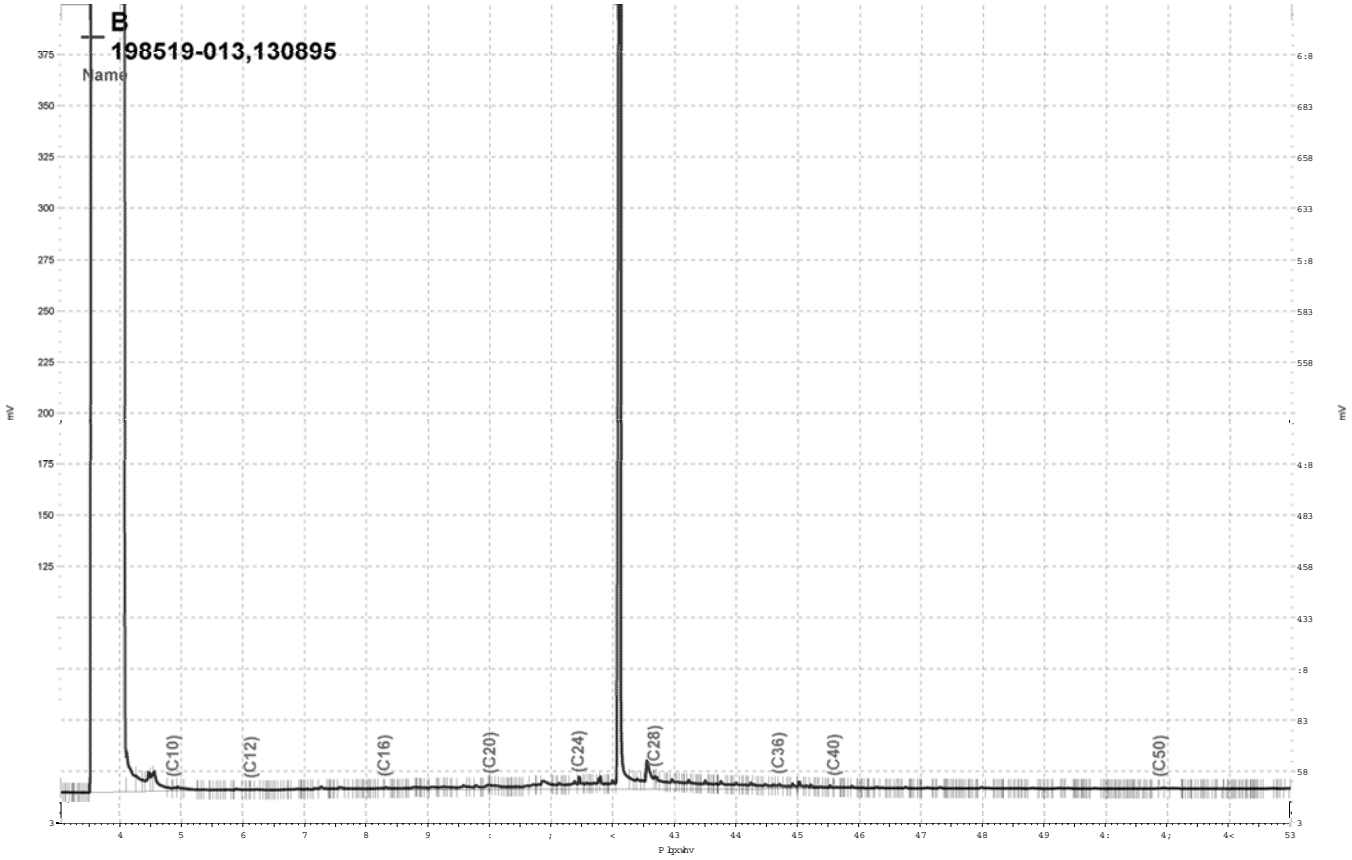


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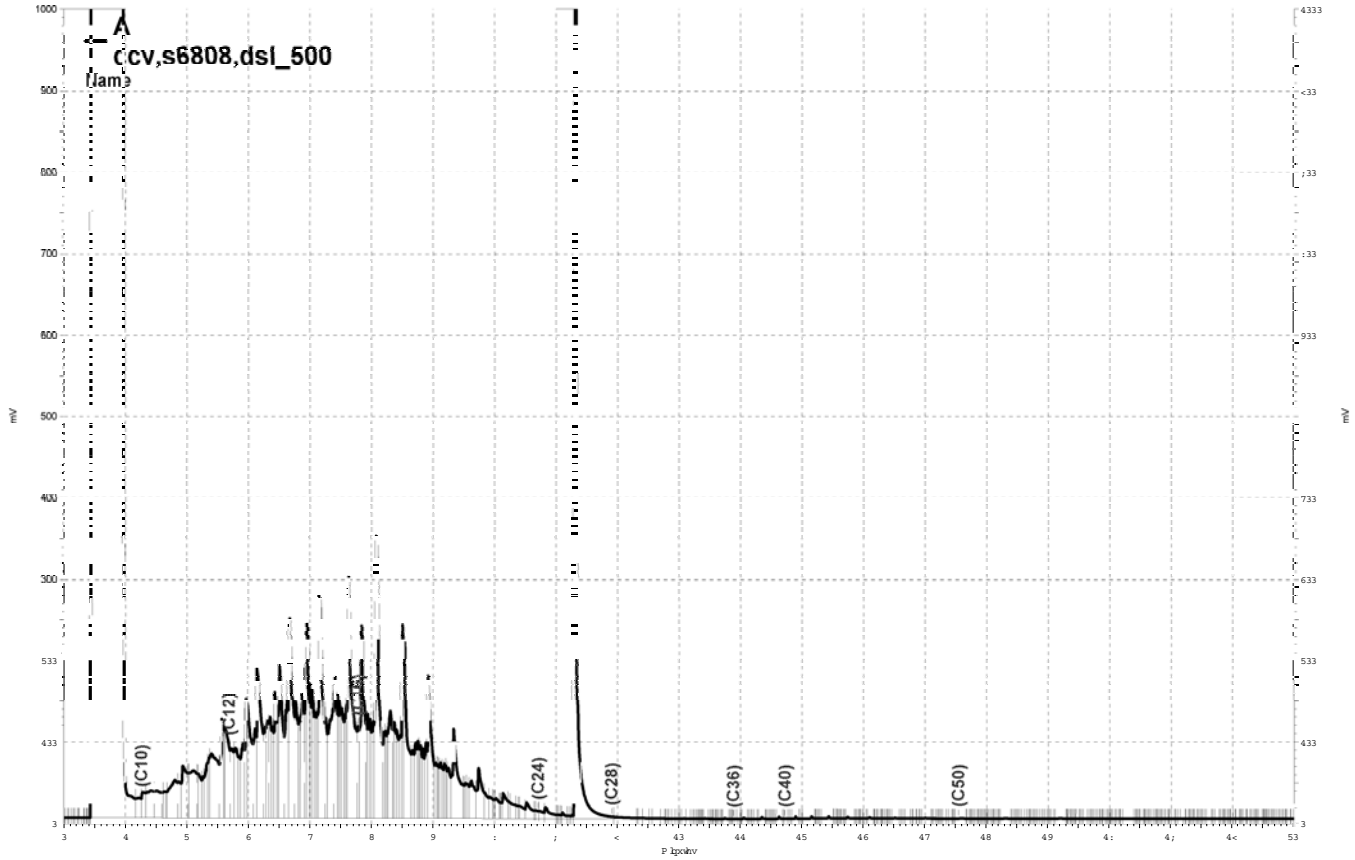


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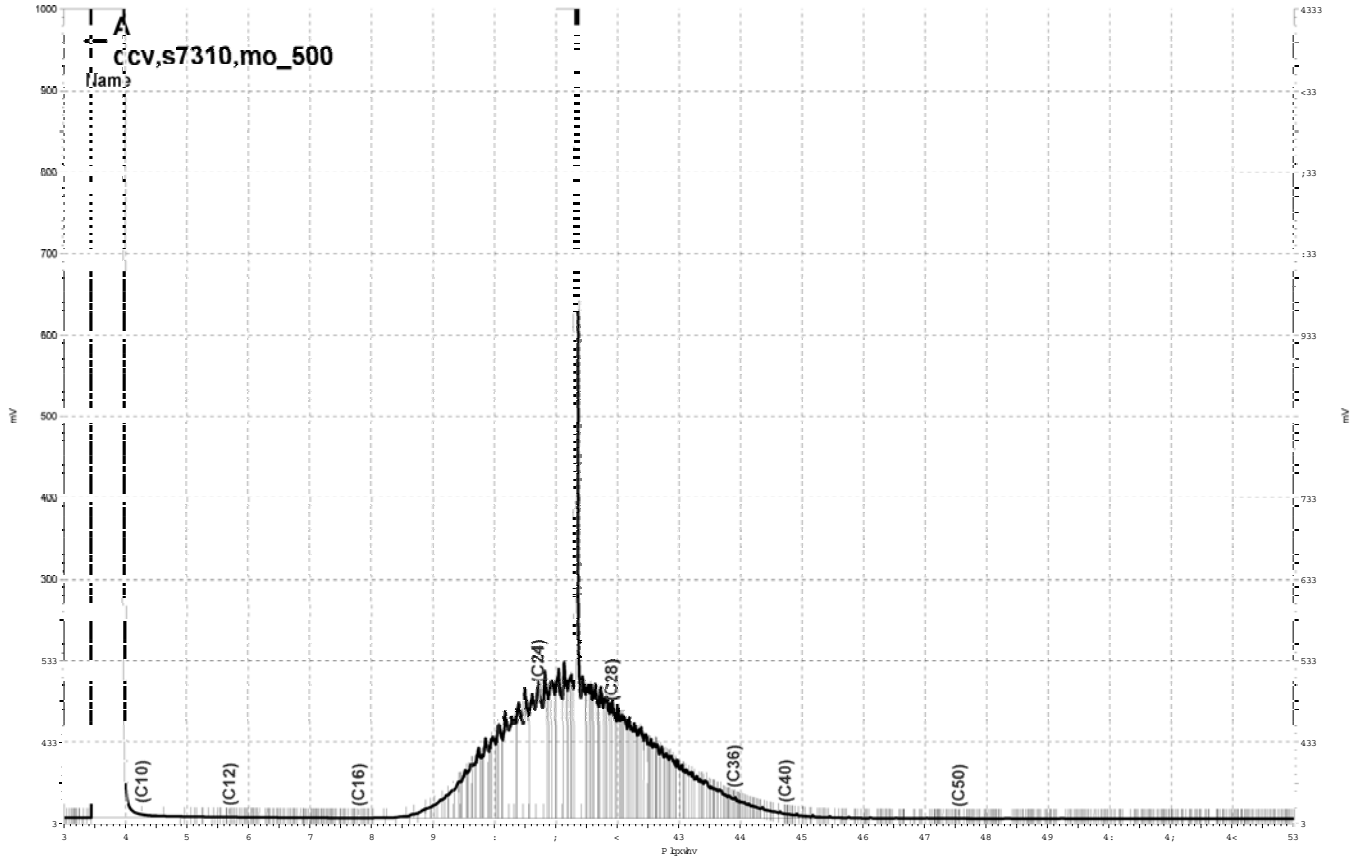


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Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Soil | Batch#: | 130769 |
| Units: | mg/Kg | Received: | 10/18/07 |
| Basis: | as received | Prepared: | 10/21/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/23/07 |

Field ID: B-16-SS-0.0' Lab ID: 198519-014
Type: SAMPLE Sampled: 10/16/07

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 10 Y | 1.0 |
| Motor Oil C24-C36 | 31 | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 111 | 46-128 |

Field ID: B-16-SS-55' Lab ID: 198519-015
Type: SAMPLE Sampled: 10/17/07

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 6.3 Y | 0.99 |
| Motor Oil C24-C36 | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 71 | 46-128 |

Type: BLANK Lab ID: QC411469

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 1.0 |
| Motor Oil C24-C36 | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 96 | 46-128 |

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC411470 | Batch#: | 130769 |
| Matrix: | Soil | Prepared: | 10/21/07 |
| Units: | mg/Kg | Analyzed: | 10/23/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3630C

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 49.93 | 46.50 | 93 | 55-131 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 96 | 46-128 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130769 |
| MSS Lab ID: | 198476-002 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/17/07 |
| Units: | mg/Kg | Prepared: | 10/21/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC411471

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Diesel C10-C24 | 0.1748 | 49.86 | 36.85 | 74 | 31-150 |

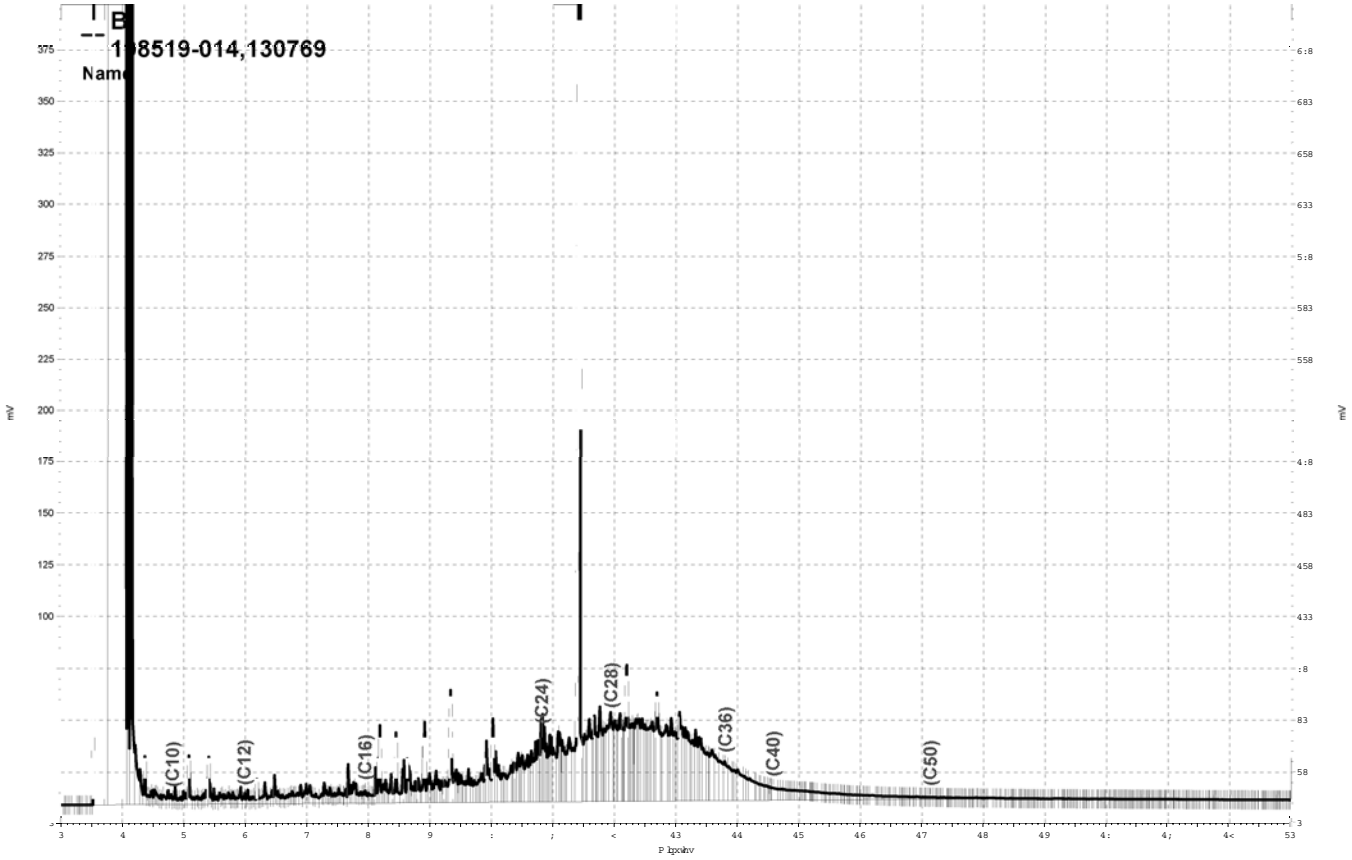
| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 80 | 46-128 |

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC411472

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 49.94 | 29.74 | 59 | 31-150 | 22 | 42 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 64 | 46-128 |

RPD= Relative Percent Difference

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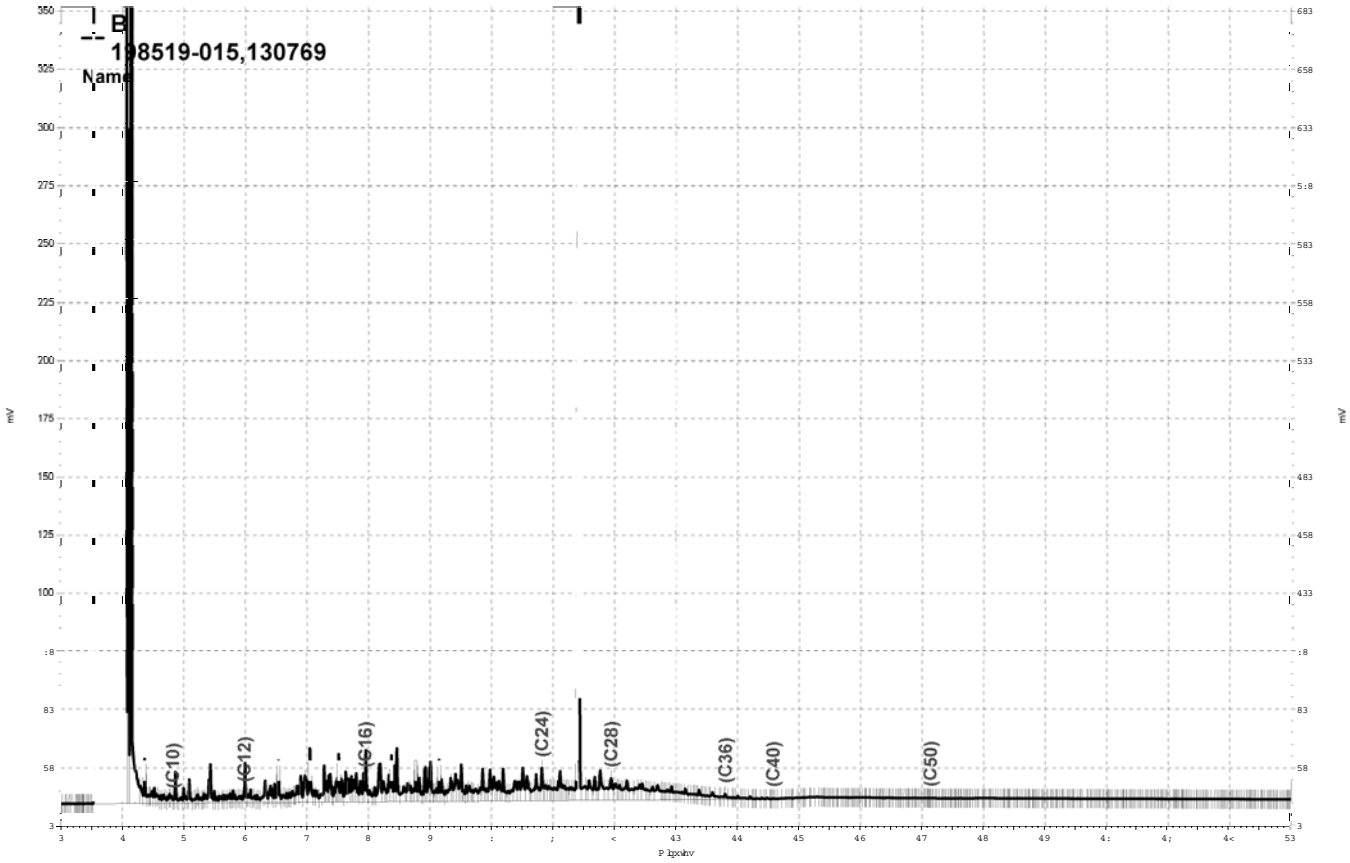


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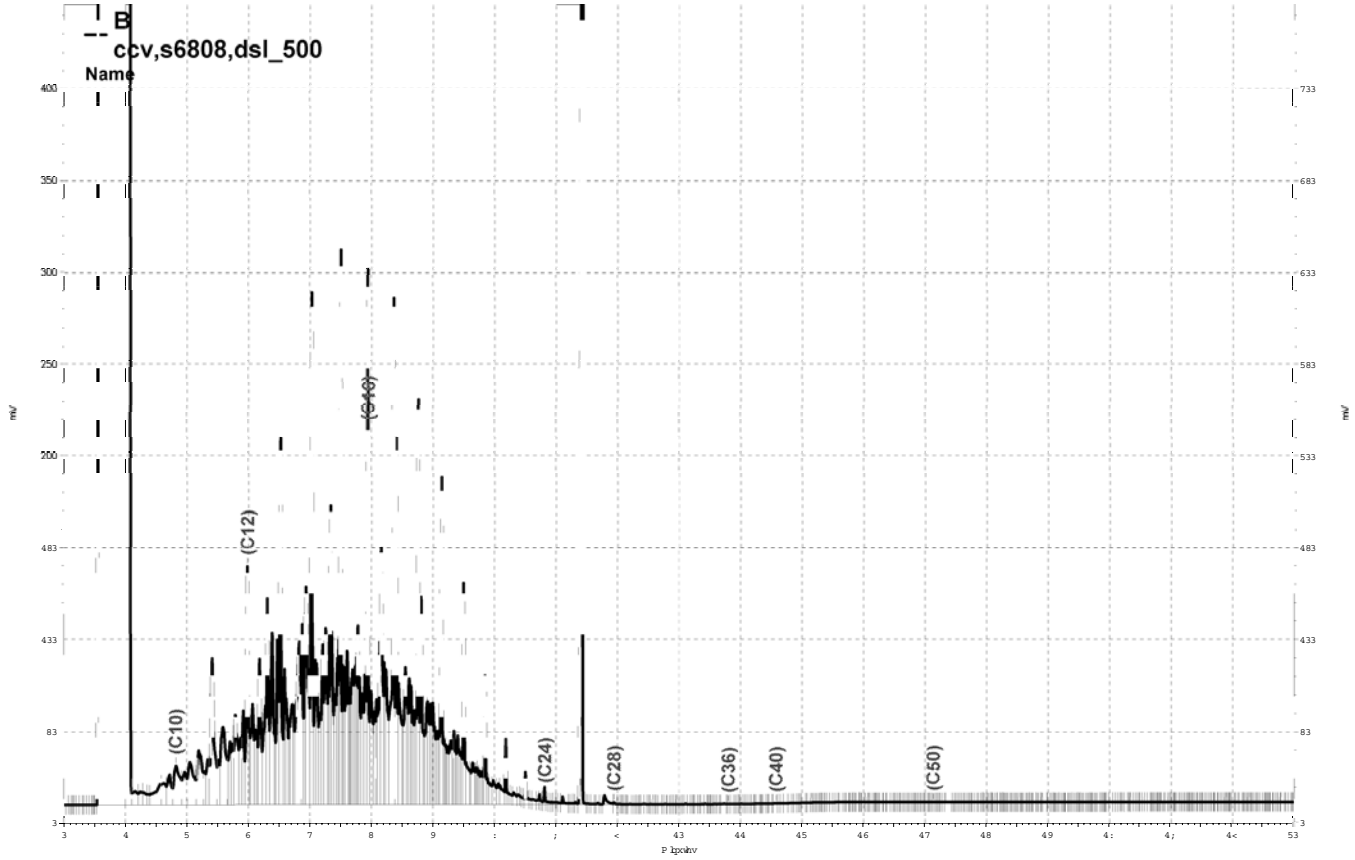


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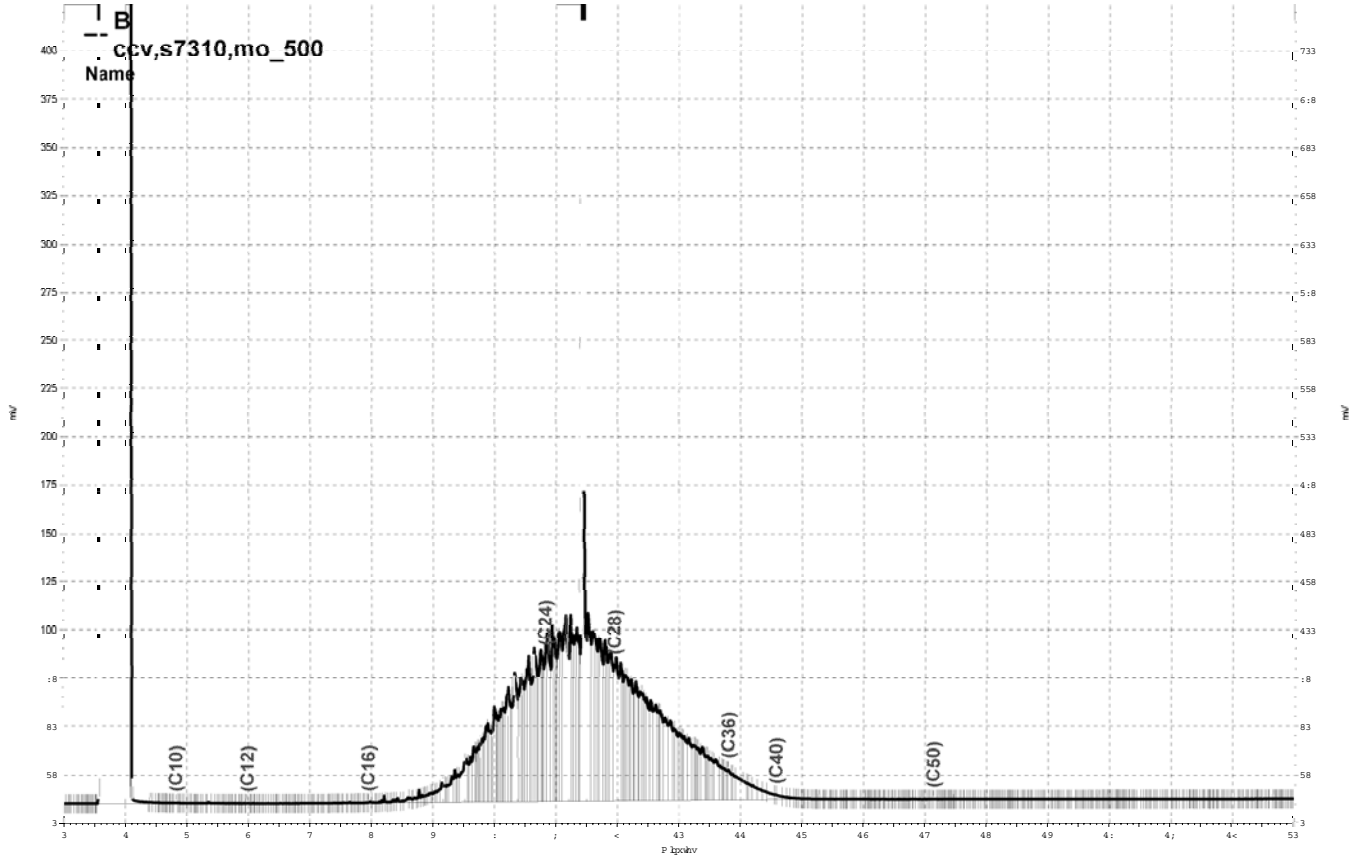


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Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-16-GW-45' | Batch#: | 130872 |
| Lab ID: | 198519-001 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/24/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 2.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |
| Tetrachloroethene | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-16-GW-45' | Batch#: | 130872 |
| Lab ID: | 198519-001 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/24/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 2.0 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 2.0 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 110 | 80-122 |
| 1,2-Dichloroethane-d4 | 118 | 74-137 |
| Toluene-d8 | 95 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-8A-GW-70' | Batch#: | 130872 |
| Lab ID: | 198519-002 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/24/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 2.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |
| Tetrachloroethene | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-8A-GW-70' | Batch#: | 130872 |
| Lab ID: | 198519-002 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/24/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 2.0 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 2.0 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 110 | 80-122 |
| 1,2-Dichloroethane-d4 | 120 | 74-137 |
| Toluene-d8 | 96 | 80-120 |
| Bromofluorobenzene | 104 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-9-GW-30.8' | Batch#: | 130872 |
| Lab ID: | 198519-003 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/24/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 2.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |
| Tetrachloroethene | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-9-GW-30.8' | Batch#: | 130872 |
| Lab ID: | 198519-003 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/24/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 2.0 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 2.0 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 111 | 80-122 |
| 1,2-Dichloroethane-d4 | 122 | 74-137 |
| Toluene-d8 | 95 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-4-GW-2.5' | Batch#: | 130872 |
| Lab ID: | 198519-013 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/24/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 2.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |
| Tetrachloroethene | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-4-GW-2.5' | Batch#: | 130872 |
| Lab ID: | 198519-013 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Analyzed: | 10/24/07 |
| Diln Fac: | 1.000 | | |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 2.0 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 2.0 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 108 | 80-122 |
| 1,2-Dichloroethane-d4 | 124 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC411931 | Batch#: | 130872 |
| Matrix: | Water | Analyzed: | 10/24/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 2.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |
| Tetrachloroethene | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC411931 | Batch#: | 130872 |
| Matrix: | Water | Analyzed: | 10/24/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 2.0 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 2.0 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 106 | 80-122 |
| 1,2-Dichloroethane-d4 | 115 | 74-137 |
| Toluene-d8 | 95 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC411932 | Batch#: | 130872 |
| Matrix: | Water | Analyzed: | 10/24/07 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 20.00 | 21.83 | 109 | 80-133 |
| Benzene | 20.00 | 19.57 | 98 | 80-120 |
| Trichloroethene | 20.00 | 21.68 | 108 | 80-120 |
| Toluene | 20.00 | 19.47 | 97 | 80-122 |
| Chlorobenzene | 20.00 | 19.05 | 95 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 102 | 80-122 |
| 1,2-Dichloroethane-d4 | 111 | 74-137 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 103 | 80-120 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130872 |
| MSS Lab ID: | 198439-009 | Sampled: | 10/16/07 |
| Matrix: | Water | Received: | 10/16/07 |
| Units: | ug/L | Analyzed: | 10/25/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC411992

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.4947 | 25.00 | 27.35 | 107 | 80-141 |
| Benzene | <0.2500 | 25.00 | 25.64 | 103 | 80-123 |
| Trichloroethene | 4.835 | 25.00 | 32.11 | 109 | 73-129 |
| Toluene | <0.1338 | 25.00 | 25.01 | 100 | 80-124 |
| Chlorobenzene | <0.1569 | 25.00 | 24.31 | 97 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 114 | 80-122 |
| 1,2-Dichloroethane-d4 | 123 | 74-137 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 100 | 80-120 |

Type: MSD Lab ID: QC411993

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 27.01 | 106 | 80-141 | 1 | 20 |
| Benzene | 25.00 | 24.91 | 100 | 80-123 | 3 | 20 |
| Trichloroethene | 25.00 | 31.87 | 108 | 73-129 | 1 | 20 |
| Toluene | 25.00 | 24.35 | 97 | 80-124 | 3 | 20 |
| Chlorobenzene | 25.00 | 23.37 | 93 | 80-120 | 4 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 111 | 80-122 |
| 1,2-Dichloroethane-d4 | 120 | 74-137 |
| Toluene-d8 | 100 | 80-120 |
| Bromofluorobenzene | 102 | 80-120 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC411994 | Batch#: | 130872 |
| Matrix: | Water | Analyzed: | 10/24/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 1.0 |
| Chloromethane | ND | 1.0 |
| Vinyl Chloride | ND | 0.5 |
| Bromomethane | ND | 1.0 |
| Chloroethane | ND | 1.0 |
| Trichlorofluoromethane | ND | 1.0 |
| Acetone | ND | 10 |
| Freon 113 | ND | 2.0 |
| 1,1-Dichloroethene | ND | 0.5 |
| Methylene Chloride | ND | 10 |
| Carbon Disulfide | ND | 0.5 |
| MTBE | ND | 0.5 |
| trans-1,2-Dichloroethene | ND | 0.5 |
| Vinyl Acetate | ND | 10 |
| 1,1-Dichloroethane | ND | 0.5 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 0.5 |
| 2,2-Dichloropropane | ND | 0.5 |
| Chloroform | ND | 0.5 |
| Bromochloromethane | ND | 0.5 |
| 1,1,1-Trichloroethane | ND | 0.5 |
| 1,1-Dichloropropene | ND | 0.5 |
| Carbon Tetrachloride | ND | 0.5 |
| 1,2-Dichloroethane | ND | 0.5 |
| Benzene | ND | 0.5 |
| Trichloroethene | ND | 0.5 |
| 1,2-Dichloropropane | ND | 0.5 |
| Bromodichloromethane | ND | 0.5 |
| Dibromomethane | ND | 0.5 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 0.5 |
| Toluene | ND | 0.5 |
| trans-1,3-Dichloropropene | ND | 0.5 |
| 1,1,2-Trichloroethane | ND | 0.5 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 0.5 |
| Tetrachloroethene | ND | 0.5 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC411994 | Batch#: | 130872 |
| Matrix: | Water | Analyzed: | 10/24/07 |
| Units: | ug/L | | |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 0.5 |
| 1,2-Dibromoethane | ND | 0.5 |
| Chlorobenzene | ND | 0.5 |
| 1,1,1,2-Tetrachloroethane | ND | 0.5 |
| Ethylbenzene | ND | 0.5 |
| m,p-Xylenes | ND | 0.5 |
| o-Xylene | ND | 0.5 |
| Styrene | ND | 0.5 |
| Bromoform | ND | 1.0 |
| Isopropylbenzene | ND | 0.5 |
| 1,1,2,2-Tetrachloroethane | ND | 0.5 |
| 1,2,3-Trichloropropane | ND | 0.5 |
| Propylbenzene | ND | 0.5 |
| Bromobenzene | ND | 0.5 |
| 1,3,5-Trimethylbenzene | ND | 0.5 |
| 2-Chlorotoluene | ND | 0.5 |
| 4-Chlorotoluene | ND | 0.5 |
| tert-Butylbenzene | ND | 0.5 |
| 1,2,4-Trimethylbenzene | ND | 0.5 |
| sec-Butylbenzene | ND | 0.5 |
| para-Isopropyl Toluene | ND | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 |
| 1,4-Dichlorobenzene | ND | 0.5 |
| n-Butylbenzene | ND | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 |
| 1,2-Dibromo-3-Chloropropane | ND | 2.0 |
| 1,2,4-Trichlorobenzene | ND | 0.5 |
| Hexachlorobutadiene | ND | 2.0 |
| Naphthalene | ND | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 0.5 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 108 | 80-122 |
| 1,2-Dichloroethane-d4 | 121 | 74-137 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 105 | 80-120 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-16-SS-0.0' | Diln Fac: | 0.9615 |
| Lab ID: | 198519-014 | Batch#: | 130704 |
| Matrix: | Soil | Sampled: | 10/16/07 |
| Units: | ug/Kg | Received: | 10/18/07 |
| Basis: | as received | Analyzed: | 10/19/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.6 |
| Chloromethane | ND | 9.6 |
| Vinyl Chloride | ND | 9.6 |
| Bromomethane | ND | 9.6 |
| Chloroethane | ND | 9.6 |
| Trichlorofluoromethane | ND | 4.8 |
| Acetone | ND | 24 |
| Freon 113 | ND | 4.8 |
| 1,1-Dichloroethene | ND | 4.8 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.8 |
| MTBE | ND | 4.8 |
| trans-1,2-Dichloroethene | ND | 4.8 |
| Vinyl Acetate | ND | 48 |
| 1,1-Dichloroethane | ND | 4.8 |
| 2-Butanone | ND | 9.6 |
| cis-1,2-Dichloroethene | ND | 4.8 |
| 2,2-Dichloropropane | ND | 4.8 |
| Chloroform | ND | 4.8 |
| Bromochloromethane | ND | 4.8 |
| 1,1,1-Trichloroethane | ND | 4.8 |
| 1,1-Dichloropropene | ND | 4.8 |
| Carbon Tetrachloride | ND | 4.8 |
| 1,2-Dichloroethane | ND | 4.8 |
| Benzene | ND | 4.8 |
| Trichloroethene | ND | 4.8 |
| 1,2-Dichloropropane | ND | 4.8 |
| Bromodichloromethane | ND | 4.8 |
| Dibromomethane | ND | 4.8 |
| 4-Methyl-2-Pentanone | ND | 9.6 |
| cis-1,3-Dichloropropene | ND | 4.8 |
| Toluene | ND | 4.8 |
| trans-1,3-Dichloropropene | ND | 4.8 |
| 1,1,2-Trichloroethane | ND | 4.8 |
| 2-Hexanone | ND | 9.6 |
| 1,3-Dichloropropane | ND | 4.8 |
| Tetrachloroethene | ND | 4.8 |
| Dibromochloromethane | ND | 4.8 |
| 1,2-Dibromoethane | ND | 4.8 |
| Chlorobenzene | ND | 4.8 |
| 1,1,1,2-Tetrachloroethane | ND | 4.8 |
| Ethylbenzene | ND | 4.8 |
| m,p-Xylenes | ND | 4.8 |
| o-Xylene | ND | 4.8 |
| Styrene | ND | 4.8 |
| Bromoform | ND | 4.8 |
| Isopropylbenzene | ND | 4.8 |
| 1,1,2,2-Tetrachloroethane | ND | 4.8 |
| 1,2,3-Trichloropropane | ND | 4.8 |
| Propylbenzene | ND | 4.8 |
| Bromobenzene | ND | 4.8 |
| 1,3,5-Trimethylbenzene | ND | 4.8 |
| 2-Chlorotoluene | ND | 4.8 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-16-SS-0.0' | Dil'n Fac: | 0.9615 |
| Lab ID: | 198519-014 | Batch#: | 130704 |
| Matrix: | Soil | Sampled: | 10/16/07 |
| Units: | ug/Kg | Received: | 10/18/07 |
| Basis: | as received | Analyzed: | 10/19/07 |

| Analyte | Result | RL |
|---|---|---|
| 4-Chlorotoluene | ND | 4.8 |
| tert-Butylbenzene | ND | 4.8 |
| 1,2,4-Trimethylbenzene | ND | 4.8 |
| sec-Butylbenzene | ND | 4.8 |
| para-Isopropyl Toluene | ND | 4.8 |
| 1,3-Dichlorobenzene | ND | 4.8 |
| 1,4-Dichlorobenzene | ND | 4.8 |
| n-Butylbenzene | ND | 4.8 |
| 1,2-Dichlorobenzene | ND | 4.8 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.8 |
| 1,2,4-Trichlorobenzene | ND | 4.8 |
| Hexachlorobutadiene | ND | 4.8 |
| Naphthalene | ND | 4.8 |
| 1,2,3-Trichlorobenzene | ND | 4.8 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 109 | 80-124 |
| 1,2-Dichloroethane-d4 | 112 | 79-136 |
| Toluene-d8 | 97 | 80-120 |
| Bromofluorobenzene | 138 * | 80-122 |

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-16-SS-55' | Diln Fac: | 0.9259 |
| Lab ID: | 198519-015 | Batch#: | 130704 |
| Matrix: | Soil | Sampled: | 10/17/07 |
| Units: | ug/Kg | Received: | 10/18/07 |
| Basis: | as received | Analyzed: | 10/19/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 9.3 |
| Chloromethane | ND | 9.3 |
| Vinyl Chloride | ND | 9.3 |
| Bromomethane | ND | 9.3 |
| Chloroethane | ND | 9.3 |
| Trichlorofluoromethane | ND | 4.6 |
| Acetone | ND | 23 |
| Freon 113 | ND | 4.6 |
| 1,1-Dichloroethene | ND | 4.6 |
| Methylene Chloride | ND | 19 |
| Carbon Disulfide | ND | 4.6 |
| MTBE | ND | 4.6 |
| trans-1,2-Dichloroethene | ND | 4.6 |
| Vinyl Acetate | ND | 46 |
| 1,1-Dichloroethane | ND | 4.6 |
| 2-Butanone | ND | 9.3 |
| cis-1,2-Dichloroethene | ND | 4.6 |
| 2,2-Dichloropropane | ND | 4.6 |
| Chloroform | ND | 4.6 |
| Bromochloromethane | ND | 4.6 |
| 1,1,1-Trichloroethane | ND | 4.6 |
| 1,1-Dichloropropene | ND | 4.6 |
| Carbon Tetrachloride | ND | 4.6 |
| 1,2-Dichloroethane | ND | 4.6 |
| Benzene | ND | 4.6 |
| Trichloroethene | ND | 4.6 |
| 1,2-Dichloropropane | ND | 4.6 |
| Bromodichloromethane | ND | 4.6 |
| Dibromomethane | ND | 4.6 |
| 4-Methyl-2-Pentanone | ND | 9.3 |
| cis-1,3-Dichloropropene | ND | 4.6 |
| Toluene | ND | 4.6 |
| trans-1,3-Dichloropropene | ND | 4.6 |
| 1,1,2-Trichloroethane | ND | 4.6 |
| 2-Hexanone | ND | 9.3 |
| 1,3-Dichloropropane | ND | 4.6 |
| Tetrachloroethene | ND | 4.6 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-16-SS-55' | Diln Fac: | 0.9259 |
| Lab ID: | 198519-015 | Batch#: | 130704 |
| Matrix: | Soil | Sampled: | 10/17/07 |
| Units: | ug/Kg | Received: | 10/18/07 |
| Basis: | as received | Analyzed: | 10/19/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 4.6 |
| 1,2-Dibromoethane | ND | 4.6 |
| Chlorobenzene | ND | 4.6 |
| 1,1,1,2-Tetrachloroethane | ND | 4.6 |
| Ethylbenzene | ND | 4.6 |
| m,p-Xylenes | ND | 4.6 |
| o-Xylene | ND | 4.6 |
| Styrene | ND | 4.6 |
| Bromoform | ND | 4.6 |
| Isopropylbenzene | ND | 4.6 |
| 1,1,2,2-Tetrachloroethane | ND | 4.6 |
| 1,2,3-Trichloropropane | ND | 4.6 |
| Propylbenzene | ND | 4.6 |
| Bromobenzene | ND | 4.6 |
| 1,3,5-Trimethylbenzene | ND | 4.6 |
| 2-Chlorotoluene | ND | 4.6 |
| 4-Chlorotoluene | ND | 4.6 |
| tert-Butylbenzene | ND | 4.6 |
| 1,2,4-Trimethylbenzene | ND | 4.6 |
| sec-Butylbenzene | ND | 4.6 |
| para-Isopropyl Toluene | ND | 4.6 |
| 1,3-Dichlorobenzene | ND | 4.6 |
| 1,4-Dichlorobenzene | ND | 4.6 |
| n-Butylbenzene | ND | 4.6 |
| 1,2-Dichlorobenzene | ND | 4.6 |
| 1,2-Dibromo-3-Chloropropane | ND | 4.6 |
| 1,2,4-Trichlorobenzene | ND | 4.6 |
| Hexachlorobutadiene | ND | 4.6 |
| Naphthalene | ND | 4.6 |
| 1,2,3-Trichlorobenzene | ND | 4.6 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-124 |
| 1,2-Dichloroethane-d4 | 111 | 79-136 |
| Toluene-d8 | 101 | 80-120 |
| Bromofluorobenzene | 112 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Matrix: | Soil | Diln Fac: | 1.000 |
| Units: | ug/Kg | Batch#: | 130704 |
| Basis: | as received | Analyzed: | 10/19/07 |

Type: BS Lab ID: QC411225

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 31.53 | 126 | 74-131 |
| Benzene | 25.00 | 29.17 | 117 | 77-121 |
| Trichloroethene | 25.00 | 30.20 | 121 | 77-121 |
| Toluene | 25.00 | 29.59 | 118 | 79-122 |
| Chlorobenzene | 25.00 | 27.98 | 112 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 107 | 80-124 |
| 1,2-Dichloroethane-d4 | 107 | 79-136 |
| Toluene-d8 | 105 | 80-120 |
| Bromofluorobenzene | 105 | 80-122 |

Type: BSD Lab ID: QC411226

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 25.00 | 31.05 | 124 | 74-131 | 2 | 20 |
| Benzene | 25.00 | 28.05 | 112 | 77-121 | 4 | 20 |
| Trichloroethene | 25.00 | 28.74 | 115 | 77-121 | 5 | 20 |
| Toluene | 25.00 | 27.57 | 110 | 79-122 | 7 | 20 |
| Chlorobenzene | 25.00 | 27.38 | 110 | 80-120 | 2 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 104 | 80-124 |
| 1,2-Dichloroethane-d4 | 103 | 79-136 |
| Toluene-d8 | 102 | 80-120 |
| Bromofluorobenzene | 110 | 80-122 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC411227 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130704 |
| Units: | ug/Kg | Analyzed: | 10/19/07 |

| Analyte | Result | RL |
|---|---|---|
| Freon 12 | ND | 10 |
| Chloromethane | ND | 10 |
| Vinyl Chloride | ND | 10 |
| Bromomethane | ND | 10 |
| Chloroethane | ND | 10 |
| Trichlorofluoromethane | ND | 5.0 |
| Acetone | ND | 25 |
| Freon 113 | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| Methylene Chloride | ND | 20 |
| Carbon Disulfide | ND | 5.0 |
| MTBE | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| Vinyl Acetate | ND | 50 |
| 1,1-Dichloroethane | ND | 5.0 |
| 2-Butanone | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| Chloroform | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| Carbon Tetrachloride | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| Benzene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| 4-Methyl-2-Pentanone | ND | 10 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| Toluene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 1,3-Dichloropropane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Type: | BLANK | Basis: | as received |
| Lab ID: | QC411227 | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130704 |
| Units: | ug/Kg | Analyzed: | 10/19/07 |

| Analyte | Result | RL |
|---|---|---|
| Dibromochloromethane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| m,p-Xylenes | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Styrene | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| Propylbenzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 2-Chlorotoluene | ND | 5.0 |
| 4-Chlorotoluene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| para-Isopropyl Toluene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dibromo-3-Chloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 105 | 80-124 |
| 1,2-Dichloroethane-d4 | 106 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 106 | 80-122 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Purgeable Organics by GC/MS

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 5030B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8260B |
| Field ID: | B-16-SS-55' | Diln Fac: | 0.9259 |
| MSS Lab ID: | 198519-015 | Batch#: | 130704 |
| Matrix: | Soil | Sampled: | 10/17/07 |
| Units: | ug/Kg | Received: | 10/18/07 |
| Basis: | as received | Analyzed: | 10/19/07 |

Type: MS Lab ID: QC411269

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | <0.3012 | 46.30 | 45.27 | 98 | 61-145 |
| Benzene | <0.6599 | 46.30 | 33.60 | 73 | 57-123 |
| Trichloroethene | <0.7375 | 46.30 | 35.61 | 77 | 52-141 |
| Toluene | <0.6347 | 46.30 | 30.67 | 66 | 53-126 |
| Chlorobenzene | <0.6032 | 46.30 | 23.91 | 52 | 49-121 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 107 | 80-124 |
| 1,2-Dichloroethane-d4 | 108 | 79-136 |
| Toluene-d8 | 99 | 80-120 |
| Bromofluorobenzene | 110 | 80-122 |

Type: MSD Lab ID: QC411270

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 46.30 | 45.69 | 99 | 61-145 | 1 | 26 |
| Benzene | 46.30 | 31.93 | 69 | 57-123 | 5 | 25 |
| Trichloroethene | 46.30 | 34.22 | 74 | 52-141 | 4 | 26 |
| Toluene | 46.30 | 28.16 | 61 | 53-126 | 9 | 27 |
| Chlorobenzene | 46.30 | 19.57 | 42 * | 49-121 | 20 | 27 |

| Surrogate | %REC | Limits |
|---|---|---|
| Dibromofluoromethane | 109 | 80-124 |
| 1,2-Dichloroethane-d4 | 108 | 79-136 |
| Toluene-d8 | 104 | 80-120 |
| Bromofluorobenzene | 113 | 80-122 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0'-NORTH 2.5 | Batch#: | 130832 |
| Lab ID: | 198519-005 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | 3.6 | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 78 | 54-120 |
| Decachlorobiphenyl | 93 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0'-NORTH 5.0 | Batch#: | 130832 |
| Lab ID: | 198519-006 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | 4.4 # | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 59 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 91 | 54-120 |
| Decachlorobiphenyl | 93 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0'-SOUTH 2.5 | Batch#: | 130832 |
| Lab ID: | 198519-007 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 59 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 84 | 54-120 |
| Decachlorobiphenyl | 89 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0'-SOUTH 5.0 | Batch#: | 130832 |
| Lab ID: | 198519-008 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/25/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | 3.5 # | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 85 | 54-120 |
| Decachlorobiphenyl | 70 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0'-EAST 2.5 | Batch#: | 130832 |
| Lab ID: | 198519-009 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | 5.4 # | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 80 | 54-120 |
| Decachlorobiphenyl | 81 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0'-EAST 5.0 | Batch#: | 130832 |
| Lab ID: | 198519-010 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | 5.9 | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 77 | 54-120 |
| Decachlorobiphenyl | 77 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0'-WEST 2.5 | Batch#: | 130832 |
| Lab ID: | 198519-011 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 85 | 54-120 |
| Decachlorobiphenyl | 84 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Field ID: | B-12-SS-0.0'-WEST 5.0 | Batch#: | 130832 |
| Lab ID: | 198519-012 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 59 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 95 | 54-120 |
| Decachlorobiphenyl | 92 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC411744 | Batch#: | 130832 |
| Matrix: | Soil | Prepared: | 10/23/07 |
| Units: | ug/Kg | Analyzed: | 10/25/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Result | RL |
|---|---|---|
| alpha-BHC | ND | 1.7 |
| beta-BHC | ND | 1.7 |
| gamma-BHC | ND | 1.7 |
| delta-BHC | ND | 1.7 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 1.7 |
| Heptachlor epoxide | ND | 1.7 |
| Endosulfan I | ND | 1.7 |
| Dieldrin | ND | 3.3 |
| 4,4'-DDE | ND | 3.3 |
| Endrin | ND | 3.3 |
| Endosulfan II | ND | 3.3 |
| Endosulfan sulfate | ND | 3.3 |
| 4,4'-DDD | ND | 3.3 |
| Endrin aldehyde | ND | 3.3 |
| 4,4'-DDT | ND | 3.3 |
| alpha-Chlordane | ND | 1.7 |
| gamma-Chlordane | ND | 1.7 |
| Methoxychlor | ND | 17 |
| Toxaphene | ND | 60 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 88 | 54-120 |
| Decachlorobiphenyl | 97 | 49-142 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8081A |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC411745 | Batch#: | 130832 |
| Matrix: | Soil | Prepared: | 10/23/07 |
| Units: | ug/Kg | Analyzed: | 10/25/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3620B

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| gamma-BHC | 13.32 | 8.811 | 66 | 44-120 |
| Heptachlor | 13.32 | 8.290 | 62 | 44-120 |
| Aldrin | 13.32 | 8.736 | 66 | 47-120 |
| Dieldrin | 26.64 | 18.30 # | 69 | 50-120 |
| Endrin | 26.64 | 17.43 # | 65 | 27-128 |
| 4,4'-DDT | 26.64 | 15.60 | 59 | 42-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 60 | 54-120 |
| Decachlorobiphenyl | 56 | 49-142 |

#= CCV drift outside limits; average CCV drift within limits per method requirements

Curtis & Tompkins, Ltd.

# Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Matrix: | Soil | Batch#: | 130832 |
| Units: | ug/Kg | Sampled: | 10/17/07 |
| Basis: | as received | Received: | 10/18/07 |
| Diln Fac: | 1.000 | Prepared: | 10/23/07 |

Field ID: B-12-SS-0.0'-NORTH 2.5
Type: SAMPLE
Lab ID: 198519-005

Analyzed: 10/24/07
Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 98 | 66-140 |
| Decachlorobiphenyl | 85 | 51-152 |

Field ID: B-12-SS-0.0'-NORTH 5.0
Type: SAMPLE
Lab ID: 198519-006

Analyzed: 10/24/07
Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 124 | 66-140 |
| Decachlorobiphenyl | 123 | 51-152 |

Field ID: B-12-SS-0.0'-SOUTH 2.5
Type: SAMPLE
Lab ID: 198519-007

Analyzed: 10/24/07
Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 108 | 66-140 |
| Decachlorobiphenyl | 113 | 51-152 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Matrix: | Soil | Batch#: | 130832 |
| Units: | ug/Kg | Sampled: | 10/17/07 |
| Basis: | as received | Received: | 10/18/07 |
| Diln Fac: | 1.000 | Prepared: | 10/23/07 |

Field ID: B-12-SS-0.0'-SOUTH 5.0 Analyzed: 10/24/07
Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198519-008

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 110 | 66-140 |
| Decachlorobiphenyl | 118 | 51-152 |

Field ID: B-12-SS-0.0'-EAST 2.5 Analyzed: 10/24/07
Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198519-009

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | 19 | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 109 | 66-140 |
| Decachlorobiphenyl | 111 | 51-152 |

Field ID: B-12-SS-0.0'-EAST 5.0 Analyzed: 10/24/07
Type: SAMPLE Cleanup Method: EPA 3665A
Lab ID: 198519-010

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 98 | 66-140 |
| Decachlorobiphenyl | 82 | 51-152 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Matrix: | Soil | Batch#: | 130832 |
| Units: | ug/Kg | Sampled: | 10/17/07 |
| Basis: | as received | Received: | 10/18/07 |
| Diln Fac: | 1.000 | Prepared: | 10/23/07 |

Field ID: B-12-SS-0.0'-WEST 2.5
Type: SAMPLE
Lab ID: 198519-011

Analyzed: 10/24/07
Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 103 | 66-140 |
| Decachlorobiphenyl | 101 | 51-152 |

Field ID: B-12-SS-0.0'-WEST 5.0
Type: SAMPLE
Lab ID: 198519-012

Analyzed: 10/24/07
Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 110 | 66-140 |
| Decachlorobiphenyl | 89 | 51-152 |

Type: BLANK
Lab ID: QC411744

Analyzed: 10/23/07
Cleanup Method: EPA 3665A

| Analyte | Result | RL |
|---|---|---|
| Aroclor-1016 | ND | 12 |
| Aroclor-1221 | ND | 24 |
| Aroclor-1232 | ND | 12 |
| Aroclor-1242 | ND | 12 |
| Aroclor-1248 | ND | 12 |
| Aroclor-1254 | ND | 12 |
| Aroclor-1260 | ND | 12 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 103 | 66-140 |
| Decachlorobiphenyl | 121 | 51-152 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC411751 | Batch#: | 130832 |
| Matrix: | Soil | Prepared: | 10/23/07 |
| Units: | ug/Kg | Analyzed: | 10/23/07 |
| Basis: | as received | | |

Cleanup Method: EPA 3665A

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Aroclor-1016 | 164.9 | 149.4 | 91 | 69-142 |
| Aroclor-1260 | 164.9 | 156.6 | 95 | 69-155 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 104 | 66-140 |
| Decachlorobiphenyl | 109 | 51-152 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3550B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8082 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130832 |
| MSS Lab ID: | 198257-002 | Sampled: | 10/10/07 |
| Matrix: | Soil | Received: | 10/10/07 |
| Units: | ug/Kg | Prepared: | 10/23/07 |
| Basis: | as received | Analyzed: | 10/23/07 |
| Diln Fac: | 1.000 | | |

Type: MS Cleanup Method: EPA 3665A
Lab ID: QC411752

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Aroclor-1016 | <2.671 | 165.1 | 158.3 | 96 | 62-139 |
| Aroclor-1260 | <2.710 | 165.1 | 152.2 | 92 | 54-143 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 99 | 66-140 |
| Decachlorobiphenyl | 104 | 51-152 |

Type: MSD Cleanup Method: EPA 3665A
Lab ID: QC411753

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Aroclor-1016 | 166.2 | 145.1 | 87 | 62-139 | 9 | 33 |
| Aroclor-1260 | 166.2 | 131.4 | 79 | 54-143 | 15 | 34 |

| Surrogate | %REC | Limits |
|---|---|---|
| TCMX | 82 | 66-140 |
| Decachlorobiphenyl | 82 | 51-152 |

RPD= Relative Percent Difference

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# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-16-GW-45' | Diln Fac: | 1.000 |
| Lab ID: | 198519-001 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Prepared: | 10/22/07 |

| Analyte | Result | RL | Batch# | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | 17 | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Barium | 67 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Chromium | 370 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Lead | 3.3 | 3.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130780 | 10/22/07 | METHOD | EPA 7470A |
| Molybdenum | 54 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Vanadium | 23 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-8A-GW-70' | Diln Fac: | 1.000 |
| Lab ID: | 198519-002 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Prepared: | 10/22/07 |

| Analyte | Result | RL | Batch# | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | 30 | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Barium | 620 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Chromium | 150 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130780 | 10/22/07 | METHOD | EPA 7470A |
| Molybdenum | 65 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Selenium | 31 | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Vanadium | 35 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-9-GW-30.8' | Diln Fac: | 1.000 |
| Lab ID: | 198519-003 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Prepared: | 10/22/07 |

| Analyte | Result | RL | Batch# | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Barium | 110 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Chromium | 11 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130780 | 10/22/07 | METHOD | EPA 7470A |
| Molybdenum | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Nickel | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Vanadium | 6.6 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-4-GW-2.5' | Diln Fac: | 1.000 |
| Lab ID: | 198519-013 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Prepared: | 10/22/07 |

| Analyte | Result | RL | Batch# | Analyzed | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Arsenic | ND | 6.1 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Barium | 200 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Beryllium | ND | 2.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Cadmium | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Chromium | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Cobalt | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Copper | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Lead | ND | 3.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Mercury | ND | 0.20 | 130780 | 10/22/07 | METHOD | EPA 7470A |
| Molybdenum | 12 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Nickel | 7.5 | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Selenium | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Silver | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Thallium | ND | 10 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Vanadium | ND | 5.0 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |
| Zinc | ND | 20 | 130788 | 10/23/07 | EPA 3010A | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Type: | BLANK | Batch#: | 130780 |
| Lab ID: | QC411516 | Prepared: | 10/22/07 |
| Matrix: | Filtrate | Analyzed: | 10/22/07 |
| Units: | ug/L | | |

| Result | RL |
|---|---|
| ND | 0.20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130780 |
| Matrix: | Filtrate | Prepared: | 10/22/07 |
| Units: | ug/L | Analyzed: | 10/22/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC411517 | 5.000 | 5.900 | 118 | 80-120 | | |
| BSD | QC411518 | 5.000 | 5.400 | 108 | 80-120 | 9 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7470A |
| Analyte: | Mercury | Batch#: | 130780 |
| Field ID: | ZZZZZZZZZZ | Sampled: | 10/17/07 |
| MSS Lab ID: | 198482-006 | Received: | 10/17/07 |
| Matrix: | Filtrate | Prepared: | 10/22/07 |
| Units: | ug/L | Analyzed: | 10/22/07 |
| Diln Fac: | 1.000 | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC411520 | 0.07900 | 5.000 | 5.650 | 111 | 79-125 | | |
| MSD | QC411521 | | 5.000 | 5.770 | 114 | 79-125 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC411555 | Batch#: | 130788 |
| Matrix: | Water | Prepared: | 10/22/07 |
| Units: | ug/L | Analyzed: | 10/23/07 |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 10 |
| Arsenic | ND | 6.1 |
| Barium | ND | 5.0 |
| Beryllium | ND | 2.0 |
| Cadmium | ND | 5.0 |
| Chromium | ND | 5.0 |
| Cobalt | ND | 5.0 |
| Copper | ND | 5.0 |
| Lead | ND | 3.0 |
| Molybdenum | ND | 5.0 |
| Nickel | ND | 5.0 |
| Selenium | ND | 10 |
| Silver | ND | 5.0 |
| Thallium | ND | 10 |
| Vanadium | ND | 5.0 |
| Zinc | ND | 20 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Water | Batch#: | 130788 |
| Units: | ug/L | Prepared: | 10/22/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/23/07 |

Type: BS Lab ID: QC411556

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 500.0 | 506.6 | 101 | 80-120 |
| Arsenic | 100.0 | 110.2 | 110 | 80-120 |
| Barium | 2,000 | 2,139 | 107 | 80-120 |
| Beryllium | 50.00 | 56.26 | 113 | 80-120 |
| Cadmium | 50.00 | 55.29 | 111 | 80-120 |
| Chromium | 200.0 | 211.4 | 106 | 80-120 |
| Cobalt | 500.0 | 516.9 | 103 | 80-120 |
| Copper | 250.0 | 254.5 | 102 | 80-120 |
| Lead | 100.0 | 103.5 | 104 | 80-120 |
| Molybdenum | 400.0 | 410.2 | 103 | 80-120 |
| Nickel | 500.0 | 533.3 | 107 | 80-120 |
| Selenium | 100.0 | 105.1 | 105 | 80-120 |
| Silver | 50.00 | 51.77 | 104 | 80-120 |
| Thallium | 100.0 | 107.3 | 107 | 80-120 |
| Vanadium | 500.0 | 523.3 | 105 | 80-120 |
| Zinc | 500.0 | 556.8 | 111 | 80-120 |

Type: BSD Lab ID: QC411557

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 495.2 | 99 | 80-120 | 2 | 20 |
| Arsenic | 100.0 | 109.0 | 109 | 80-120 | 1 | 20 |
| Barium | 2,000 | 2,089 | 104 | 80-120 | 2 | 20 |
| Beryllium | 50.00 | 55.05 | 110 | 80-120 | 2 | 20 |
| Cadmium | 50.00 | 53.21 | 106 | 80-120 | 4 | 20 |
| Chromium | 200.0 | 207.5 | 104 | 80-120 | 2 | 20 |
| Cobalt | 500.0 | 505.2 | 101 | 80-120 | 2 | 20 |
| Copper | 250.0 | 251.4 | 101 | 80-120 | 1 | 20 |
| Lead | 100.0 | 98.80 | 99 | 80-120 | 5 | 20 |
| Molybdenum | 400.0 | 414.8 | 104 | 80-120 | 1 | 20 |
| Nickel | 500.0 | 522.3 | 104 | 80-120 | 2 | 20 |
| Selenium | 100.0 | 104.4 | 104 | 80-120 | 1 | 20 |
| Silver | 50.00 | 50.84 | 102 | 80-120 | 2 | 20 |
| Thallium | 100.0 | 104.9 | 105 | 80-120 | 2 | 20 |
| Vanadium | 500.0 | 513.7 | 103 | 80-120 | 2 | 20 |
| Zinc | 500.0 | 543.7 | 109 | 80-120 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3010A |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130788 |
| MSS Lab ID: | 198501-001 | Sampled: | 10/17/07 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | ug/L | Prepared: | 10/22/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/23/07 |

Type: MS Lab ID: QC411558

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 2.491 | 500.0 | 515.3 | 103 | 80-120 |
| Arsenic | <2.042 | 100.0 | 99.40 | 99 | 80-127 |
| Barium | 31.16 | 2,000 | 2,063 | 102 | 80-120 |
| Beryllium | 0.1092 | 50.00 | 53.83 | 107 | 80-120 |
| Cadmium | 0.3999 | 50.00 | 51.89 | 103 | 80-120 |
| Chromium | 0.7970 | 200.0 | 201.4 | 100 | 80-120 |
| Cobalt | 0.5399 | 500.0 | 480.7 | 96 | 80-120 |
| Copper | 1.429 | 250.0 | 253.2 | 101 | 80-120 |
| Lead | 2.621 | 100.0 | 94.95 | 92 | 76-120 |
| Molybdenum | 12.89 | 400.0 | 407.3 | 99 | 80-120 |
| Nickel | 2.602 | 500.0 | 486.7 | 97 | 80-120 |
| Selenium | <1.469 | 100.0 | 108.2 | 108 | 80-128 |
| Silver | 0.8259 | 50.00 | 49.94 | 98 | 73-122 |
| Thallium | <1.616 | 100.0 | 97.52 | 98 | 78-120 |
| Vanadium | 2.392 | 500.0 | 508.2 | 101 | 80-120 |
| Zinc | <0.8377 | 500.0 | 520.1 | 104 | 80-123 |

Type: MSD Lab ID: QC411559

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 500.0 | 525.3 | 105 | 80-120 | 2 | 20 |
| Arsenic | 100.0 | 99.30 | 99 | 80-127 | 0 | 20 |
| Barium | 2,000 | 2,087 | 103 | 80-120 | 1 | 20 |
| Beryllium | 50.00 | 54.67 | 109 | 80-120 | 2 | 20 |
| Cadmium | 50.00 | 53.06 | 105 | 80-120 | 2 | 20 |
| Chromium | 200.0 | 204.7 | 102 | 80-120 | 2 | 20 |
| Cobalt | 500.0 | 489.9 | 98 | 80-120 | 2 | 20 |
| Copper | 250.0 | 256.1 | 102 | 80-120 | 1 | 20 |
| Lead | 100.0 | 97.34 | 95 | 76-120 | 2 | 20 |
| Molybdenum | 400.0 | 416.7 | 101 | 80-120 | 2 | 20 |
| Nickel | 500.0 | 497.9 | 99 | 80-120 | 2 | 20 |
| Selenium | 100.0 | 108.5 | 109 | 80-128 | 0 | 20 |
| Silver | 50.00 | 51.38 | 101 | 73-122 | 3 | 20 |
| Thallium | 100.0 | 101.0 | 101 | 78-120 | 3 | 20 |
| Vanadium | 500.0 | 515.9 | 103 | 80-120 | 2 | 20 |
| Zinc | 500.0 | 526.5 | 105 | 80-123 | 1 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-16-SS-0.0' | Diln Fac: | 1.000 |
| Lab ID: | 198519-014 | Sampled: | 10/16/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | mg/Kg | Analyzed: | 10/22/07 |
| Basis: | as received | | |

| Analyte | Result | RL | Batch# | Prepared | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | 5.9 | 0.50 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Arsenic | 6.0 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Barium | 120 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.48 | 0.10 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Chromium | 24 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Cobalt | 8.5 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Copper | 27 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Lead | 8.4 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.023 | 0.020 | 130798 | 10/22/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Nickel | 33 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Selenium | 1.2 | 0.50 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Vanadium | 27 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Zinc | 61 | 1.0 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Project#: | 379-1827-15-02 |
| Client: | Weiss Associates | Location: | Cloverdale Project |
| Field ID: | B-16-SS-55' | Diln Fac: | 1.000 |
| Lab ID: | 198519-015 | Sampled: | 10/17/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | mg/Kg | Analyzed: | 10/22/07 |
| Basis: | as received | | |

| Analyte | Result | RL | Batch# | Prepared | Prep | Analysis |
|---|---|---|---|---|---|---|
| Antimony | 6.3 | 0.50 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Arsenic | 5.3 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Barium | 230 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Beryllium | 0.40 | 0.10 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Cadmium | ND | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Chromium | 28 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Cobalt | 11 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Copper | 47 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Lead | 9.7 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Mercury | 0.18 | 0.020 | 130798 | 10/22/07 | METHOD | EPA 7471A |
| Molybdenum | ND | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Nickel | 38 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Selenium | 2.8 | 0.50 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Silver | ND | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Thallium | ND | 0.50 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Vanadium | 40 | 0.25 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |
| Zinc | 74 | 1.0 | 130744 | 10/19/07 | EPA 3050B | EPA 6010B |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC411382 | Batch#: | 130744 |
| Matrix: | Soil | Prepared: | 10/19/07 |
| Units: | mg/Kg | Analyzed: | 10/22/07 |
| Basis: | as received | | |

| Analyte | Result | RL |
|---|---|---|
| Antimony | ND | 0.50 |
| Arsenic | ND | 0.25 |
| Barium | ND | 0.25 |
| Beryllium | ND | 0.10 |
| Cadmium | ND | 0.25 |
| Chromium | ND | 0.25 |
| Cobalt | ND | 0.25 |
| Copper | ND | 0.25 |
| Lead | ND | 0.25 |
| Molybdenum | ND | 0.25 |
| Nickel | ND | 0.25 |
| Selenium | ND | 0.50 |
| Silver | ND | 0.25 |
| Thallium | ND | 0.50 |
| Vanadium | ND | 0.25 |
| Zinc | ND | 1.0 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Matrix: | Soil | Batch#: | 130744 |
| Units: | mg/Kg | Prepared: | 10/19/07 |
| Basis: | as received | Analyzed: | 10/22/07 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC411383

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Antimony | 100.0 | 90.61 | 91 | 80-120 |
| Arsenic | 50.00 | 51.35 | 103 | 80-120 |
| Barium | 100.0 | 94.72 | 95 | 80-120 |
| Beryllium | 2.500 | 2.342 | 94 | 80-120 |
| Cadmium | 10.00 | 9.926 | 99 | 80-120 |
| Chromium | 100.0 | 93.02 | 93 | 80-120 |
| Cobalt | 25.00 | 22.56 | 90 | 80-120 |
| Copper | 12.50 | 11.14 | 89 | 80-120 |
| Lead | 100.0 | 93.81 | 94 | 80-120 |
| Molybdenum | 20.00 | 19.21 | 96 | 80-120 |
| Nickel | 25.00 | 23.09 | 92 | 80-120 |
| Selenium | 50.00 | 47.24 | 94 | 80-120 |
| Silver | 10.00 | 8.805 | 88 | 80-120 |
| Thallium | 50.00 | 44.02 | 88 | 80-120 |
| Vanadium | 25.00 | 23.44 | 94 | 80-120 |
| Zinc | 25.00 | 23.55 | 94 | 80-120 |

Type: BSD Lab ID: QC411384

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 100.0 | 91.16 | 91 | 80-120 | 1 | 20 |
| Arsenic | 50.00 | 51.21 | 102 | 80-120 | 0 | 20 |
| Barium | 100.0 | 94.24 | 94 | 80-120 | 1 | 20 |
| Beryllium | 2.500 | 2.317 | 93 | 80-120 | 1 | 20 |
| Cadmium | 10.00 | 9.923 | 99 | 80-120 | 0 | 20 |
| Chromium | 100.0 | 92.04 | 92 | 80-120 | 1 | 20 |
| Cobalt | 25.00 | 22.55 | 90 | 80-120 | 0 | 20 |
| Copper | 12.50 | 11.08 | 89 | 80-120 | 1 | 20 |
| Lead | 100.0 | 93.64 | 94 | 80-120 | 0 | 20 |
| Molybdenum | 20.00 | 19.12 | 96 | 80-120 | 0 | 20 |
| Nickel | 25.00 | 23.03 | 92 | 80-120 | 0 | 20 |
| Selenium | 50.00 | 47.08 | 94 | 80-120 | 0 | 20 |
| Silver | 10.00 | 8.720 | 87 | 80-120 | 1 | 20 |
| Thallium | 50.00 | 44.06 | 88 | 80-120 | 0 | 20 |
| Vanadium | 25.00 | 23.14 | 93 | 80-120 | 1 | 20 |
| Zinc | 25.00 | 23.60 | 94 | 80-120 | 0 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3050B |
| Project#: | 379-1827-15-02 | Analysis: | EPA 6010B |
| Field ID: | B-16-SS-0.0' | Batch#: | 130744 |
| MSS Lab ID: | 198519-014 | Sampled: | 10/16/07 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | mg/Kg | Prepared: | 10/19/07 |
| Basis: | as received | Analyzed: | 10/22/07 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC411385

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Antimony | 5.895 | 90.09 | 32.77 | 30 | 1-122 |
| Arsenic | 6.028 | 45.05 | 39.90 | 75 | 72-120 |
| Barium | 120.9 | 90.09 | 151.0 | 33 * | 49-139 |
| Beryllium | 0.4788 | 2.252 | 1.937 | 65 * | 80-120 |
| Cadmium | <0.002477 | 9.009 | 6.205 | 69 * | 74-120 |
| Chromium | 23.54 | 90.09 | 77.19 | 60 * | 65-120 |
| Cobalt | 8.521 | 22.52 | 21.49 | 58 * | 60-120 |
| Copper | 26.60 | 11.26 | 27.28 | 6 * | 47-146 |
| Lead | 8.355 | 90.09 | 66.66 | 65 | 53-123 |
| Molybdenum | <0.02084 | 18.02 | 11.85 | 66 | 66-120 |
| Nickel | 32.96 | 22.52 | 37.12 | 18 * | 43-142 |
| Selenium | 1.172 | 45.05 | 32.73 | 70 * | 71-120 |
| Silver | <0.01699 | 9.009 | 6.267 | 70 | 66-120 |
| Thallium | 0.2793 | 45.05 | 26.97 | 59 * | 62-120 |
| Vanadium | 27.42 | 22.52 | 34.95 | 33 * | 52-139 |
| Zinc | 61.06 | 22.52 | 59.50 | -7 * | 42-147 |

Type: MSD Lab ID: QC411386

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Antimony | 98.04 | 33.89 | 29 | 1-122 | 5 | 30 |
| Arsenic | 49.02 | 44.20 | 78 | 72-120 | 3 | 20 |
| Barium | 98.04 | 186.5 | 67 | 49-139 | 17 | 23 |
| Beryllium | 2.451 | 2.189 | 70 * | 80-120 | 5 | 20 |
| Cadmium | 9.804 | 6.938 | 71 * | 74-120 | 3 | 20 |
| Chromium | 98.04 | 89.34 | 67 | 65-120 | 8 | 20 |
| Cobalt | 24.51 | 24.67 | 66 | 60-120 | 8 | 24 |
| Copper | 12.25 | 38.43 | 97 | 47-146 | 31 * | 21 |
| Lead | 98.04 | 75.21 | 68 | 53-123 | 4 | 28 |
| Molybdenum | 19.61 | 13.04 | 67 | 66-120 | 1 | 20 |
| Nickel | 24.51 | 47.42 | 59 | 43-142 | 21 | 26 |
| Selenium | 49.02 | 36.65 | 72 | 71-120 | 3 | 20 |
| Silver | 9.804 | 6.926 | 71 | 66-120 | 2 | 20 |
| Thallium | 49.02 | 29.14 | 59 * | 62-120 | 1 | 20 |
| Vanadium | 24.51 | 43.09 | 64 | 52-139 | 17 | 20 |
| Zinc | 24.51 | 78.23 | 70 | 42-147 | 25 | 27 |

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Basis: | as received |
| Type: | BLANK | Diln Fac: | 1.000 |
| Lab ID: | QC411603 | Batch#: | 130798 |
| Matrix: | Soil | Prepared: | 10/22/07 |
| Units: | mg/Kg | Analyzed: | 10/22/07 |

| Result | RL |
|---|---|
| ND | 0.020 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Matrix: | Soil | Batch#: | 130798 |
| Units: | mg/Kg | Prepared: | 10/22/07 |
| Basis: | as received | Analyzed: | 10/22/07 |

| Type | Lab ID | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|
| BS | QC411604 | 0.5000 | 0.5460 | 109 | 80-120 | | |
| BSD | QC411605 | 0.5000 | 0.5360 | 107 | 80-120 | 2 | 20 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

## California Title 26 Metals

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 7471A |
| Analyte: | Mercury | Diln Fac: | 1.000 |
| Field ID: | ZZZZZZZZZZ | Batch#: | 130798 |
| MSS Lab ID: | 198414-001 | Sampled: | 10/15/07 |
| Matrix: | Soil | Received: | 10/16/07 |
| Units: | mg/Kg | Prepared: | 10/22/07 |
| Basis: | as received | Analyzed: | 10/22/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|---|---|
| MS | QC411607 | 0.06024 | 0.5000 | 0.6240 | 113 | 70-143 | | |
| MSD | QC411608 | | 0.5000 | 0.5900 | 106 | 70-143 | 6 | 22 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Batch#: | 130697 |
| Matrix: | Water | Received: | 10/18/07 |
| Units: | mg/L | | |

| Field ID | Type | Lab ID | Result | RL | Diln Fac | Sampled | Analyzed |
|---|---|---|---|---|---|---|---|
| B-16-GW-45' | SAMPLE | 198519-001 | ND | 0.05 | 1.000 | 10/17/07 09:00 | 10/18/07 18:43 |
| B-8A-GW-70' | SAMPLE | 198519-002 | 0.12 | 0.05 | 1.000 | 10/17/07 09:00 | 10/18/07 18:08 |
| B-9-GW-30.8' | SAMPLE | 198519-003 | 7.4 | 0.10 | 2.000 | 10/17/07 18:30 | 10/18/07 23:41 |
| B-4-GW-2.5' | SAMPLE | 198519-013 | 3.3 | 0.05 | 1.000 | 10/17/07 18:00 | 10/18/07 19:53 |
| | BLANK | QC411198 | ND | 0.05 | 1.000 | | 10/18/07 17:28 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | METHOD |
| Project#: | 379-1827-15-02 | Analysis: | EPA 300.0 |
| Analyte: | Nitrogen, Nitrate | Units: | mg/L |
| Field ID: | B-16-GW-45' | Batch#: | 130697 |
| MSS Lab ID: | 198519-001 | Sampled: | 10/17/07 09:00 |
| Matrix: | Water | Received: | 10/18/07 |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC411199 | | 1.000 | 1.062 | 106 | 80-120 | | | 1.000 | 10/18/07 20:28 |
| BSD | QC411200 | | 1.000 | 1.024 | 102 | 80-120 | 4 | 20 | 1.000 | 10/18/07 20:46 |
| MS | QC411207 | 0.04546 | 5.000 | 5.322 | 106 | 80-120 | | | 10.00 | 10/18/07 21:21 |
| MSD | QC411208 | | 5.000 | 5.209 | 103 | 80-120 | 2 | 20 | 10.00 | 10/18/07 21:38 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Diln Fac: | 1.000 |
| Field ID: | B-16-SS-55' | Batch#: | 130830 |
| Matrix: | Soil | Sampled: | 10/17/07 10:15 |
| Units: | mg/Kg | Received: | 10/18/07 |
| Basis: | as received | | |

| Type | Lab ID | Result | RL | Analyzed |
|---|---|---|---|---|
| SAMPLE | 198519-015 | ND | 0.5 | 10/23/07 12:14 |
| BLANK | QC411736 | ND | 0.5 | 10/23/07 11:18 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 198519 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1827-15-02 | | |
| Analyte: | Nitrogen, Nitrate | Basis: | as received |
| Field ID: | B-16-SS-55' | Batch#: | 130830 |
| MSS Lab ID: | 198519-015 | Sampled: | 10/17/07 10:15 |
| Matrix: | Soil | Received: | 10/18/07 |
| Units: | mg/Kg | | |

| Type | Lab ID | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC411737 | | 10.00 | 9.862 | 99 | 80-120 | | | 1.000 | 10/23/07 11:36 |
| BSD | QC411738 | | 10.00 | 9.643 | 96 | 80-120 | 2 | 20 | 1.000 | 10/23/07 11:53 |
| MS | QC411739 | 0.1188 | 5.100 | 4.793 | 92 | 50-120 | | | 1.020 | 10/23/07 12:39 |
| MSD | QC411740 | | 5.100 | 4.860 | 93 | 50-120 | 1 | 30 | 1.020 | 10/23/07 12:56 |

RPD= Relative Percent Difference

198519

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

# Chain of Custody Record

| | | | |
|---|---|---|---|
| Weiss Associates | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/17/07 |
| 5801 Christie Avenue, Suite 600 | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: — |
| Emeryville, CA 94608 | Analysis Turnaround Time | | 1827-15 |
| (510) - 450 - 6000 Phone | Calendar ( C ) or Work Days (W) 5 days | | 1 of 3 COCs |
| (510) - 547 - 5043 FAX | TAT if different from above: 5 days | | Job No. 379-1827-15-02 |
| Project Name: Cloverdale Project | ☐ 2 weeks | | SDG No. |
| Site: Cloverdale, Ca | ☐ 1 week | | |
| C&T-WO-07-002 | ☐ 2 days | | |
| | ☐ 1 day | | |

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | B-16-GW-45 | 10/17/07 | 9:00 | VOA | GW | 6 | | ✓ | | ✓ | | | | |
| | | | | 1L amber | | 2 | | | ✓ | | | | | |
| | | | | 750ml poly | | 1 | ✓ | ✓ | | | | | | |
| | | | ↓ | 750ml poly | | 1 | | | | | ✓ | | | |
| -2 | B-8a-GW-70 | | 15:00 | VOA | | 6 | | ✓ | | ✓ | | | | Sample is very silty |
| | | | | 1L amber | | 2 | | | ✓ | | | | | |
| | | | | 750ml poly | | 1 | ✓ | ✓ | | | | | | (partial bottle) |
| | | | ↓ | 750ml poly | | 1 | | | | | ✓ | | | |
| -3 | B-9-GW-30.8 | | 18:30 | VOA | | 6 | | ✓ | | ✓ | | | | |
| | | | | 1L amber | | 2 | | | ✓ | | | | | |
| | | | | 750 ml poly | | 1 | ✓ | ✓ | | | | | | |
| | | | ↓ | 750 ml poly | ↓ | 1 | | | | | ✓ | | | |
| -4 | Trip Blank | | | VOA | AQ | 1 | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= $H_2SO_4$; 4=$HNO_3$; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

**Special Instructions/QC Requirements & Comments:**

| | Company: | Date/Time: | | Company: | Date/Time: |
|---|---|---|---|---|---|
| Relinquished by: | Weiss Associates | 10/17/07 2130 | Received by: | C&T | 10/18/07 1322 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

* refrigerator in locked Storage unit

Extract on ice cold Re

198519

# Chain of Custody Record

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

| | | | |
|---|---|---|---|
| Weiss Associates | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/17/07 |
| 5801 Christie Avenue, Suite 600 | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: |
| Emeryville, CA 94608 | Analysis Turnaround Time | | |
| (510) - 450 - 6000 Phone | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 547 - 5043 FAX | TAT if different from above: 5 days | | |
| Project Name: Cloverdale Project | ☐ 2 weeks | | |
| Site: Cloverdale, Ca | ☐ 1 week | | |
| C&T-WO-07-002 | ☐ 2 days | | |
| | ☐ 1 day | | |

1827-15
2 of 3 COCs
Job No. 379-1827-15-02
SDG No.

| | Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Archive Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -5 | B-12-55-0.0' - North 2.5 | 10/17/07 | 15:00 | G | SO | 1 | | | | | | | | ✓ | |
| -6 | - North 5.0 | | | | | | | | | | | | | ✓ | |
| -7 | - South 2.5 | | | | | | | | | | | | | ✓ | |
| -8 | - South 5.0 | | | | | | | | | | | | | ✓ | |
| -9 | - East 2.5 | | | | | | | | | | | | | ✓ | |
| -10 | - East 5.0 | | | | | | | | | | | | | ✓ | |
| -11 | - West 2.5 | | | | | | | | | | | | | ✓ | |
| -12 | - West 5.0 | | | | | | | | | | | | | ✓ | |
| -13 | B-4-GW-2.5' | 10/17/07 | 18:00 | VOA | GW | 6 | | ✓ | | | ✓ | | | | |
| | | | | 1L amber | | 2 | | | | ✓ | | | | | |
| | | | | 750ml poly | | 1 | | ✓ | ✓ | | | | | | |
| | | | | 750ml poly | | 1 | | | | | | ✓ | | | |
| Rtnd 10/18/07 -14 | Trip Blank 10/17/07 | | | VOA | AQ | 1 | | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Robert A. Gi | Weiss Associate | 10/17/07 2130 | | C&T | 10/18/07 1322 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

* refrigerator in locked storage unit

intact on ice cord Rn

19859

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

# Chain of Custody Record

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/17/07 |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | |
| Project Name: Cloverdale Project | ☐ 1 week | | |
| Site: Cloverdale, Ca | ☐ 2 days | | |
| C&T-WO-07-002 | ☐ 1 day | | |

1827-15
3 of 3 COCs
Job No. 379-1827-15-02
SDG No.

| Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | Archive Sample | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -14 B-16-55-0.0' | 10/16/07 | 10:00 | G | SO | 1 | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| -15 B-16-55-5.5' | 10/17/07 | 10:15 | G | SO | 1 | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

**Special Instructions/QC Requirements & Comments:**

| | Company: | Date/Time: | | Company: | Date/Time: |
|---|---|---|---|---|---|
| Relinquished by: Robert McCann | Weiss Associates | 10/17/07 2130 | Received by: | CT | 10/18/07 1322 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

* refrigerator in locked storage unit

intact on ice cold RL

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

# COOLER RECEIPT CHECKLIST

Login#: 198519 Date Received: 10/18/07 Number of Coolers: 2
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10/18 By (print): KWellbrock (sign) KWellbrock

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
   If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? ..... YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... YES NO *
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bags
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES NO
   Type of ice: wet & blue Temperature: no temp blank - cold on ice
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10/18 By (print): KWellbrock (sign) KWellbrock

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... YES NO *
8. Was the client contacted concerning this sample delivery? ..... YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
B5: Sent only 1 Trip Blank, not 2 as written on COC
B7: 3/6 B-8-GW-70 w/ bubbles ; Trip Blank w/ Bubble

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# ANALYTICAL REPORT

| | |
|---|---|
| Weiss Associates | Project : 379-1827-15-02 |
| 5801 Christie Avenue | Location : Cloverdale Project |
| Emeryville, CA 94608 | Level : II |

| Sample ID | Lab ID |
|---|---|
| B-8-GW-+1.25' | 198756-001 |

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/12/2007
Project Manager

Signature: _____ Date: 11/15/2007
Operations Manager

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **198756** |
| Client: | **Weiss Associates** |
| Project: | **379-1827-15-02** |
| Location: | **Cloverdale Project** |
| Request Date: | **10/26/07** |
| Samples Received: | **10/10/07** |

This hardcopy data package contains sample and QC results for one water sample, requested for the above referenced project on 10/26/07. The sample was received on ice and intact.

**TPH-Extractables by GC (EPA 8015B):**

198756-001 was prepared outside of hold time per client request; affected data was qualified with "b". No other analytical problems were encountered.

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198756 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Field ID: | B-8-GW-+1.25' | Sampled: | 10/09/07 |
| Matrix: | Water | Received: | 10/10/07 |
| Units: | ug/L | Prepared: | 10/27/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/28/07 |
| Batch#: | 131027 | | |

Type: SAMPLE Cleanup Method: EPA 3630C
Lab ID: 198756-001

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND b | 50 | |
| Motor Oil C24-C36 | ND b | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 91 b | 61-133 |

Type: BLANK Cleanup Method: EPA 3630C
Lab ID: QC412574

| Analyte | Result | RL | MDL |
|---|---|---|---|
| Diesel C10-C24 | ND | 50 | |
| Motor Oil C24-C36 | ND | 300 | 85 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 100 | 61-133 |

b= See narrative
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 198756 | Location: | Cloverdale Project |
| Client: | Weiss Associates | Prep: | EPA 3520C |
| Project#: | 379-1827-15-02 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 131027 |
| Units: | ug/L | Prepared: | 10/27/07 |
| Diln Fac: | 1.000 | Analyzed: | 10/28/07 |

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC412575

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,192 | 88 | 58-128 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 92 | 61-133 |

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC412576

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,289 | 92 | 58-128 | 4 | 29 |

| Surrogate | %REC | Limits |
|---|---|---|
| Hexacosane | 93 | 61-133 |

RPD= Relative Percent Difference

**Lisa Brooker** 198756

**From:** "Joyce E. Adams" <jea@weiss.com>
**To:** <anne@ctberk.com>; <lisa@ctberk.com>
**Sent:** Friday, October 26, 2007 5:21 PM
**Subject:** Rush sample analysis for Cloverdale project

Please do a silica gel cleanup and TPH-D and TPH-MO by EPA Method 8015 modified.

The sample 198234-003.

Joyce

Curtis & Tompkins
2323 5th Street Berkeley, Ca 94710
510-204-2225

198234

# Chain of Custody Record

| | | | |
|---|---|---|---|
| | Project Manager: J. Adams | Site Contact: R. Davis | Date: 10/9/07 |
| Weiss Associates | Tel/Fax: 510-450-6162 | Lab Contact: Anne Kathain | Carrier: UPS - 9X3169 |
| 5801 Christie Avenue, Suite 600 | Analysis Turnaround Time | | |
| Emeryville, CA 94608 | Calendar ( C ) or Work Days (W) 5 days | | |
| (510) - 450 - 6000 Phone | TAT if different from above: 5 days | | |
| (510) - 547 - 5043 FAX | ☐ 2 weeks | | |
| Project Name: Cloverdale Project | ☐ 1 week | | |
| Site: Cloverdale, Ca | ☐ 2 days | | |
| C&T-WO-07-002 | ☐ 1 day | | |

1827-15 - J
1 of 1 COCs
Job No. 379-1827-15-02
SDG No.

| Sample Identification | Sample Date | Sample Time | Container Type | Matrix | # of Cont. | VOCs EPA 8260B | Cam 17 Metals EPA 6010b/ 7000 series | TPH-D/MO EPA 8015M | TPH-G EPA 8015M | Nitrate Method 300 | Asbestos PCM | Pesticides/PCBs EPA 8081/8082 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-8-SS-0.0' | 10/8/07 | 15:30 | | SO | 1 | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| B-8-SS-6.8' | 10/9/07 | 13:15 | | SO | 1 | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| B-8-GW-+1.25' | 10/9/07 | 07:40 | VOA | GW | 3 | ✓ | | | | | | | |
| | | | VOA | | 3 | | | | ✓ | | | | |
| | | | 1L poly | | 2 | | | ✓ | | | | | |
| | | | 750 ml poly | | 1 | ✓ | ✓ | | | | | | |
| ↓ | ↓ | ↓ | 500 ml poly | ↓ | 1 | | | | | ✓ | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Trip Blank | 10/9/07 | | VOA | AQ | | | | | | | | | |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

*Possible Hazard Identification*
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| [signature] | Weiss Associates | 10/9/07, 15:00 | [signature] | C&T | 10-10-07 1050 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

Curtis & Tompkins, Ltd.

# COOLER RECEIPT CHECKLIST

Login#: 198234 Date Received: 10-10-07 Number of Coolers: 1
Client: Weiss Project: Cloverdale

A. Preliminary Examination Phase
Date Opened: 10-10-07 By (print): Faith Nichols (sign) Faith

1. Did cooler come with a shipping slip (airbill, etc.)? (YES) NO
   If YES, enter carrier name and airbill number: UPS 1Z 832 32E 01 4339 1827
2. Were custody seals on outside of cooler? YES (NO)
   How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO N/A
4. Were custody papers dry and intact when received? (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? (YES) NO
6. Did you sign the custody papers in the appropriate place? (YES) NO
7. Was project identifiable from custody papers? (YES) NO
   If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap, Voa foam
9. If required, was sufficient ice used? Samples should be <=6 degrees C. (YES) NO
   Type of ice: Wet Temperature: No temp blank, All cold
10. Were Encore sampling devices present in the cooler? YES (NO)
    If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 10-10-07 By (print): Faith Nichols (sign) Faith

1. Did all bottles arrive unbroken? (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? (YES) NO
3. Did bottle labels agree with custody papers? (YES) NO
4. Were appropriate containers used for the tests indicated? (YES) NO
5. Were correct preservatives added to samples? (YES) NO
6. Was sufficient amount of sample sent for tests indicated? (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below (YES) NO
8. Was the client contacted concerning this sample delivery? YES NO
   If YES, give details below.
   Who was called? _____ By whom? _____ Date: _____

Additional Comments:
Trip Blank listed on COC but not in cooler

Curtis & Tompkins, Ltd.

# Dissolved Chloride

| | | | |
|---|---|---|---|
| Lab #: | 203418 | Location: | 35 Acres Site, Cloverdale |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1824-15-3 | | |
| Analyte: | Chloride | Batch#: | 138346 |
| Units: | mg/L | Received: | 05/20/08 |

| Field ID | Type | Lab ID | Matrix | Result | RL | Diln Fac | Sampled | Analyzed |
|---|---|---|---|---|---|---|---|---|
| 0508-01 | SAMPLE | 203418-001 | Filtrate | 21 | 1.0 | 5.000 | 05/19/08 13:45 | 05/21/08 05:39 |
| 0508-02 | SAMPLE | 203418-002 | Filtrate | 41 | 2.0 | 10.00 | 05/19/08 10:50 | 05/20/08 15:59 |
| 0508-03 | SAMPLE | 203418-003 | Filtrate | 110 | 2.0 | 10.00 | 05/19/08 12:45 | 05/21/08 08:20 |
| 0508-04 | SAMPLE | 203418-004 | Filtrate | 12 | 0.20 | 1.000 | 05/20/08 10:40 | 05/20/08 19:47 |
| 0508-05 | SAMPLE | 203418-005 | Filtrate | 17 | 0.20 | 1.000 | 05/20/08 08:50 | 05/20/08 19:12 |
| 0508-06 | SAMPLE | 203418-006 | Filtrate | 11 | 0.20 | 1.000 | 05/20/08 11:15 | 05/20/08 20:39 |
| 0508-07 | SAMPLE | 203418-007 | Filtrate | 15 | 0.20 | 1.000 | 05/19/08 15:35 | 05/20/08 22:24 |
| 0508-08 | SAMPLE | 203418-008 | Filtrate | 71 | 1.0 | 5.000 | 05/19/08 14:40 | 05/20/08 16:38 |
| 0508-09 | SAMPLE | 203418-009 | Filtrate | 26 | 1.0 | 5.000 | 05/19/08 11:45 | 05/21/08 08:37 |
| 0508-12 | SAMPLE | 203418-010 | Filtrate | 17 | 0.20 | 1.000 | 05/20/08 09:00 | 05/20/08 19:30 |
| | BLANK | QC442698 | Water | ND | 0.20 | 1.000 | | 05/20/08 11:21 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved Chloride

| | | | |
|---|---|---|---|
| Lab #: | 203418 | Location: | 35 Acres Site, Cloverdale |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1824-15-3 | | |
| Analyte: | Chloride | Batch#: | 138346 |
| Field ID: | 0508-01 | Sampled: | 05/19/08 13:45 |
| MSS Lab ID: | 203418-001 | Received: | 05/20/08 |
| Units: | mg/L | | |

| Type | Lab ID | Matrix | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC442699 | Water | | 4.000 | 3.738 | 93 | 80-120 | | | 1.000 | 05/20/08 11:38 |
| BSD | QC442700 | Water | | 4.000 | 3.743 | 94 | 80-120 | 0 | 20 | 1.000 | 05/20/08 11:55 |
| MS | QC442701 | Filtrate | 20.83 | 10.00 | 29.84 | 90 | 80-120 | | | 5.000 | 05/21/08 07:06 |
| MSD | QC442702 | Filtrate | | 10.00 | 29.95 | 91 | 80-120 | 0 | 20 | 5.000 | 05/21/08 07:23 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved Fluoride

| | | | |
|---|---|---|---|
| Lab #: | 203418 | Location: | 35 Acres Site, Cloverdale |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1824-15-3 | | |
| Analyte: | Fluoride | Batch#: | 138573 |
| Units: | mg/L | Received: | 05/20/08 |
| Diln Fac: | 1.000 | | |

| Field ID | Type | Lab ID | Matrix | Result | RL | Sampled | Analyzed |
|---|---|---|---|---|---|---|---|
| 0508-01 | SAMPLE | 203418-001 | Filtrate | ND | 0.10 | 05/19/08 13:45 | 05/27/08 22:29 |
| 0508-02 | SAMPLE | 203418-002 | Filtrate | 0.38 | 0.10 | 05/19/08 10:50 | 05/27/08 22:47 |
| 0508-03 | SAMPLE | 203418-003 | Filtrate | 0.23 | 0.10 | 05/19/08 12:45 | 05/28/08 00:31 |
| 0508-04 | SAMPLE | 203418-004 | Filtrate | 0.37 | 0.10 | 05/20/08 10:40 | 05/28/08 01:06 |
| 0508-05 | SAMPLE | 203418-005 | Filtrate | 1.5 | 0.10 | 05/20/08 08:50 | 05/28/08 01:23 |
| 0508-06 | SAMPLE | 203418-006 | Filtrate | ND | 0.10 | 05/20/08 11:15 | 05/28/08 01:41 |
| 0508-07 | SAMPLE | 203418-007 | Filtrate | ND | 0.10 | 05/19/08 15:35 | 05/28/08 01:58 |
| 0508-08 | SAMPLE | 203418-008 | Filtrate | 0.25 | 0.10 | 05/19/08 14:40 | 05/28/08 02:16 |
| 0508-09 | SAMPLE | 203418-009 | Filtrate | 0.28 | 0.10 | 05/19/08 11:45 | 05/28/08 02:33 |
| 0508-12 | SAMPLE | 203418-010 | Filtrate | 1.5 | 0.10 | 05/20/08 09:00 | 05/28/08 02:50 |
| | BLANK | QC443601 | Water | ND | 0.10 | | 05/27/08 19:53 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved Fluoride

| | | | |
|---|---|---|---|
| Lab #: | 203418 | Location: | 35 Acres Site, Cloverdale |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1824-15-3 | | |
| Analyte: | Fluoride | Batch#: | 138573 |
| Field ID: | 0508-04 | Sampled: | 05/20/08 10:40 |
| MSS Lab ID: | 203418-004 | Received: | 05/20/08 |
| Units: | mg/L | | |

| Type | Lab ID | Matrix | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC443602 | Water | | 2.000 | 2.028 | 101 | 80-120 | | | 1.000 | 05/27/08 20:10 |
| BSD | QC443603 | Water | | 2.000 | 2.034 | 102 | 80-120 | 0 | 20 | 1.000 | 05/27/08 20:28 |
| MS | QC443604 | Filtrate | 0.3650 | 1.020 | 1.339 | 96 | 69-120 | | | 1.020 | 05/27/08 20:45 |
| MSD | QC443605 | Filtrate | | 1.020 | 1.395 | 101 | 69-120 | 4 | 20 | 1.020 | 05/27/08 21:02 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 203418 | Location: | 35 Acres Site, Cloverdale |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1824-15-3 | | |
| Analyte: | Nitrogen, Nitrate | Batch#: | 138346 |
| Units: | mg/L | Received: | 05/20/08 |

| Field ID | Type | Lab ID | Matrix | Result | RL | Diln Fac | Sampled | Analyzed |
|---|---|---|---|---|---|---|---|---|
| 0508-01 | SAMPLE | 203418-001 | Filtrate | 0.67 | 0.05 | 1.000 | 05/19/08 13:45 | 05/20/08 15:42 |
| 0508-02 | SAMPLE | 203418-002 | Filtrate | 1.5 | 0.05 | 1.000 | 05/19/08 10:50 | 05/20/08 20:05 |
| 0508-03 | SAMPLE | 203418-003 | Filtrate | 0.79 | 0.05 | 1.000 | 05/19/08 12:45 | 05/20/08 21:14 |
| 0508-04 | SAMPLE | 203418-004 | Filtrate | ND | 0.05 | 1.000 | 05/20/08 10:40 | 05/20/08 19:47 |
| 0508-05 | SAMPLE | 203418-005 | Filtrate | ND | 0.05 | 1.000 | 05/20/08 08:50 | 05/20/08 19:12 |
| 0508-06 | SAMPLE | 203418-006 | Filtrate | 2.1 | 0.05 | 1.000 | 05/20/08 11:15 | 05/20/08 20:39 |
| 0508-07 | SAMPLE | 203418-007 | Filtrate | 6.6 | 0.10 | 2.000 | 05/19/08 15:35 | 05/21/08 07:45 |
| 0508-08 | SAMPLE | 203418-008 | Filtrate | 0.33 | 0.05 | 1.000 | 05/19/08 14:40 | 05/20/08 21:49 |
| 0508-09 | SAMPLE | 203418-009 | Filtrate | ND | 0.05 | 1.000 | 05/19/08 11:45 | 05/20/08 20:57 |
| 0508-12 | SAMPLE | 203418-010 | Filtrate | ND | 0.05 | 1.000 | 05/20/08 09:00 | 05/20/08 19:30 |
| | BLANK | QC442698 | Water | ND | 0.05 | 1.000 | | 05/20/08 11:21 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved Nitrate Nitrogen

| | | | |
|---|---|---|---|
| Lab #: | 203418 | Location: | 35 Acres Site, Cloverdale |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1824-15-3 | | |
| Analyte: | Nitrogen, Nitrate | Batch#: | 138346 |
| Field ID: | 0508-01 | Sampled: | 05/19/08 13:45 |
| MSS Lab ID: | 203418-001 | Received: | 05/20/08 |
| Units: | mg/L | | |

| Type | Lab ID | Matrix | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC442699 | Water | | 1.000 | 0.9346 | 93 | 80-120 | | | 1.000 | 05/20/08 11:38 |
| BSD | QC442700 | Water | | 1.000 | 0.9375 | 94 | 80-120 | 0 | 20 | 1.000 | 05/20/08 11:55 |
| MS | QC442701 | Filtrate | 0.6703 | 2.500 | 2.994 | 93 | 80-120 | | | 5.000 | 05/21/08 07:06 |
| MSD | QC442702 | Filtrate | | 2.500 | 3.101 | 97 | 80-120 | 3 | 20 | 5.000 | 05/21/08 07:23 |

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

# Dissolved Sulfate

| | | | |
|---|---|---|---|
| Lab #: | 203418 | Location: | 35 Acres Site, Cloverdale |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1824-15-3 | | |
| Analyte: | Sulfate | Batch#: | 138346 |
| Units: | mg/L | Received: | 05/20/08 |

| Field ID | Type | Lab ID | Matrix | Result | RL | Diln Fac | Sampled | Analyzed |
|---|---|---|---|---|---|---|---|---|
| 0508-01 | SAMPLE | 203418-001 | Filtrate | 43 | 0.50 | 1.000 | 05/19/08 13:45 | 05/20/08 15:42 |
| 0508-02 | SAMPLE | 203418-002 | Filtrate | 130 | 5.0 | 10.00 | 05/19/08 10:50 | 05/20/08 15:59 |
| 0508-03 | SAMPLE | 203418-003 | Filtrate | 110 | 2.5 | 5.000 | 05/19/08 12:45 | 05/20/08 16:17 |
| 0508-04 | SAMPLE | 203418-004 | Filtrate | 20 | 0.50 | 1.000 | 05/20/08 10:40 | 05/20/08 19:47 |
| 0508-05 | SAMPLE | 203418-005 | Filtrate | 6.2 | 0.50 | 1.000 | 05/20/08 08:50 | 05/20/08 19:12 |
| 0508-06 | SAMPLE | 203418-006 | Filtrate | 14 | 0.50 | 1.000 | 05/20/08 11:15 | 05/20/08 20:39 |
| 0508-07 | SAMPLE | 203418-007 | Filtrate | 20 | 0.50 | 1.000 | 05/19/08 15:35 | 05/20/08 22:24 |
| 0508-08 | SAMPLE | 203418-008 | Filtrate | 48 | 0.50 | 1.000 | 05/19/08 14:40 | 05/20/08 21:49 |
| 0508-09 | SAMPLE | 203418-009 | Filtrate | 23 | 0.50 | 1.000 | 05/19/08 11:45 | 05/20/08 20:57 |
| 0508-12 | SAMPLE | 203418-010 | Filtrate | 6.1 | 0.50 | 1.000 | 05/20/08 09:00 | 05/20/08 19:30 |
| | BLANK | QC442698 | Water | ND | 0.50 | 1.000 | | 05/20/08 11:21 |

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

## Dissolved Sulfate

| | | | |
|---|---|---|---|
| Lab #: | 203418 | Location: | 35 Acres Site, Cloverdale |
| Client: | Weiss Associates | Analysis: | EPA 300.0 |
| Project#: | 379-1824-15-3 | | |
| Analyte: | Sulfate | Batch#: | 138346 |
| Field ID: | 0508-01 | Sampled: | 05/19/08 13:45 |
| MSS Lab ID: | 203418-001 | Received: | 05/20/08 |
| Units: | mg/L | | |

| Type | Lab ID | Matrix | MSS Result | Spiked | Result | %REC | Limits | RPD | Lim | Diln Fac | Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BS | QC442699 | Water | | 10.00 | 9.461 | 95 | 80-120 | | | 1.000 | 05/20/08 11:38 |
| BSD | QC442700 | Water | | 10.00 | 9.400 | 94 | 80-120 | 1 | 20 | 1.000 | 05/20/08 11:55 |
| MS | QC442701 | Filtrate | 43.00 | 25.00 | 66.88 | 96 | 80-120 | | | 5.000 | 05/21/08 07:06 |
| MSD | QC442702 | Filtrate | | 25.00 | 67.50 | 98 | 80-120 | 1 | 20 | 5.000 | 05/21/08 07:23 |

RPD= Relative Percent Difference

203418


**Weiss Associates**

*Environmental Science, Engineering and Management Services*

5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043
*AguaTierra Associates Incorporated, DBA*


| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
| 1824-051908 | Call immediately with any questions or problems. |

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Con-tainers | Sample/ Container Type[1] (T) | Volume S | Preser-vative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0408-01 | 5/19/08 | 1345 | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020 | 6020 | filtered in the field; 0.45 um |
| | | | | | | | | | Major Cations | Major cations | Sodium, Magnesium, Calcium |
| | | | | | | | | | | | Potassium |
| | | | | | | | | | Total Manganese | 6010 | |
| 0408-01 | | | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0408-01 | | | 1 | W/P | 1L | N | Y | N | Nitrate | 300 | **Nitrate 48 hours hold time** |
| | | | | | | | | | Sulfate | 300 | Anion 28 days hold time |
| | | | | | | | | | Chloride/Fluoride | 300 | |
| | | | | | | | | | Total Dissolved Solids | 160.1 | |
| | | | | | | | | | Alkalinity | 310.2 | Carbonate, bicarbonate |
| 0408-01 | | | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |

1 [signature] 5/20/08 1200 ☒ — 3 ☐ — 5 ☐
Released by (Signature), Date, Time — Released by (Signature), Date, Time — Released by (Signature), Date, Time

1 (Affiliation) Weiss — 3 (Affiliation) — 5 (Affiliation)

2 [signature] 5/20/08 1200 ☐ — 4 ☐ — 6 ☐
Received by (Signature), Date, Time — Received by (Signature), Date, Time — Received by (Signature), Date, Time

2 (Affiliation) C&T — 4 (Affiliation) — 6 (Affiliation)

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*
X RECEIVED ON ICE

Received ☐ On Ice
☐ Cold ☐ Ambient ☐ Intact



J:\PerryJohnson\1824WaterResources\Protocols\379-1846_040708_protocol

7 1

203418


**Weiss Associates**

*Environmental Science, Engineering and Management Services*

5801 Christie Avenue, Suite 600, Emeryville, CA 94608
Phone: 510-450-6000 Fax: 510-547-5043

*AguaTierra Associates Incorporated, DBA*


| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
| 1824-051908 | Call immediately with any questions or problems. |

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMP Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Con-tainers | Sample/ Container Type[1] (T) | Volume S | Preser-vative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0408-02 | 5/19/08 | 1050 | 3 | W/V | 40 ml | HCL | Y | N | VOCs/8260B | 8260B | full List<br>0.5 ppb detection limits |
| 0408-02 | | | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020<br>Major Cations<br><br>Total Manganese | 6020<br>Major cations<br><br>6010 | filtered in the field; 0.45 um<br>Sodium, Magnesium, Calcium<br>Potassium |
| 0408-02 | | | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0408-02 | | | 1 | W/P | 1L | N | Y | N | Nitrate<br>Sulfate<br>Chloride/Fluoride<br>Total Dissolved Solids<br>Alkalinity | 300<br>300<br>300<br>160.1<br>310.2 | **Nitrate 48 hours hold time**<br>Anion 28 days hold time<br><br>TDS<br>Carbonate, bicarbonate |
| 0408-02 | | | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |

2

| | | | |
|---|---|---|---|
| 1 Released by (Signature), Date, Time: 5/20/08 1200 ☒ | 3 Released by (Signature), Date, Time: ☐ | 5 Released by (Signature), Date, Time: ☐ |
| 1 (Affiliation): Weiss | 3 (Affiliation): | 5 (Affiliation): |
| 2 Received by (Signature), Date, Time: 5/20/08 1200 ☐ | 4 Received by (Signature), Date, Time: ☐ | 6 Received by (Signature), Date, Time: ☐ |
| 2 (Affiliation): CET | 4 (Affiliation): | 6 (Affiliation): |

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N) 3 = Refrigerated (Y/N) 4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*

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203418

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*Environmental Science, Engineering and Management Services*
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Phone: 510-450-6000 Fax: 510-547-5043
*AguaTierra Associates Incorporated, DBA*

| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
| 1824-051908 | Call immediately with any questions or problems. |

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMP Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Con-tainers | Sample/ Container Type[1] (T) | Volume S | Preser-vative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0408-03 | 5/19/08 | 1245 | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020<br>Major Cations<br><br>Total Manganese | 6020<br>Major cations<br><br>6010 | filtered in the field; 0.45 um<br>Sodium, Magnesium, Calcium<br>Potassium |
| 0408-03 | | | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0408-03 | | | 1 | W/P | 1L | N | Y | N | Nitrate<br>Sulfate<br>Chloride/Fluoride<br>Total Dissolved Solids<br>Alkalinity | 300<br>300<br>300<br>160.1<br>310.2 | **Nitrate 48 hours hold time**<br>Anion 28 days hold time<br><br>TDS<br>Carbonate, bicarbonate |
| 0408-03 | | | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |

3

| | | | |
|---|---|---|---|
| 1 Released by (Signature), Date, Time: 5/20/08 1200 ☒ | 3 Released by (Signature), Date, Time ☐ | 5 Released by (Signature), Date, Time ☐ |
| 1 (Affiliation) Weiss | 3 (Affiliation) | 5 (Affiliation) |
| 2 Received by (Signature), Date, Time: 5/20/08 1200 ☐ | 4 Received by (Signature), Date, Time ☐ | 6 Received by (Signature), Date, Time ☐ |
| 2 (Affiliation) C&T | 4 (Affiliation) | 6 (Affiliation) |

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N) 3 = Refrigerated (Y/N) 4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:* * RECEIVED ON ICE

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*AguaTierra Associates Incorporated, DBA*


| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
| 1824-051908 | Call immediately with any questions or problems. |

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Containers | Sample/ Container Type[1] (T) | Volume S | Preservative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0408-04 | 5/20/08 | 1040 | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020<br>Major Cations<br><br>Total Manganese | 6020<br>Major cations<br><br>6010 | filtered in the field; 0.45 um<br>Sodium, Magnesium, Calcium<br>Potassium |
| 0408-04 | ↓ | ↓ | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0408-04 | ↓ | ↓ | 1 | W/P | 1L | N | Y | N | Nitrate<br>Sulfate<br>Chloride/Fluoride<br>Total Dissolved Solids<br>Alkalinity | 300<br>300<br>300<br>160.1<br>310.2 | **Nitrate 48 hours hold time**<br>Anion 28 days hold time<br><br>TDS<br>Carbonate, bicarbonate |
| 0408-04 | ↓ | ↓ | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |

4

1 Released by (Signature), Date, Time: 5/20/08 1200 ☒ | 3 Released by (Signature), Date, Time: ☐ | 5 Released by (Signature), Date, Time: ☐

1 (Affiliation): Weiss | 3 (Affiliation): | 5 (Affiliation):

2 Received by (Signature), Date, Time: 5/20/08 1200 ☐ | 4 Received by (Signature), Date, Time: ☐ | 6 Received by (Signature), Date, Time: ☐

2 (Affiliation): CET | 4 (Affiliation): | 6 (Affiliation):

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*

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*AguaTierra Associates Incorporated, DBA*


| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
| 1824-051908 | Call immediately with any questions or problems. |

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMO Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Containers | Sample/ Container Type[1] (T) | Volume S | Preservative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0508-05 | 5/20/08 | 0950 | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020<br>Major Cations<br><br>Total Manganese | 6020<br>Major cations<br><br>6010 | filtered in the field; 0.45 um<br>Sodium, Magnesium, Calcium<br>Potassium |
| 0508-05 | | | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0508-05 | | | 1 | W/P | 1L | N | Y | N | Nitrate<br>Sulfate<br>Chloride/Fluoride<br>Total Dissolved Solids<br>Alkalinity | 300<br>300<br>300<br>160.1<br>310.2 | **Nitrate 48 hours hold time**<br>Anion 28 days hold time<br><br>TDS<br>Carbonate, bicarbonate |
| 0508-05 | | | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |

5

| | | | |
|---|---|---|---|
| 1 Released by (Signature), Date, Time: 5/20/08 1200 | ☐ | 3 Released by (Signature), Date, Time | ☐ 5 Released by (Signature), Date, Time ☐ |
| 1 (Affiliation) Weiss | | 3 (Affiliation) | 5 (Affiliation) |
| 2 Received by (Signature), Date, Time: 5/20/08 1200 | ☐ | 4 Received by (Signature), Date, Time | ☐ 6 Received by (Signature), Date, Time ☐ |
| 2 (Affiliation) C&T | | 4 (Affiliation) | 6 (Affiliation) |

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*

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AguaTierra Associates Incorporated, DBA


| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
| 1824-051908 | Call immediately with any questions or problems. |

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Containers | Sample/ Container Type[1] (T) | Volume S | Preservative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0408-06 | 5/2/08 | 1115 | 3 | W/V | 40 ml | HCL | Y | N | VOCs/8260B | 8260B | full List<br>0.5 ppb detection limits |
| 0408-06 | | | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020<br>Major Cations<br><br>Total Manganese | 6020<br>Major cations<br><br>6010 | filtered in the field; 0.45 um<br>Sodium, Magnesium, Calcium<br>Potassium |
| 0408-06 | | | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0408-06 | | | 1 | W/P | 1L | N | Y | N | Nitrate<br>Sulfate<br>Chloride/Fluoride<br>Total Dissolved Solids<br>Alkalinity | 300<br>300<br>300<br>160.1<br>310.2 | **Nitrate 48 hours hold time**<br>Anion 28 days hold time<br><br>TDS<br>Carbonate, bicarbonate |
| 0408-06 | | | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |

6

| | | | | | |
|---|---|---|---|---|---|
| 1 Released by (Signature), Date, Time | 5/2/08 1200 ☒ | 3 Released by (Signature), Date, Time | ☐ | 5 Released by (Signature), Date, Time | ☐ |
| 1 (Affiliation) WCIS | | 3 (Affiliation) | | 5 (Affiliation) | |
| 2 Received by (Signature), Date, Time | 5/2/08 1200 ☐ | 4 Received by (Signature), Date, Time | ☐ | 6 Received by (Signature), Date, Time | ☐ |
| 2 (Affiliation) CET | | 4 (Affiliation) | | 6 (Affiliation) | |

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*
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Phone: 510-450-6000 Fax: 510-547-5043
*AguaTierra Associates Incorporated, DBA*


| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
| 1824-051908 | Call immediately with any questions or problems. |

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMO Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Containers | Sample/ Container Type[1] (T) | Volume S | Preservative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0508-07 | 5/19/08 | 1535 | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020<br>Major Cations<br><br>Total Manganese | 6020<br>Major cations<br><br>6010 | filtered in the field; 0.45 um<br>Sodium, Magnesium, Calcium<br>Potassium |
| 0508-07 | ↓ | ↓ | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0508-07 | ↓ | ↓ | 1 | W/P | 1L | N | Y | N | Nitrate<br>Sulfate<br>Chloride/Fluoride<br>Total Dissolved Solids<br>Alkalinity | 300<br>300<br>300<br>160.1<br>310.2 | **Nitrate 48 hours hold time**<br>Anion 28 days hold time<br><br>TDS<br>Carbonate, bicarbonate |
| 0508-07 | ↓ | ↓ | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |

1 [signature] 5/20/08 1200 ☒ — 3 ☐ — 5 ☐
Relinquished by (Signature), Date, Time — Released by (Signature), Date, Time — Released by (Signature), Date, Time

1 (Affiliation) Weiss — 3 (Affiliation) — 5 (Affiliation)

2 [signature] 5/20/08 1200 ☐ — 4 ☐ — 6 ☐
Received by (Signature), Date, Time — Received by (Signature), Date, Time — Received by (Signature), Date, Time

2 (Affiliation) C&T — 4 (Affiliation) — 6 (Affiliation)

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative(Y/N) 3 = Refrigerated (Y/N) 4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*

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Phone: 510-450-6000 Fax: 510-547-5043
AguaTierra Associates Incorporated, DBA


Project Manager: Joyce Adams, 510-450-6162

379--1824-15-3
1824-051908

**INSTRUCTIONS FOR LAB PERSONNEL:**
GeoTracker EDF required? ☐ Yes ☒ No
Include laboratory QA/QC data with report.
Specify analytic/prep method and detection limit in report.
Notify us of any anomalous peaks in GC or other scans.
Call immediately with any questions or problems.

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMO Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Containers | Sample/ Container Type[1] (T) | Volume S | Preservative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0408-08 | 5/19/08 | 1440 | 3 | W/V | 40 ml | HCL | Y | N | VOCs/8260B | 8260B | full List<br>0.5 ppb detection limits |
| 0408-08 | | | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020<br>Major Cations<br><br>Total Manganese | 6020<br>Major cations<br><br>6010 | filtered in the field; 0.45 um<br>Sodium, Magnesium, Calcium<br>Potassium |
| 0408-08 | | | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0408-08 | | | 1 | W/P | 1L | N | Y | N | Nitrate<br>Sulfate<br>Chloride/Fluoride<br>Total Dissolved Solids<br>Alkalinity | 300<br>300<br>300<br>160.1<br>310.2 | **Nitrate 48 hours hold time**<br>Anion 28 days hold time<br><br>TDS<br>Carbonate, bicarbonate |
| 0408-08 | | | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |

8

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 Released by (Signature), Date, Time | 5/20/08 1200 | ☒ | 3 Released by (Signature), Date, Time | ☐ | 5 Released by (Signature), Date, Time | ☐ |
| 1 (Affiliation) Weiss | | | 3 (Affiliation) | | 5 (Affiliation) | |
| 2 Received by (Signature), Date, Time | 5/20/08 1200 | ☐ | 4 Received by (Signature), Date, Time | ☐ | 6 Received by (Signature), Date, Time | ☐ |
| 2 (Affiliation) C&T | | | 4 (Affiliation) | | 6 (Affiliation) | |

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*

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| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
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# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Con-tainers | Sample/ Container Type[1] (T) | Volume S | Preser-vative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0408-12 | 5/20/08 | 0900 | 1 | W/P | 500 ml | HNO3 | Y | N | CAM 17 metals/6020<br>Major Cations<br><br>Total Manganese | 6020<br>Major cations<br><br>6010 | filtered in the field; 0.45 um<br>Sodium, Magnesium, Calcium<br>Potassium |
| 0408-12 | | | 1 | W/A | 1L | N | Y | N | TPHd/mo | 8015M | Petroleum hydrocarbons in the diesel-motor oil range. Silica gel cleanup |
| 0408-12 | | | 1 | W/P | 1L | N | Y | N | Nitrate<br>Sulfate<br>Chloride/Fluoride<br>Total Dissolved Solids<br>Alkalinity | 300<br>300<br>300<br>160.1<br>310.2 | **Nitrate 48 hours hold time**<br>Anion 28 days hold time<br><br>TDS<br>Carbonate, bicarbonate |
| 0408-12 | | | 3 | W/V | 40 ml | N | Y | N | Carbon Dioxide | RSK-175 | |
| Travel Blank | 5/18/08 | 1500 | 1 | W/V | 40 ml | HCL | Y | N | VOCs | EPA 8260B | |

10

11

1 Released by (Signature), Date, Time: 5/20/08 1200 ☒ | 3 Released by (Signature), Date, Time: ☐ | 5 Released by (Signature), Date, Time: ☐

1 (Affiliation): WEISS | 3 (Affiliation): | 5 (Affiliation):

2 Received by (Signature), Date, Time: 5/20/08 1200 ☐ | 4 Received by (Signature), Date, Time: ☐ | 6 Received by (Signature), Date, Time: ☐

2 (Affiliation): C&T | 4 (Affiliation): | 6 (Affiliation):

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*

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*AguaTierra Associates Incorporated, DBA*


| | |
|---|---|
| Project Manager: Joyce Adams, 510-450-6162 | **INSTRUCTIONS FOR LAB PERSONNEL:** |
| | GeoTracker EDF required? ☐ Yes ☒ No |
| | Include laboratory QA/QC data with report. |
| | Specify analytic/prep method and detection limit in report. |
| 379--1824-15-3 | Notify us of any anomalous peaks in GC or other scans. |
| 1824-051908 | Call immediately with any questions or problems. |

# CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: JMD Laboratory Name: C & T Berkeley Site Name: 35 Acres Site, Cloverdale

| Sample ID | Sample Date | Sample Time | # of Con-tainers | Sample/ Container Type[1] (T) | Volume S | Preser-vative? (2) | Refrig? 3 | Turn 4 | Analyze for | Analytical Method | Special Instructions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 X 0408-13 | 5/20/08 | 1125 | 3 | W/V | 40 ml | HCL | Y | N | VOCs/8260B | 8260B | full List<br>0.5 ppb detection limits |

1 Released by (Signature), Date, Time: 5/20/08 1200 ☒ — 1 (Affiliation): Weiss
2 Received by (Signature), Date, Time: 5/20/08 1200 ☐ — 2 (Affiliation): C&T
3 Released by (Signature), Date, Time: ☐ — 3 (Affiliation):
4 Received by (Signature), Date, Time: ☐ — 4 (Affiliation):
5 Released by (Signature), Date, Time: ☐ — 5 (Affiliation):
6 Received by (Signature), Date, Time: ☐ — 6 (Affiliation):

1 = Sample Type Codes: W = Water, S = Soil, Specify Other
Container Type Codes: V = VOA; A = Amber liter; P = Plastic; O&G = Oil and Grease Bottle; T = Brass Tube; Specify Other
2 = Preservative (Y/N)
3 = Refrigerated (Y/N)
4 = Turnaround: N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)

☒ = *Samples stored in a secured, locked area.*

*Other instructions:*

A RECEIVED ON ICE

**COOLER RECEIPT CHECKLIST**

Curtis & Tompkins, Ltd.

Login # 203418 Date Received 5-20-08 Number of coolers 3
Client Weiss Project 35 Acre Site, Cloverdale

Date Opened 5-20-08 By (print) F Nichols (sign) [signature]
Date Logged in 5-20-08 By (print) _____ (sign) _____

1. Did cooler come with a shipping slip (airbill, etc)?..... YES (NO)
Shipping info _____

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? ..... YES NO (N/A)

3. Were custody papers dry and intact when received?..... (YES) NO

4. Were custody papers filled out properly (ink, signed, etc)?..... (YES) NO

5. Is the project identifiable from custody papers? (If so fill out top of form)..... (YES) NO

6. Indicate the packing in cooler: (if other, describe) _____

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None

☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. If required, was sufficient ice used? Samples should be < or = 6°C ..... (YES) NO N/A

Type of ice used: ☒ Wet ☐ Blue ☐ None Temp(°C) _____

☒ Samples Received on ice & cold without a temperature blank

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? ..... YES (NO)
If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened?..... (YES) NO

10. Are samples in the appropriate containers for indicated tests? ..... (YES) NO

11. Are sample labels present, in good condition and complete? ..... (YES) NO

12. Do the sample labels agree with custody papers? ..... (YES) NO

13. Was sufficient amount of sample sent for tests requested? ..... (YES) NO

14. Are the samples appropriately preserved? ..... (YES) NO N/A

15. Are bubbles > 6mm absent in VOA samples?..... (YES) NO N/A

16. Was the client contacted concerning this sample delivery?..... YES NO
If YES, Who was called? _____ By _____ Date: _____

COMMENTS

_____

_____

_____

_____

_____

_____

_____

_____

# Appendix L
## NHPA Section 106 and Tribal Consultation Correspondence

ESA

# United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825

FEB 27 2009

Mr. Milford Wayne Donaldson, F.A.I.A.
State Historic Preservation Officer
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296-0001

Dear Mr. Donaldson:

The Bureau of Indian Affairs (BIA), Pacific Regional Office, wishes to initiate Section 106 consultation with the State Historic Preservation Office (SHPO) concerning the fee-to-trust conveyance of approximately 79 acres of land for the Cloverdale Rancheria of Pomo Indians (Tribe), Sonoma County, California. The implementation of this proposed action, pursuant to 25 CFR 151 (Land Acquisitions), is contingent in part on the BIA meeting its obligations under Section 106 of the National Historic Preservation Act (NHPA) as amended.

The Area of Potential Effects (APE) for this undertaking includes six parcels of land totaling approximately 79 acres (see enclosed Figure 1-3, Draft EIS). The APE is located in an unsectioned portion of the Rincon de Musalacon Mexican landgrant within Township 11 North, Range 10 West, MDBM. The project area is bounded on the west by Asti Road and adjacent Highway 101, and it is bounded on the east by the Russian River. In addition to taking the land into trust, the Tribe is proposing to develop the property. The proposed action (Alternative A) would include a casino, hotel, convention center, entertainment center, Tribal government building, ancillary support buildings, and both surface and garage parking totaling 3,400± spaces. Site plans illustrating the Proposed Action and Alternatives B-D have been enclosed. It is estimated that the square footage for the facilities in Alternative A would total approximately 595,600ft$^2$.

The APE was surveyed by Environmental Science Associates (ESA) in 2008 (report enclosed). This study resulted in the identification of six historic structures that meet the 50-year minimum age threshold for consideration of National Register eligibility. The structures include three single-family residences, two shed outbuildings, and one cattle chute/corral. No prehistoric or historic archaeological sites were encountered during the pedestrian survey, although the records search indicated that two prehistoric sites have been recorded within ½-mile of the APE.

ESA completed significance evaluations for all six structures located within the APE. As detailed in the report, none of the resources were found to be associated with events or persons important in history, nor do they embody distinctive characteristics of a type, period, or method of construction. The recordation and research conducted to-date has exhausted the research potential of these structures. As such, ESA recommended that none of the six resources are eligible for listing in the National Register. The BIA agrees with ESA's findings and evaluations, and therefore has determined that **No Historic Properties will be Affected** by this proposed federal action. Your concurrence in this determination shall suffice as evidence that the BIA has met its Section 106 compliance obligations in this matter, pursuant to 36 CFR 800.4(d)(1).

If you should require further clarification or additional information concerning this federal action, please contact Jennifer Thomas, Assistant Regional Archeologist, at (916) 978-6165, or John Rydzik, Chief, Division of Environmental, Cultural Resources Management, and Safety at (916) 978-6051.

Sincerely,

Regional Director

Enclosures

cc: Superintendent, Central California Agency (without enclosures)
Chairperson, Cloverdale Rancheria (without enclosures)
Regional Environmental Protection Specialist (without enclosures)

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

**OFFICE OF HISTORIC PRESERVATION**
**DEPARTMENT OF PARKS AND RECREATION**
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

March 16, 2009

In Reply Refer To: BIA090304A

Dale Morris
Regional Director
United States Department of the Interior
Bureau of Indian Affairs
Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825

Re: Proposed Fee-To-Trust Conveyance of 79 Acres of Land for the Cloverdale Rancheria of Pomo Indians, Sonoma County, California.

Dear Mr. Morris:

Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act, the Bureau of Indian Affairs (BIA), Pacific Regional Office, is seeking my comments on its determination of effects that the proposed undertaking will have on historic properties. The undertaking consists of the conveyance of a parcel of 79 acres, located just southeast of the City of Cloverdale between Highway 101 and the Russian River, into trust status for the Cloverdale Rancheria of Pomo Indians (Tribe). The BIA has determined that the 79 acre parcel to be conveyed is the project Area of Potential Effects (APE).

In addition to your letter requesting consultation, you have submitted the following report as evidence of your efforts to identify historic properties in the APE:

*Cloverdale Rancheria Fee To Trust Project, Sonoma County, California Cultural Resources Survey Report* (Heidi Koenig and Kathy Anderson, Environmental Science Associates: November 2008).

Based on their identification efforts, the BIA has determined that there are no archaeological sites and six historic-era buildings or structures that exceed 50 years of age within the APE. After reviewing your letter of February 27, 2009, and supporting documentation, I have the following comments:

1) I concur that the Area of Potential Effects (APE) has been properly determined and documented pursuant to 36 CFR Part 800.4 (a) (1) and that the Efforts to Identify Historic Properties within the APE represent a reasonable and good faith effort by the BIA pursuant to 36 CFR Part 800.4.

2) I concur that the following built-environment buildings and structures are not eligible for the National Register of Historic Places: Lile Lane Shed #1, Lile Lane Shed #2, Lile Lane Cattle Chute/Corral, 209 Lile Lane (1948 single-family, single-story residence), 347 Lile Lane (1920 heavily modified, two-story vernacular style residence), and 505 Lile Lane (1956 single-story, single-family residence).

3) I further concur that a finding of No Historic Properties Affected for this undertaking is appropriate as per 36 CFR Part 800.4(d)(1).

Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, the BIA may have additional future responsibilities for this undertaking under 36 CFR Part 800. Thank you for seeking my comments and for considering historic properties in planning your project. If you require further information, please contact William Soule, Associate State Archeologist, at phone 916-654-4614 or email wsoule@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

ESA

1425 N. McDowell Boulevard
Suite 105
Petaluma, CA 94954
707.795.0900 phone
707.795.0902 fax

www.esassoc.com

# FAX TRANSMITTAL FORM

Account-Job No.: D207737
Date: April 17, 2008

To: Native American Heritage Commission

Fax No.: (916) 657-5390
Phone No.: (916) 653-4082

Total Number of Pages: 2
(including cover page)

From: Heidi Koenig

Re: Cloverdale Rancheria fee-to-trust

Fax No.: (707) 795-0902
Phone No.: (707) 795-0920
E-mail: hkoenig@esassoc.com

## COMMENTS

Please review the sacred lands files for any Native American cultural resources that may be within or adjacent to the project area depicted on the accompanying Cloverdale 7.5 topographic quadrangle. The proposed project is in Cloverdale, Sonoma County and consists of the placement of 4 parcels of land totaling 32.1± acres into federal trust for the Cloverdale Rancheria of Pomo Indians. Five varying development alternatives and a No Action Alternative have been proposed. Four alternatives include the construction of a casino and associated facilities. One alternative consists of a commercial retail center. We also request a list of Native American individuals/organizations that may have knowledge of cultural resources in the project area. ESA intends to conduct a survey of the project area for cultural resources. Please call if you have any questions.

Thank you for your assistance.

Heidi Koenig
Cultural Resources Group

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

**NATIVE AMERICAN HERITAGE COMMISSION**
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390

April 17, 2008

Heidi Koenig
Cultural Resource Group
ESA Petaluma
1425 N. McDowell Boulevard, Suite 105
Petaluma, CA 94954

Sent by Fax: 707-795-0902
Number of Pages: 2

Re: Proposed Account Job No. D207737, Cloverdale Rancheria Fee-To-Trust; Sonoma County

Dear Ms. Koenig:

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Katy Sanchez
Program Analyst

**Native American Contacts**
Sonoma County
April 22, 2008

Cloverdale Rancheria of Pomo Indians
Patricia Hermosillo, Chairperson
555 South Cloverdale Blvd., Suite A Pomo
Cloverdale , CA 95425
clvrdler61@aol.com
(707) 894-5775
909-894-5727

Kathleen Smith
1778 Sunnyvale Avenue Pomo
Walnut Creek , CA 94596 Coast Miwok
(925) 938-6323

Dawn S. Getchell
P.O. Box 53 Coast Miwok
Jenner , CA 95450 Pomo
(707) 865-2248

Cloverdale Rancheria of Pomo Indians
Mario Hermosillo Jr., Tribal Environmental Planner
555 South Cloverdale Blvd., Suite A Pomo
Cloverdale , CA 95425
mhermosillo@cloverdalerancheria.com
(707) 894-5775
707-894-5727

**This list is current only as of the date of this document.**

**Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.**

**This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Account-Job No.: D207737, Cloverdale Rancheria fee-to-trust; Sonoma County.**

ESA

1425 N. McDowell Boulevard
Suite 105
Petaluma, CA 94954
707.795.0900 phone
707.795.0902 fax

www.esassoc.com

April 28, 2008

Kathleen Smith
1778 Sunnyvale Avenue
Walnut Creek, California 94596

Re: Cultural resource study near Cloverdale, Sonoma County – Cloverdale Rancheria Fee-to-Trust Project (ESA Project #D207737)

Dear Ms. Smith:

Environmental Science Associates (ESA) is conducting cultural resources study for an environmental assessment for the Cloverdale Rancheria Fee-to-Trust Project. The project area is located near Cloverdale, Sonoma County. The Cloverdale Rancheria of Pomo Indians has purchased several parcels (approximately 80 acres) on land adjacent to the Cloverdale Rancheria. The project is located on the Cloverdale USGS 7.5' Quad (see attached map).

In an effort to address any potential impact to archaeological or ethnographic resources, we are seeking comments from Native American representatives; your name was supplied to us by the Native American Heritage Commission as a contact for this area. We are in contact with the chairperson and other tribe members of the Cloverdale Rancheria. We would appreciate your comments identifying any concerns or issues pertinent to this project.

Thank you for your cooperation on this matter. If you have any questions, please contact me at 707.795-0920.

Sincerely,

Heidi Koenig
Cultural Resources Group

ESA

1425 N. McDowell Boulevard
Suite 105
Petaluma, CA 94954
707.795.0900 phone
707.795.0902 fax

www.esassoc.com

April 28, 2008

Dawn S. Getchell
P.O. Box 53
Jenner, California 95450

Re: Cultural resource study near Cloverdale, Sonoma County – Cloverdale Rancheria Fee-to-Trust Project (ESA Project #D207737)

Dear Ms. Smith:

Environmental Science Associates (ESA) is conducting cultural resources study for an environmental assessment for the Cloverdale Rancheria Fee-to-Trust Project. The project area is located near Cloverdale, Sonoma County. The Cloverdale Rancheria of Pomo Indians has purchased several parcels (approximately 80 acres) on land adjacent to the Cloverdale Rancheria. The project is located on the Cloverdale USGS 7.5' Quad (see attached map).

In an effort to address any potential impact to archaeological or ethnographic resources, we are seeking comments from Native American representatives; your name was supplied to us by the Native American Heritage Commission as a contact for this area. We are in contact with the chairperson and other tribe members of the Cloverdale Rancheria. We would appreciate your comments identifying any concerns or issues pertinent to this project.

Thank you for your cooperation on this matter. If you have any questions, please contact me at 707.795-0920.

Sincerely,

Heidi Koenig
Cultural Resources Group

# Appendix M

## Farmland Conversion Impact Rating Form and Site Assessment Criteria

ESA

**United States Department of Agriculture**

NRCS
Natural Resources Conservation Service
Petaluma Field Office
1301 Redwood Way, Suite 170
Petaluma, CA 94954

March 25, 2009

RE: Cloverdale Rancheria Fee-to-Trust, Farmland Conversion Impact Rating

ESA
Jennifer Wade
8950 Cal Center Drive
Sacramento, CA 95826

Dear Ms. Wade,

Enclosed is the completed Farmland Conversion Impact Rating (Form AD1006) for the sites you identified in Sonoma County. We have retained the maps you sent us for reference in the event you require further assistance.

If you have any questions regarding the ratings please feel free to contact us.

Sincerely,

Jennifer L Gabor

Jennifer Gabor

Enclosures

cc: Charlette Epifanio, District Conservationist

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

An Equal Opportunity Provider and Employer

U.S. Department of Agriculture

# FARMLAND CONVERSION IMPACT RATING

| | |
|---|---|
| **PART I** *(To be completed by Federal Agency)* | Date Of Land Evaluation Request 3/16/09 |
| Name Of Project Cloverdale Rancheria Fee-to-Trust Project | Federal Agency Involved Bureau of Indian Affairs |
| Proposed Land Use Destination Resort Casino | County And State Sonoma County, California |
| **PART II** *(To be completed by NRCS)* | Date Request Received By NRCS 3/19/09 |

| | | | | |
|---|---|---|---|---|
| Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).* | Yes ☑ | No ☐ | Acres Irrigated 78,265 | Average Farm Size 155 ac |
| Major Crop(s) wine grape, milk, livestock, poultry | Farmable Land In Govt. Jurisdiction Acres: 530,895 % | | Amount Of Farmland As Defined in FPPA Acres: % | |
| Name Of Land Evaluation System Used CA Storie Index | Name Of Local Site Assessment System n/a | | Date Land Evaluation Returned By NRCS 3/25/09 | |

| **PART III** *(To be completed by Federal Agency)* | Alternative Site Rating | | | |
|---|---|---|---|---|
| | Site A | Site B | Site C | Site D |
| A. Total Acres To Be Converted Directly | 57.6 | | | |
| B. Total Acres To Be Converted Indirectly | 12.2 | | | |
| C. Total Acres In Site | 69.8 | 0.0 | 0.0 | 0.0 |
| **PART IV** *(To be completed by NRCS)* Land Evaluation Information | | | | |
| A. Total Acres Prime And Unique Farmland | 28.4 | 0.0 | 0.0 | |
| B. Total Acres Statewide And Local Important Farmland | 37.1 | | | |
| C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted | 93.8 | | | |
| D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value | | | | |
| **PART V** *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)* | 27 | | | 0 |

| **PART VI** *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)* | Maximum Points | | | | |
|---|---|---|---|---|---|
| 1. Area In Nonurban Use | | | | | |
| 2. Perimeter In Nonurban Use | | | | | |
| 3. Percent Of Site Being Farmed | | | | | |
| 4. Protection Provided By State And Local Government | | | | | |
| 5. Distance From Urban Builtup Area | | | | | |
| 6. Distance To Urban Support Services | | | | | |
| 7. Size Of Present Farm Unit Compared To Average | | | | | |
| 8. Creation Of Nonfarmable Farmland | | | | | |
| 9. Availability Of Farm Support Services | | | | | |
| 10. On-Farm Investments | | | | | |
| 11. Effects Of Conversion On Farm Support Services | | | | | |
| 12. Compatibility With Existing Agricultural Use | | | | | |
| TOTAL SITE ASSESSMENT POINTS | 160 | 0 | 0 | 0 | 0 |
| **PART VII** *(To be completed by Federal Agency)* | | | | | |
| Relative Value Of Farmland *(From Part V)* | 100 | 27 | | | 0 |
| Total Site Assessment *(From Part VI above or a local site assessment)* | 160 | 0 | 0 | 0 | 0 |
| TOTAL POINTS *(Total of above 2 lines)* | 260 | 27 | 0 | 0 | 0 |

| | | |
|---|---|---|
| Site Selected: | Date Of Selection | Was A Local Site Assessment Used? Yes ☐ No ☒ |

Reason For Selection:

*(See Instructions on reverse side)* Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

# Land Classification

Cloverdale Rancheria Fee-to-Trust Project

Field Office: PETALUMA SERVICE CENTER
Agency: Natural Resources Conservation Service
State and County: CA, SONOMA

March 2009

**Legend**

- Tract Boundaries
- Urban
- Grazing Land
- Farmland of Local Importance
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Water Area
- Other Land
- road_sonoma

250 0 250 500 750 1,000 Feet

N

Source: Department of Conservation FMMP-2006

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 – Federal agencies involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form.

Step 2 – Originator will send copies A, B and C together with maps indicating locations of site(s), to the Natural Resources Conservation Service (NRCS) local field office and retain copy D for their files. (Note: NRCS has a field office in most counties in the U.S. The field office is usually located in the county seat. A list of field office locations are available from the NRCS State Conservationist in each state).

Step 3 – NRCS will, within 45 calendar days after receipt of form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland.

Step '4 – In cases where farmland covered by the FPPA will be converted by the proposed project, NRCS field offices will complete Parts II, IV and V of the form.

Step 5 – NRCS will return copy A and B of the form to the Federal agency involved in the project. (Copy C will be retained for NRCS records).

Step 6 – The Federal agency involved in the proposed project will complete Parts VI and VII of the form.

Step 7 – The Federal agency involved in the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA and the agency's internal policies.

## INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

**Part I:** In completing the "County And State" questions list all the local governments that are responsible for local land controls where site(s) are to be evaluated.

**Part III:** In completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them.

2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities) that will cause a direct conversion.

**Part VI:** Do not complete Part VI if a local site assessment is used.

Assign the maximum points for each site assessment criterion as shown in § 658.5 (b) of CFR. In cases of corridor-type projects such as transportation, powerline and flood control, criteria #5 and #6 will not apply and will, be weighed zero, however, criterion #8 will be weighed a maximum of 25 points, and criterion #11 a maximum of 25 points.

Individual Federal agencies at the national level, may assign relative weights among the 12 site assessment criteria other than those shown in the FPPA rule. In all cases where other weights are assigned relative adjustments must be made to maintain the maximum total weight points at 160.

In rating alternative sites, Federal agencies shall consider each of the criteria and assign points within the limits established in the FPPA rule. Sites most suitable for protection under these criteria will receive the highest total scores, and sites least suitable, the lowest scores.

**Part VII:** In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, adjust the site assessment points to a base of 160. Example: if the Site Assessment maximum is 200 points, and alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site "A."}$$

## Site Assessment Scoring for the Twelve Factors Used in FPPA

The Site Assessment criteria used in the Farmland Protection Policy Act (FPPA) rule are designed to assess important factors other than the agricultural value of the land when determining which alternative sites should receive the highest level of protection from conversion to non agricultural uses.

Twelve factors are used for Site Assessment and ten factors for corridor-type sites. Each factor is listed in an outline form, without detailed definitions or guidelines to follow in the rating process. The purpose of this document is to expand the definitions of use of each of the twelve Site Assessment factors so that all persons can have a clear understanding as to what each factor is intended to evaluate and how points are assigned for given conditions.

In each of the 12 factors a number rating system is used to determine which sites deserve the most protection from conversion to non-farm uses. The higher the number value given to a proposed site, the more protection it will receive. The maximum scores are 10, 15 and 20 points, depending upon the relative importance of each particular question. If a question significantly relates to why a parcel of land should not be converted, the question has a maximum possible protection value of 20, whereas a question which does not have such a significant impact upon whether a site would be converted, would have fewer maximum points possible, for example 10.

The following guidelines should be used in rating the twelve Site Assessment criteria:

1. **How much land is in non-urban use within a radius of 1.0 mile from where the project is intended?**

| | |
|---|---|
| More than 90 percent: | 15 points |
| 90-20 percent: | 14 to 1 points |
| Less than 20 percent: | 0 points |

This factor is designed to evaluate the extent to which the area within one mile of the proposed site is non-urban area. For purposes of this rule, "non-urban" should include:

- Agricultural land (crop-fruit trees, nuts, oilseed)
- Range land
- Forest land
- Golf Courses
- Non paved parks and recreational areas
- Mining sites
- Farm Storage
- Lakes, ponds and other water bodies
- Rural roads, and through roads without houses or buildings
- Open space
- Wetlands
- Fish production
- Pasture or hayland

Urban uses include:

- Houses (other than farm houses)
- Apartment buildings
- Commercial buildings
- Industrial buildings
- Paved recreational areas (i.e. tennis courts)
- Streets in areas with 30 structures per 40 acres
- Gas stations

- Equipment, supply stores
- Off-farm storage
- Processing plants
- Shopping malls
- Utilities/Services
- Medical buildings

In rating this factor, an area one-mile from the outer edge of the proposed site should be outlined on a current photo; the areas that are urban should be outlined. For rural houses and other buildings with unknown sizes, use 1 and 1/3 acres per structure. For roads with houses on only one side, use one half of road for urban and one half for non-urban.

The purpose of this rating process is to insure that the most valuable and viable farmlands are protected from development projects sponsored by the Federal Government. With this goal in mind, factor S1 suggests that the more agricultural lands surrounding the parcel boundary in question, the more protection from development this site should receive. Accordingly, a site with a large quantity of non-urban land surrounding it will receive a greater
number of points for protection from development. Thus, where more than 90 percent of the area around the proposed site (do not include the proposed site in this assessment) is non-urban, assign 15 points. Where 20 percent or less is
non-urban, assign 0 points. Where the area lies between 20 and 90 percent non-urban, assign appropriate points from 14 to 1, as noted below.

| **Percent Non-Urban Land within 1 mile** | **Points** |
|---|---|
| 90 percent or greater | 15 |
| 85 to 89 percent | 14 |
| 80 to 84 percent | 13 |
| 75 to 79 percent | 12 |
| 70 to 74 percent | 11 |
| 65 to 69 percent | 10 |
| 60 to 64 percent | 9 |
| 55 to 59 percent | 8 |
| 50 to 54 percent | 7 |
| 45 to 49 percent | 6 |
| 40 to 44 percent | 5 |
| 35 to 39 percent | 4 |
| 30 to 24 percent | 3 |
| 25 to 29 percent | 2 |
| 21 to 24 percent | 1 |
| 20 percent or less | 0 |

**2. How much of the perimeter of the site borders on land in non-urban use?**

| | |
|---|---|
| More than 90 percent: | I0 points |
| 90 to 20 percent: | 9 to 1 point(s) |
| Less than 20 percent: | 0 points |

This factor is designed to evaluate the extent to which the land adjacent to the proposed site is non-urban use. Where factor #1 evaluates the general location of the proposed site, this factor evaluates the immediate perimeter of the site. The definition of urban and non-urban uses in factor #1 should be used for this factor.

In rating the second factor, measure the perimeter of the site that is in non-urban and urban use. Where more than 90 percent of the perimeter is in non-urban use, score this factor 10 points. Where less than 20 percent, assign 0 points. If a road is next to the perimeter, class the area according to the

use on the other side of the road for that area. Use 1 and 1/3 acre per structure if not otherwise known. Where 20 to 90 percent of the perimeter is non-urban, assign points as noted below:

| Percentage of Perimeter Bordering Land | Points |
|---|---|
| 90 percent or greater | 10 |
| 82 to 89 percent | 9 |
| 74 to 81 percent | 8 |
| 65 to 73 percent | 7 |
| 58 to 65 percent | 6 |
| 50 to 57 percent | 5 |
| 42 to 49 percent | 4 |
| 34 to 41 percent | 3 |
| 27 to 33 percent | 2 |
| 21 to 26 percent | 1 |
| 20 percent or Less | 0 |

3. **How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last ten years?**

| | |
|---|---|
| More than 90 percent: | 20 points |
| 90 to 20 percent: | 19 to 1 point(s) |
| Less than 20 percent: | 0 points |

This factor is designed to evaluate the extent to which the proposed conversion site has been used or managed for agricultural purposes in the past 10 years.

Land is being farmed when it is used or managed for food or fiber, to include timber products, fruit, nuts, grapes, grain, forage, oil seed, fish and meat, poultry and dairy products.

Land that has been left to grow up to native vegetation without management or harvest will be considered as abandoned and therefore not farmed. The proposed conversion site should be evaluated and rated according to the percent, of the site farmed.

If more than 90 percent of the site has been farmed 5 of the last 10 years score the site as follows:

| Percentage of Site Farmed | Points |
|---|---|
| 90 percent or greater | 20 |
| 86 to 89 percent | 19 |
| 82 to 85 percent | 18 |
| 78 to 81 percent | 17 |
| 74 to 77 percent | 16 |
| 70 to 73 percent | 15 |
| 66 to 69 percent | 14 |
| 62 to 65 percent | 13 |
| 58 to 61 percent | 12 |
| 54 to 57 percent | 11 |
| 50 to 53 percent | 10 |
| 46 to 49 percent | 9 |
| 42 to 45 percent | 8 |
| 38 to 41 percent | 7 |
| 35 to 37 percent | 6 |
| 32 to 34 percent | 5 |
| 29 to 31 percent | 4 |
| 26 to 28 percent | 3 |

| | |
|---|---|
| 23 to 25 percent | 2 |
| 20 to 22 percent percent or Less | 1 |
| Less than 20 percent | 0 |

**4. Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?**

| | |
|---|---|
| Site is protected: | 20 points |
| Site is not protected: | 0 points |

This factor is designed to evaluate the extent to which state and local government and private programs have made efforts to protect this site from conversion.

**State and local policies and programs to protect farmland include:**

**State Policies and Programs to Protect Farmland**

1. Tax Relief:

   A. Differential Assessment: Agricultural lands are taxed on their agricultural use value, rather than at market value. As a result, farmers pay fewer taxes on their land, which helps keep them in business, and therefore helps to insure that the farmland will not be converted to nonagricultural uses.

      1. Preferential Assessment for Property Tax: Landowners with parcels of land used for agriculture are given the privilege of differential assessment.

      2. Deferred Taxation for Property Tax: Landowners are deterred from converting their land to nonfarm uses, because if they do so, they must pay back taxes at market value.

      3. Restrictive Agreement for Property Tax: Landowners who want to receive Differential Assessment must agree to keep their land in - eligible use.

   B. Income Tax Credits

   Circuit Breaker Tax Credits: Authorize an eligible owner of farmland to apply some or all of the property taxes on his or her farmland and farm structures as a tax credit against the owner's state income tax.

   C. Estate and Inheritance Tax Benefits

   Farm Use Valuation for Death Tax: Exemption of state tax liability to eligible farm estates.

2. "Right to farm" laws:

   Prohibits local governments from enacting laws which will place restrictions upon normally accepted farming practices, for example, the generation of noise, odor or dust.

3. Agricultural Districting:

   Wherein farmers voluntarily organize districts of agricultural land to be legally recognized geographic areas. These farmers receive benefits, such as protection from annexation, in exchange for keeping land within the district for a given number of years.

4. Land Use Controls: Agricultural Zoning.

Types of Agricultural Zoning Ordinances include:

A. Exclusive: In which the agricultural zone is restricted to only farm-related dwellings, with, for example, a minimum of 40 acres per dwelling unit.

B. Non-Exclusive: In which non-farm dwellings are allowed, but the density remains low, such as 20 acres per dwelling unit.

Additional Zoning techniques include:

A. Sliding Scale: This method looks at zoning according to the total size of the parcel owned. For example, the number of dwelling units per a given number of acres may change from county to county according to the existing land acreage to dwelling unit ratio of surrounding parcels of land within the specific area.

B. Point System or Numerical Approach: Approaches land use permits on a case by case basis.

LESA: The LESA system (Land Evaluation-Site Assessment) is used as a tool to help assess options for land use on an evaluation of productivity weighed against commitment to urban development.

C. Conditional Use: Based upon the evaluation on a case by case basis by the Board of Zoning Adjustment. Also may include the method of using special land use permits.

5. Development Rights:

A. Purchase of Development Rights (PDR): Where development rights are purchased by Government action.

Buffer Zoning Districts: Buffer Zoning Districts are an example of land purchased by Government action. This land is included in zoning ordinances in order to preserve and protect agricultural lands from non-farm land uses encroaching upon them.

B. Transfer of Development Rights (TDR): Development rights are transferable for use in other locations designated as receiving areas. TDR is considered a locally based action (not state), because it requires a voluntary decision on the part of the individual landowners.

6. Governor's Executive Order: Policy made by the Governor, stating the importance of agriculture, and the preservation of agricultural lands. The Governor orders the state agencies to avoid the unnecessary conversion of important farmland to nonagricultural uses.

7. Voluntary State Programs:

A. California's Program of Restrictive Agreements and Differential Assessments: The California Land Conservation Act of 1965, commonly known as the Williamson Act, allows cities, counties and individual landowners to form agricultural preserves and enter into contracts for 10 or more years to insure that these parcels of land remain strictly for agricultural use. Since 1972 the Act has extended eligibility to recreational and open space lands such as scenic highway corridors, salt ponds and wildlife preserves. These contractually restricted lands may be taxed differentially for their real value. One hundred-acre districts constitute the minimum land size eligible.

Suggestion: An improved version of the Act would state that if the land is converted after the contract expires, the landowner must pay the difference in the taxes between market value for the land and the agricultural tax value which he or she had been

paying under the Act. This measure would help to insure that farmland would not be converted after the 10 year period ends.

B. Maryland Agricultural Land Preservation Program: Agricultural landowners within agricultural districts have the opportunity to sell their development rights to the Maryland Land Preservation Foundation under the agreement that these landowners will not subdivide or develop their land for an initial period of five years. After five years the landowner may terminate the agreement with one year notice.

   As is stated above under the California Williamson Act, the landowner should pay the back taxes on the property if he or she decides to convert the land after the contract expires, in order to discourage such conversions.

C. Wisconsin Income Tax Incentive Program: The Wisconsin Farmland Preservation Program of December 1977 encourages local jurisdictions in Wisconsin to adopt agricultural preservation plans or exclusive agricultural district zoning ordinances in exchange for credit against state income tax and exemption from special utility assessment. Eligible candidates include local governments and landowners with at least 35 acres of land per dwelling unit in agricultural use and gross farm profits of at least $6.000 per year, or $18,000 over three years.

8. Mandatory State Programs:

   A. The Environmental Control Act in the state of Vermont was adopted in 1970 by the Vermont State Legislature. The Act established an environmental board with 9 members (appointed by the Governor) to implement a planning process and a permit system to screen most subdivisions and development proposals according to specific criteria stated in the law. The planning process consists of an interim and a final Land Capability and Development Plan, the latter of which acts as a policy plan to control development. The policies are written in order to:

      - prevent air and water pollution;
      - protect scenic or natural beauty, historic sites and rare and irreplaceable natural areas; and
      - consider the impacts of growth and reduction of development on areas of primary agricultural soils.

   B. The California State Coastal Commission: In 1976 the Coastal Act was passed to establish a permanent Coastal Commission with permit and planning authority The purpose of the Coastal Commission was and is to protect the sensitive coastal zone environment and its resources, while accommodating the social and economic needs of the state. The Commission has the power to regulate development in the coastal zones by issuing permits on a case by case basis until local agencies can develop their own coastal plans, which must be certified by the Coastal Commission.

   C. Hawaii's Program of State Zoning: In 1961, the Hawaii State Legislature established Act 187, the Land Use Law, to protect the farmland and the welfare of the local people of Hawaii by planning to avoid "unnecessary urbanization". The Law made all state lands into four districts: agricultural, conservation, rural and urban. The Governor appointed members to a State Land Use Commission, whose duties were to uphold the Law and form the boundaries of the four districts. In addition to state zoning, the Land Use Law introduced a program of Differential Assessment, wherein agricultural landowners paid taxes on their land for its agricultural use value, rather than its market value.

   D. The Oregon Land Use Act of 1973: This act established the Land Conservation and Development Commission (LCDC) to provide statewide planning goals and guidelines.

Under this Act, Oregon cities and counties are each required to draw up a comprehensive plan, consistent with statewide planning goals. Agricultural land preservation is high on the list of state goals to be followed locally.

If the proposed site is subject to or has used one or more of the above farmland protection programs or policies, score the site 20 points. If none of the above policies or programs apply to this site, score 0 points.

**5. How close is the site to an urban built-up area?**

| | |
|---|---|
| The site is 2 miles or more from an urban built-up area | 15 points |
| The site is more than 1 mile but less than 2 miles from an urban built-up area | 10 points |
| The site is less than 1 mile from, but is not adjacent to an urban built-up area | 5 points |
| The site is adjacent to an urban built-up area | 0 points |

This factor is designed to evaluate the extent to which the proposed site is located next to an existing urban area. The urban built-up area must be 2500 population. The measurement from the built-up area should be made from the point at which the density is 30 structures per 40 acres and with no open or non-urban land existing between the major built-up areas and this point. Suburbs adjacent to cities or urban built-up areas should be considered as part of that urban area.

For greater accuracy, use the following chart to determine how much protection the site should receive according to its distance from an urban area. See chart below:

| Distance From Perimeter of Site to Urban Area | Points |
|---|---|
| More than 10,560 feet | 15 |
| 9,860 to 10,559 feet | 14 |
| 9,160 to 9,859 feet | 13 |
| 8,460 to 9,159 feet | 12 |
| 7,760 to 8,459 feet | 11 |
| 7,060 to 7,759 feet | 10 |
| 6,360 to 7,059 feet | 9 |
| 5,660 to 6,359 feet | 8 |
| 4,960 to 5,659 feet | 7 |
| 4,260 to 4,959 feet | 6 |
| 3,560 to 4,259 feet | 5 |
| 2,860 to 3,559 feet | 4 |
| 2,160 to 2,859 feet | 3 |
| 1,460 to 2,159 feet | 2 |
| 760 to 1,459 feet | 1 |
| Less than 760 feet (adjacent) | 0 |

**6. How close is the site to water lines, sewer lines and/or other local facilities and services whose capacities and design would promote nonagricultural use?**

| | |
|---|---|
| None of the services exist nearer than 3 miles from the site | 15 points |
| Some of the services exist more than one but less than 3 miles from the site | 10 points |
| All of the services exist within 1/2 mile of the site | 0 points |

This question determines how much infrastructure (water, sewer, etc.) is in place which could facilitate nonagricultural development. The fewer facilities in place, the more difficult it is to develop an area. Thus, if a proposed site is further away from these services (more than 3 miles distance away), the site should be awarded the highest number of points (15). As the distance of the parcel of land to services decreases, the number of points awarded declines as well. So, when the site is equal to or further than 1 mile but less than 3 miles away from services, it should be given 10 points. Accordingly, if this distance is 1/2 mile to less than 1 mile, award 5 points; and if the distance from land to services is less than 1/2 mile, award 0 points.

Distance to public facilities should be measured from the perimeter of the parcel in question to the nearest site(s) where necessary facilities are located. If there is more than one distance (i.e. from site to water and from site to sewer), use the average distance (add all distances and then divide by the number of different distances to get the average).

Facilities which could promote nonagricultural use include:

- Water lines
- Sewer lines
- Power lines
- Gas lines
- Circulation (roads)
- Fire and police protection
- Schools

7. **Is the farm unit(s) containing the site (before the project) as large as the average-size farming unit in the county? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage of Farm Units in Operation with $1,000 or more in sales.)**

| | |
|---|---|
| As large or larger: | 10 points |
| Below average: Deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more is below average | 9 to 0 points |

This factor is designed to determine how much protection the site should receive, according to its size in relation to the average size of farming units within the county. The larger the parcel of land, the more agricultural use value the land possesses, and vice versa. Thus, if the farm unit is as large or larger than the county average, it receives the maximum number of points (10). The smaller the parcel of land compared to the county average, the fewer number of points given. Please see below:

| Parcel Size in Relation to Average County Size | Points |
|---|---|
| Same size or larger than average (l00 percent) | 10 |
| 95 percent of average | 9 |
| 90 percent of average | 8 |
| 85 percent of average | 7 |
| 80 percent of average | 6 |
| 75 percent of average | 5 |
| 70 percent of average | 4 |
| 65 percent of average | 3 |
| 60 percent of average | 2 |
| 55 percent of average | 1 |
| 50 percent or below county average | 0 |

State and local Natural Resources Conservation Service offices will have the average farm size information, provided by the latest available Census of Agriculture data

**8. If this site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?**

| | |
|---|---|
| Acreage equal to more than 25 percent of acres directly converted by the project | 10 points |
| Acreage equal to between 25 and 5 percent of the acres directly converted by the project | 9 to 1 point(s) |
| Acreage equal to less than 5 percent of the acres directly converted by the project | 0 points |

This factor tackles the question of how the proposed development will affect the rest of the land on the farm The site which deserves the most protection from conversion will receive the greatest number of points, and vice versa. For example, if the project is small, such as an extension on a house, the rest of the agricultural land would remain farmable, and thus a lower number of points is given to the site. Whereas if a large-scale highway is planned, a greater portion of the land (not including the site) will become non-farmable, since access to the farmland will be blocked; and thus, the site should receive the highest number of points (10) as protection from conversion

Conversion uses of the Site Which Would Make the Rest of the Land Non-Farmable by Interfering with Land Patterns

Conversions which make the rest of the property nonfarmable include any development which blocks accessibility to the rest of the site Examples are highways, railroads, dams or development along the front of a site restricting access to the rest of the property.

The point scoring is as follows:

| Amount of Land Not Including the Site Which Will Become Non-Farmable | Points |
|---|---|
| 25 percent or greater | 10 |
| 23 - 24 percent | 9 |
| 21 - 22 percent | 8 |
| 19 - 20 percent | 7 |
| 17 - 18 percent | 6 |
| 15 - 16 percent | 5 |
| 13 - 14 percent | 4 |
| 11 - 12 percent | 3 |
| 9 - 11 percent | 2 |
| 6 - 8 percent | 1 |
| 5 percent or less | 0 |

**9. Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?**

| | |
|---|---|
| All required services are available | 5 points |
| Some required services are available | 4 to 1 point(s) |
| No required services are available | 0 points |

This factor is used to assess whether there are adequate support facilities, activities and industry to keep the farming business in business. The more support facilities available to the agricultural

landowner, the more feasible it is for him or her to stay in production. In addition, agricultural support facilities are compatible with farmland. This fact is important, because some land uses are not compatible; for example, development next to farmland cam be dangerous to the welfare of the agricultural land, as a result of pressure from the neighbors who often do not appreciate the noise, smells and dust intrinsic to farmland. Thus, when all required agricultural support services are available, the maximum number of points (5) are awarded. When some services are available, 4 to 1 point(s) are awarded; and consequently, when no services are available, no points are given. See below:

| Percent of Services Available | Points |
|---|---|
| 100 percent | 5 |
| 75 to 99 percent | 4 |
| 50 to 74 percent | 3 |
| 25 to 49 percent | 2 |
| 1 to 24 percent | 1 |
| No services | 0 |

**10. Does the site have substantial and well-maintained on farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?**

| | |
|---|---|
| High amount of on-farm investment | 20 points |
| Moderate amount of non-farm investment | 19 to 1 point(s) |
| No on-farm investments | 0 points |

This factor assesses the quantity of agricultural facilities in place on the proposed site. If a significant agricultural infrastructure exists, the site should continue to be used for farming, and thus the parcel will receive the highest amount of points towards protection from conversion or development. If there is little on farm investment, the site will receive comparatively less protection. See-below:

| Amount of On-farm Investment | Points |
|---|---|
| As much or more than necessary to maintain production (100 percent) | 20 |
| 95 to 99 percent | 19 |
| 90 to 94 percent | 18 |
| 85 to 89 percent | 17 |
| 80 to 84 percent | 16 |
| 75 to 79 percent | 15 |
| 70 to 74 percent | 14 |
| 65 to 69 percent | 13 |
| 60 to 64 percent | 12 |
| 55 to 59 percent | 11 |
| 50 to 54 percent | 10 |
| 45 to 49 percent | 9 |
| 40 to 44 percent | 8 |
| 35 to 39 percent | 7 |
| 30 to 34 percent | 6 |
| 25 to 29 percent | 5 |
| 20 to 24 percent | 4 |
| 15 to 19 percent | 3 |
| 10 to 14 percent | 2 |
| 5 to 9 percent | 1 |
| 0 to 4 percent | 0 |

**11. Would the project at this site, by converting farmland to nonagricultural use, reduce the support for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?**

| | |
|---|---|
| Substantial reduction in demand for support services if the site is converted | 10 points |
| Some reduction in demand for support services if the site is converted | 9 to 1 point(s) |
| No significant reduction in demand for support services if the site is converted | 0 points |

This factor determines whether there are other agriculturally related activities, businesses or jobs dependent upon the working of the pre-converted site in order for the others to remain in production. The more people and farming activities relying upon this land, the more protection it should receive from conversion. Thus, if a substantial reduction in demand for support services were to occur as a result of conversions, the proposed site would receive a high score of 10; some reduction in demand would receive 9 to 1 point(s), and no significant reduction in demand would receive no points.

Specific points are outlined as follows:

| **Amount of Reduction in Support Services if Site is Converted to Nonagricultural Use** | **Points** |
|---|---|
| Substantial reduction (100 percent) | 10 |
| 90 to 99 percent | 9 |
| 80 to 89 percent | 8 |
| 70 to 79 percent | 7 |
| 60 to 69 percent | 6 |
| 50 to 59 percent | 5 |
| 40 to 49 percent | 4 |
| 30 to 39 percent | 3 |
| 20 to 29 percent | 2 |
| 10 to 19 percent | 1 |
| No significant reduction (0 to 9 percent) | 0 |

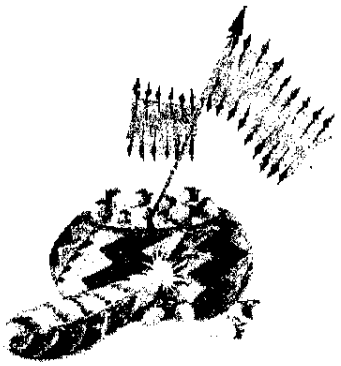
**12. Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of the surrounding farmland to nonagricultural use?**

| | |
|---|---|
| Proposed project is incompatible with existing agricultural use of surrounding farmland | 10 points |
| Proposed project is tolerable of existing agricultural use of surrounding farmland | 9 to 1 point(s) |
| Proposed project is fully compatible with existing agricultural use of surrounding farmland | 0 points |

Factor 12 determines whether conversion of the proposed agricultural site will eventually cause the conversion of neighboring farmland as a result of incompatibility of use of the first with the latter. The more incompatible the proposed conversion is with agriculture, the more protection this site receives from conversion. Therefor-, if the proposed conversion is incompatible with agriculture, the site receives 10 points. If the project is tolerable with agriculture, it receives 9 to 1 points; and if the proposed conversion is compatible with agriculture, it receives 0 points.

# Appendix N
## Fire District Letter of Intent

ESA



*Cloverdale Rancheria*
555 S. Cloverdale Blvd., Suite A ~ Cloverdale, CA 95425
(707) 894-5775 ~ Fax (707) 894-5727

April 23, 2009

Mr. Brian Elliott
Fire Chief
Cloverdale Fire Protection District
116 Broad Street
Cloverdale, CA 95424

RE: Letter of Intent for Fire Service to the Cloverdale Rancheria

This Letter of Intent is by and between the Cloverdale Rancheria of Pomo Indians of California (the "Tribe"), 555 S. Cloverdale Blvd. Cloverdale, CA 95425 and Cloverdale Fire Protection District (the "Cloverdale Fire"), 116 Broad Street, Cloverdale, CA 95425.

The Cloverdale Rancheria of Pomo Indians of California is a federally-recognized Indian Tribe desiring to reestablish its land base and develop a gaming enterprise thereon. The Cloverdale Fire Protection District is an independent fire district pursuant to California Health and Safety Code Section 13800. Cloverdale Fire and the Tribe intend to enter into a Memorandum of Understanding ("MOU") to provide fire and emergency services to the gaming enterprise that the Tribe will own and operate on Indian lands located outside the City of Cloverdale's political boundaries.

Cloverdale Fire will provide fire protection services to Cloverdale Rancheria's gaming facility in exchange for consideration paid by Cloverdale Rancheria to the Cloverdale Fire Protection District as agreed upon and set forth in the MOU. The Tribe's consideration for these services will likewise be set forth in the MOU between the Cloverdale Fire Protection District and the Cloverdale Rancheria of Pomo Indians.

The purpose of this Letter of Intent is to set forth the intentions of the Tribe and Cloverdale Fire to negotiate in good faith an agreement for fire and emergency services. The Tribe and Cloverdale Fire recognize that the transaction discussed in this Letter of Intent will require further information exchange, documentation and approvals. Nevertheless, the parties execute this Letter as evidence of their intentions to proceed in mutual good faith to complete the work required and negotiate the terms of an MOU that is consistent with this Letter of Intent.

***CLOVERDALE RANCHERIA TRIBAL COUNCIL***

| *Patricia Hermosillo* | *Silver Galleto* | *Christina Hermosillo* | *Elaine Willits* | *Sandy Roope* |
|---|---|---|---|---|
| *Chairperson* | *Vice-Chairperson* | *Secretary* | *Treasurer* | *Tribal Representative* |

Cloverdale Rancheria

In the absence of a duly executed MOU, Cloverdale Fire shall have no duty or obligation to provide any services to the Tribe for its proposed gaming facility and the Tribe shall have no duty to provide compensation to Cloverdale Fire.

The parties agree to use their best efforts to enter into a MOU or other agreements used by Cloverdale Fire with other governments or business within the service area by May 1, 2010.

This Letter of Intent may be executed in several counterparts. If the foregoing is acceptable to you, kindly execute a copy of this Letter in the place set forth below and return it.

**ACCEPTED AND AGREED TO:**

**Cloverdale Rancheria of Pomo Indians**

By: Patricia Hermosillo Date: 4/23/09
Patricia Hermosillo, Chairperson

**Cloverdale Fire Protection District**

By: Brian Elliot Date: 7/29/09
Brian Elliot, Fire Chief

*CLOVERDALE RANCHERIA TRIBAL COUNCIL*

| *Patricia Hermosillo* | *Silver Galleto* | *Christina Hermosillo* | *Elaine Willits* | *Sandy Roope* |
|---|---|---|---|---|
| *Chairperson* | *Vice-Chairperson* | *Secretary* | *Treasurer* | *Tribal Representative* |

# Appendix O
## Wetland Delineation

ESA

**DEPARTMENT OF THE ARMY**
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 01 2009

Regulatory Division

SUBJECT: File Number SPN-2009-00191-N

Mr. Jamie Galos
2600 Capitol Avenue
Suite 200
Sacramento, California 95816

Dear Mr. Galos:

This letter is written in response to your submittal of March 13, 2009 requesting confirmation of the extent of Corps of Engineers jurisdiction at the Cloverdale Rancheria, located near the northeast intersection of Asti Road and Santana Drive, in the Town of Cloverdale, Sonoma County, California (APN 116-310-039, -040, -035, -020, -044, and -005).

Enclosed is a map, dated November 30, 2009, showing the extent and location of Corps of Engineers jurisdiction. We have based this jurisdictional delineation on the current conditions on the site as verified during a site visit performed by our staff on August 26, 2009. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date.

All proposed discharges of dredged or fill material into waters of the United States must be authorized by the Corps of Engineers pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. Section 1344). Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands.

Your proposed activity appears to be within our jurisdiction and a permit may/is within our jurisdiction and a permit will be required for your project. Application for Corps authorization should be made to this office using the application form in the enclosed pamphlet. To avoid delays it is essential that you enter the file number at the top of this letter into Item No. 1 of the application. The application must include plans showing the location, extent and character of the proposed activity, prepared in accordance with the requirements contained in this pamphlet. You should note, in planning your project, that upon receipt of a properly completed application and plans, it may be necessary to advertise the proposed work by issuing a Public Notice for a period of 30 days.

Since an Individual Permit will probably be required to authorize your project, it will be necessary for you to demonstrate to the Corps that your proposed fill is necessary because there are no practicable alternatives as outlined in the U.S. Environmental Protection Agency's Section 404(b)(1) Guidelines. A copy of the Guidelines is enclosed to aid you in preparation of this alternative analysis. You are advised to refrain from starting your proposed activity until we complete our review of your application and issue you the required authorization. Commencement of work before you receive our notification will be interpreted as a violation of our regulations.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

Should you have any questions regarding this matter, please call Philip Shannin of our Regulatory Division at 415-503-6781. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy Furnished

CA RWQCB, Santa Rosa, CA

# CLOVERDALE RANCHERIA

## Wetland Delineation Report

Prepared for
End to End Enterprises

February 2009

# CLOVERDALE RANCHERIA

## Wetland Delineation Report

Prepared for
End to End Enterprises

February 2009

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Los Angeles

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Woodland Hills

207737

ESA

# TABLE OF CONTENTS

## Report Title


| | | Page |
|---|---|---|
| **1.** | **Summary** | **1-1** |
| **2.** | **Introduction** | **2-1** |
| 2.1 | Study Area | 2-1 |
| 2.2 | Purpose of Assessment | 2-2 |
| **3.** | **Methodology** | **3-1** |
| 3.1 | Definitions | 3-1 |
| 3.2 | Pre-field Review | 3-3 |
| 3.3 | Field Investigation | 3-3 |
| 3.4 | Mapping and Acreage Calculations | 3-4 |
| **4.** | **Results** | **4-1** |
| 4.1 | Soils | 4-1 |
| 4.2 | Field Investigation | 4-3 |
| **5.** | **References** | **5-1** |

**Appendices**

A. Plant Species Observed
B. Wetland Delineation Data Sheets
C. Site Photographs

**List of Tables and Figures**

| | | |
|---|---|---|
| Table 4-1 | Potential Jurisdictional Features within the Study Area | 4-11 |
| Figure 2-1 | Regional Location | 2-3 |
| Figure 2-2 | Project Area | 2-4 |
| Figure 2-3 | Project Area (USGS quad base) | 2-5 |
| Figure 4-1 | Soils Map | 4-2 |
| Figure 4-2 | Connection to TNW | 4-8 |
| Figure 4-3 | Potentially Jurisdictional Waters of the U.S. | 4-10 |

# SECTION 1.0
# Summary

On behalf of End to End Enterprises, in March and May 2008 and January 2009, Environmental Science Associates (ESA) conducted a wetland delineation for property associated with the Cloverdale Rancheria of Pomo Indians of California located in Cloverdale, Sonoma County, California. This wetland delineation report describes those features within the study area that may be considered waters of the United States (U.S.), and are therefore subject to Section 404 of the Clean Water Act (CWA).

The contact information for End to End Enterprises is:

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End to End Enterprises
One Sealaska Plaza, Suite 400
Juneau, AK 99801-1245
907-586-9245, phone

The study area is located towards the head of the Alexander Valley in northeastern Sonoma County. While a majority of the study area being in unincorporated Sonoma County, it is within the sphere of influence (SOI) of the City of Cloverdale, and also has a small portion within the City limits. The study area is located just east of Cloverdale, spanning the area between Highway 101 and the Russian River. It is bordered to the north for the most part by the City of Cloverdale's Waste Water Treatment Plant (WWTP); the southern border more or less parallels Santana Drive, which occurs a few hundred feet further to the south of the site's western portion.

Directions to the site:

- From Sacramento, take I-80 westbound
- Take CA-37 westbound
- Take 101 northbound
- Exit South Cloverdale Blvd.
- Right on S Redwood Highway
- Left on Asti Road
- Site is on the right immediately after Santana Drive

The subject property occurs as two disjunct areas, separated by the north-south running Northwestern Pacific Railroad right-of-way (NWPR ROW). For purposes of providing a contiguous study area, the NWPR ROW was also included to connect the two property sites. The east portion of the study

area (east of the NWPR ROW) is relatively flat, occurring on floodplain adjacent to the Russian River. It is almost entirely developed as a vineyard, but also includes settlement ponds for the City of Cloverdale's wastewater treatment facility. Additionally, it contains portions of Porterfield Creek with associated riparian habitat in segments along the west and south boundary.

The west portion of the study area (west of the NWPR ROW), found farther to the west from the Russian River and Porterfield Creek, exhibits greater topographic variation than the east portion of the study area, with raised portions in the north and south dipping to a broad centrally located swale. The greater part of the area is grazed pasture. It also contains six rural residences and associated outbuildings including barns, horse paddocks, and corrals.

Approximately 2.36 acres of potentially jurisdictional waters of the U.S. were identified in the study area. A summary of Waters of the U.S. and associated information is provided in Section 4.0, Results.

This report documents wetland and channel boundary delineation and the best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and verification in writing by the U.S. Army Corps of Engineers (Corps).

This wetland delineation has been conducted in accordance with the 1987 "Corps of Engineers Wetlands Delineation Manual" and the "Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region."

# SECTION 2.0
# Introduction

## 2.1 Study Area

The study area is located in unincorporated Sonoma County, within the sphere of influence (SOI) of the City of Cloverdale (**Figure 2-1**). It is within the Rincon De Musalacon Land Grant on the Cloverdale U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (USGS, 1960). Elevation of the study areas ranges from approximately 280 to 330 feet above mean sea level (msl). Study area topography varies from flat floodplain adjacent to the Russian River to rolling terrain further west of the river.

The subject property occurs as two disjunct areas, separated by the north-south running Northwestern Pacific Railroad right-of-way (NWPR ROW). For purposes of providing a contiguous study area, the NWPR ROW was also included to connect the two property sites. (**Figure 2-2**). The project site and its topography are also shown on the 1960 (most current) Cloverdale USGS quadrangle in **Figure 2-3**.

Current land uses within the study area include vineyard and a wastewater treatment facility in the eastern floodplain area, and pasture, rural residences and outbuildings in the western portion. Segments of Porterfield Creek and Coyote Creek, with associated riparian habitat, occur within the study area. Surrounding uses include a wastewater treatment facility to the north, industrial warehouses and storage facilities to the south, and Highway 101 and residential neighborhoods to the west. The Russian River occurs beyond the eastern border of the study area, beyond which is agricultural land. Regional freeway access to the project site is provided by Highway 101 with local access provided by South Cloverdale Boulevard via Highway 101. The study area consists of six individual assessor parcels (Assessor Parcel Numbers (APN) 116-310-039, 116-310-040, 116-310-035, 116-310-020, 116-310-044, 116-310-005) totaling ±78.35 acres of land.

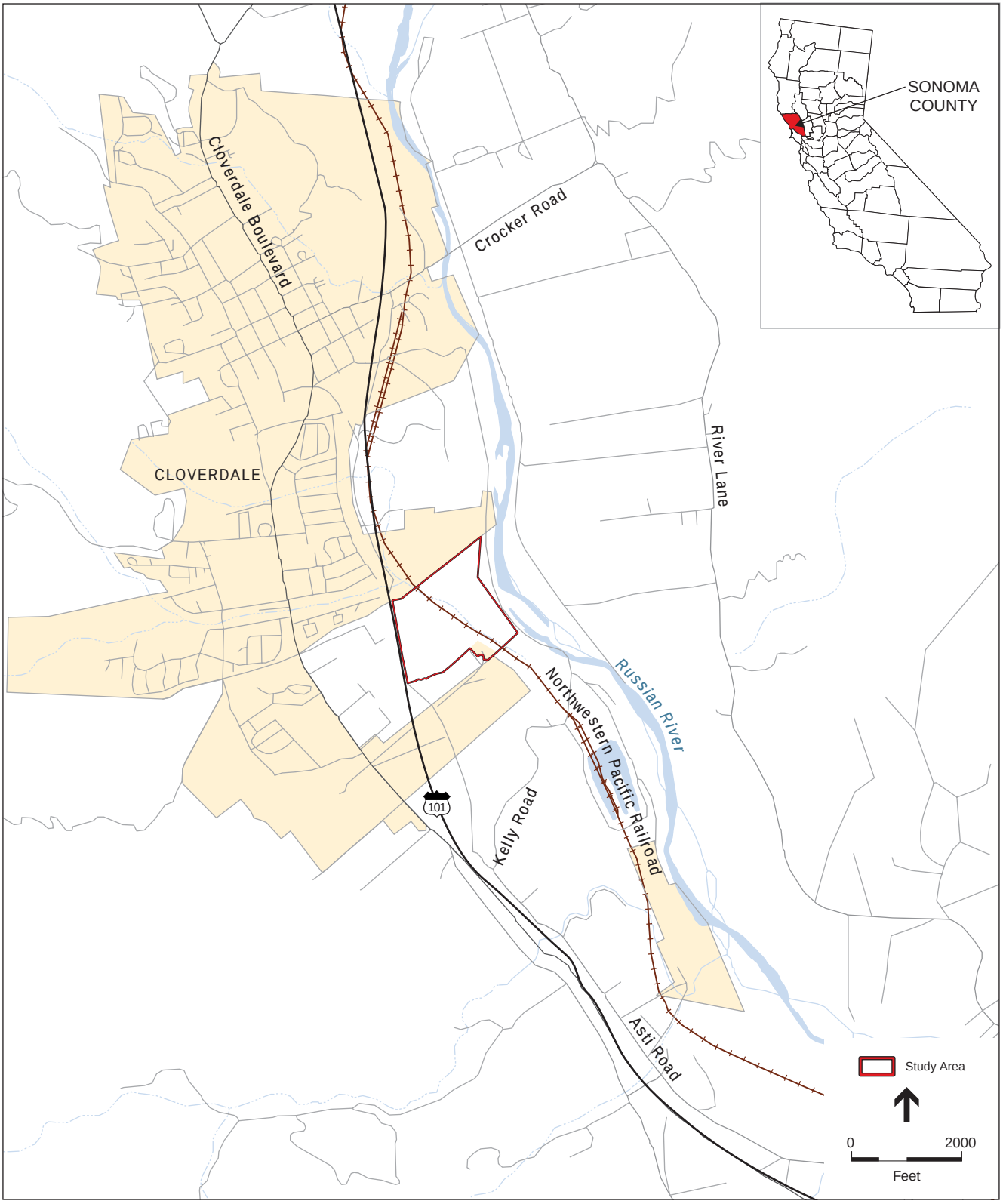
The east portion of the study area is almost entirely comprised of a vineyard occurring on relatively flat flood plain adjacent to the Russian River. Elevation in the ranges from approximately 280 feet above mean sea level (msl) in the southeast corner to 285 feet above msl in the northwest corner. It is bordered to the northwest by a private agricultural road that forms the border of the vineyard. The border extends linearly eastward into the adjacent water treatment facility such that the northern portion of the east portion of the study area includes a triangular-shaped overflow basin. The western border of the area is formed by an agricultural road, Porterfield Creek and associated riparian vegetation, and the NWPR ROW. The southern border of the area more or less follows the boundary of the vineyard.

The west portion of the study area is comprised principally of grazed non-native annual grassland. It also contains six rural residences and associated outbuildings including barns, horse paddocks, and corrals. Here, the study area's topography consists of gently rolling terrain. The northern portion is raised, reaching approximately 330 feet above msl near the northwest corner. Moving south, the terrain dips down to a broad swale ranging from approximately 317 feet above msl at its western extent to 305 feet above msl to the east. Moving further south, the terrain rises to approximately 332 feet above msl in the southwest portion, then dips down again to the I-2 drainage, which ranges from approximately 310 feet above msl at the study area's west border, to 300 feet above msl at its eastern border.

Boundaries for the west portion of the study area are formed by Lile Lane to the north, Lile Lane and the NWPR ROW to the east, and Asti Road, which parallels Highway 101, to the west. The southern border follows existing parcel boundaries, with Santana Drive running parallel to it further to the south.

## 2.2 Purpose of Assessment

The purpose of this investigation is to describe and delineate all waters of the U.S. within the study area that are subject to Section 404 of the CWA. If necessary, information from this report may be used in preparing permit applications for future actions proposed in the study area. This report will be reviewed by the Corps to verify their jurisdiction over wetlands and other waters of the U.S.




SOURCE: ESRI, 2006; and ESA, 2008

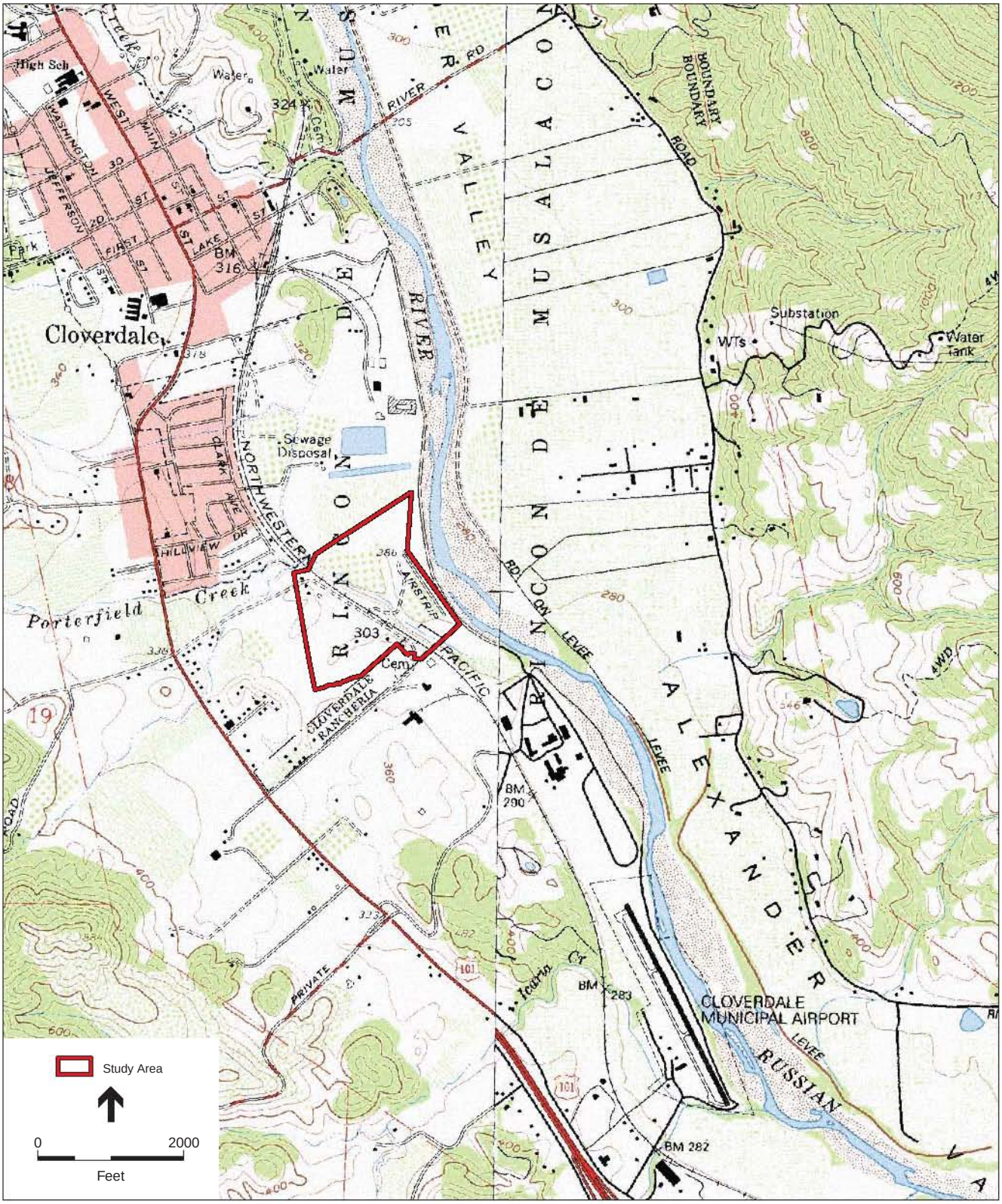
Cloverdale Rancheria Wetland Delineation . 207737

**Figure 2-1**
Regional Location

SOURCE: NAIP, 2006; GlobeXplorer, 2007; and ESA, 2008

Cloverdale Rancheria Wetland Delineation . 207737

**Figure 2-2**
Study Area




SOURCE: USGS Topographic Quadrangle, 1960-1963; and ESA, 2008



**Figure 2-3**
Study Area – USGS Quadrangle Based

# SECTION 4
# Results

## 4.1 Soils

The *Sonoma County Area California Soil Survey* (NRCS, 2008a) shows five soil units occurring within the study area (**Figure 4-1**). Two of the three soil units occurring in the east portion of the study area are listed as hydric, or contain inclusions that are hydric, per the national hydric soils list for Sonoma County, California (NRCS, 2008b) and the Sonoma County Field Office List of Hydric Soils (NRCS, 2008c). The two soil units occurring on the west portion of the study area are not included on the hydric soils list. A brief description of each soil unit is provided below.

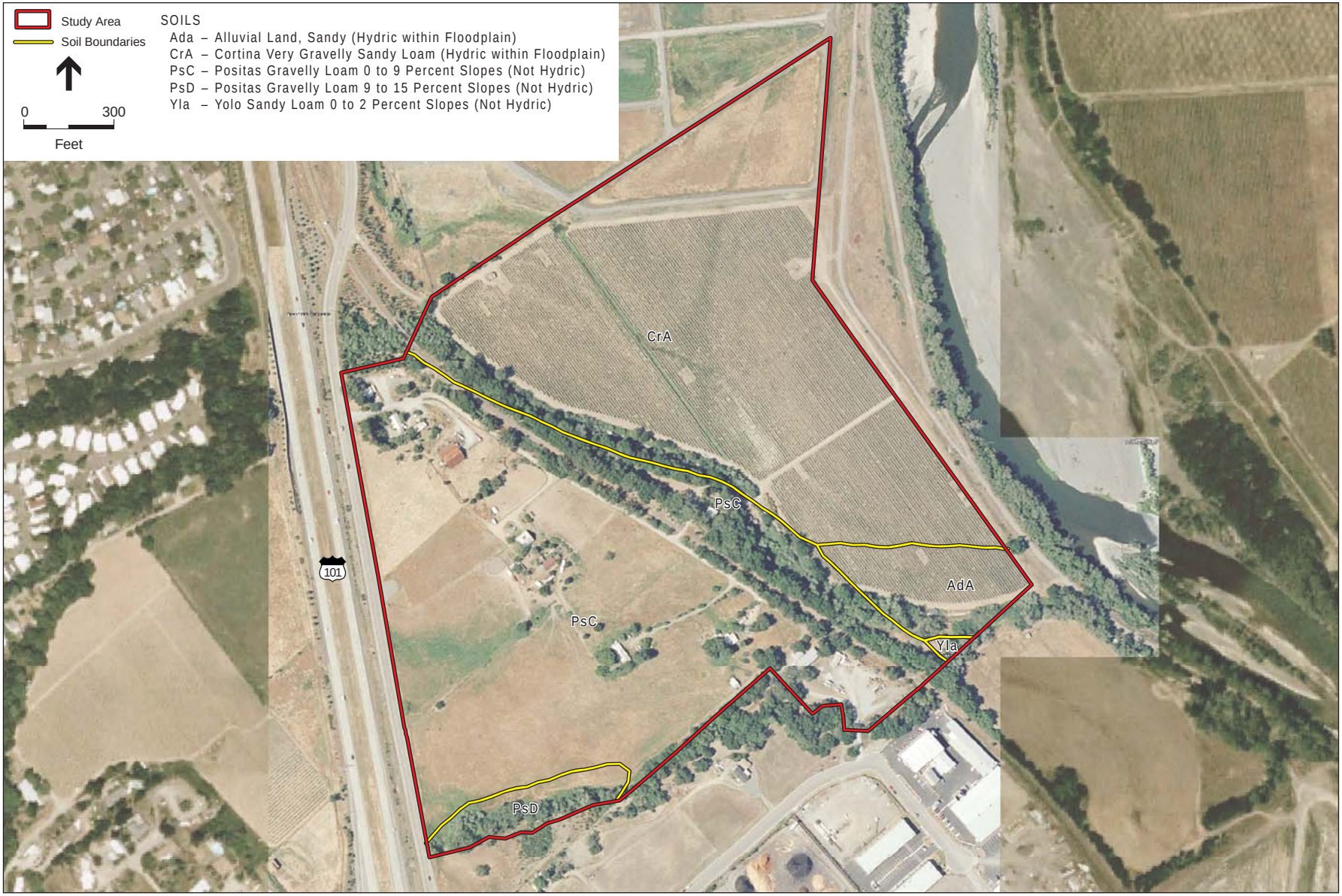
**Alluvial Land, Sandy (AdA) soil** is excessively drained soil occurring on floodplains. A typical profile includes gravelly sand to 10 inches, subtended by stratified very gravelly course sand to sand. Fifteen percent of the mapping unit is composed of an unnamed inclusion. Although extremely well draining, the series is considered hydric due to frequent flooding of long duration.

This series occurs in a minor portion of the east portion of the study area, including the southern portion of the vineyard and a small portion of Porterfield Creek and associated riparian vegetation.

**Cortina Very Gravelly Sandy Loam, 0 to 2 Percent Slopes (CrA)** soil series comprises very deep, somewhat excessively-drained soils on alluvial fans and floodplains. Typically, the surface horizon and subsoil is light brownish gray very gravelly sandy loam to 32 inches depth, subtended by light gray and light brownish gray very gravelly sand. Runoff is negligible to low and permeability is rapid. Inclusions in this soils unit are Cole, Yolo, and Riverwash soils. Riverwash soil, occurring in floodplain channels, is the only component of this mapping unit that is classified as hydric.

This soil series occurs on all but the western and southern edges (i.e. areas associated with Porterfield Creek) of the east portion of the study area. Land cover currently consists primarily of vineyard, although the waste water treatment facility and a portion of the riparian vegetation associated with Porterfield Creek also occur in this mapping unit.

**Positas Gravelly Loam, 0 to 9 Percent Slopes (PsC)** soil consists of deep to very deep soil located on stream terraces formed in alluvial material. The series is moderately well drained, with medium to very high runoff and slow to very slow permeability. A typical profile includes a surface layer of brown gravelly loam to 8 inches, a similar but slightly lighter colored layer from 8-11 inches, subtended by a subsoil reddish brown clay layer from 11-20 inches. The series is not considered hydric. All but the southwest corner of the west portion of the study area is covered by this soil series.




SOURCE: USDA, 1997; GlobeXplorer, 2006; NAIP, 2006; and ESA, 2008



**Figure 4-1**
Soils in the Study Area

**Positas Gravelly Loam, 9 to 15 Percent Slopes (PsD)** soil is similar to the series described above but occurs on areas with slightly greater sloping. This series is mapped in the southwest corner of the west portion of the study area. Current topography of the area does not conform with the indicated slope range for this series, nor to the topography shown in the 1960 USGS Cloverdale quadrangle. It is likely that this area has undergone considerable manipulation (e.g. excavation and grading) since the topographic and soils mapping were conducted over 40 years ago.

**Yolo Sandy Loam, 0 to 2 Percent Slopes (Yla)** soils are typically located on nearly level to moderately sloping alluvial fans. The series is well drained with slow to medium runoff and moderate permeability. Soils in the Yolo Series are typically silty loams. The Yolo Series soil found within the study area has been mapped as a sandy loam. The series is not considered hydric. The series occurs in a small area in the southeast section of the study area near the junction of Coyote and Porterfield Creeks.

## 4.2 Field Investigation

### 4.2.1 Study Area Setting

The combined study area is located within unincorporated Sonoma County, within the SOI of the City of Cloverdale and is surrounded by a mix of commercial, residential, municipal, and agricultural development. Regionally, the project is located at the northern end of the Alexander Valley, with the Mayacamas Mountains rising to the east and coastal range hills rising to the west. The project site occurs on the relatively flat valley floor, spanning an area more or less from the developed portion of Cloverdale to the west and the Russian River to the east. Regional natural plant communities in the study area include those that are common to the Central Franciscan subsection of the Northern California Coast Ranges, such as mixed oak, mixed conifer forest, and needlegrass grassland (Miles and Goudey, 1997). Climate is typically temperate and humid. Typical elevations within this ecological subsection range from 300 feet above sea level up to 6,175 feet at Big Signal Peak. Mean annual precipitation is approximately 35 to 110 inches. Mean annual temperature ranges from 40 to 58 degrees Fahrenheit (Miles and Goudey, 1997).

Within the study area, the terrain varies from flat floodplain adjacent to the Russian River to mildly rolling terrain further west of the river. Hydrology features in the study areas include two intermittent drainages; Porterfield Creek (I-1) and Coyote Creek (I-2). A broad swale and a topographic depression in the area of rolling terrain support seasonal wetlands. An excavated vegetated drainage swale through the vineyard on the floodplain carries drainage of Heron Creek (I-3) entering the project area from the north.

### 4.2.2 Study Area Plant Communities and Habitats

Plant communities are assemblages of plant species that occur together in the same area, which are defined by species composition and relative abundance. Upland plant communities and habitats within the study area include non-native annual grassland, disturbed/ruderal, agricultural lands (vineyards), urban/developed, central coast riparian forest, north coast riparian scrub. Plant communities and habitats associated with aquatic settings include seasonal wetland and freshwater emergent wetland.

## Upland Plant Communities and Habitats

### *Non-Native Annual Grassland*

Non-native annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California (Holland, 1986). It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub and woodland as a result of human disturbance. Scattered native wildflowers and grasses, representing remnants of the original vegetation may also be common.

Within the study area, non-native annual grassland is present in the pastures occupying most of the west portion of the study area. These pastures are currently in use primarily for horse grazing. Non-native annual grasses occurring include wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum* ssp.*gussoneanum*), hare barley (*Hordeum murinum* ssp. *leporinum*), Italian ryegrass (*Lolium multiflorum*), hedgehog dogtail (*Cynosurus echinatus*), and rattail fescue (*Vulpia myuros*), among others. Common nonnative forbs include English plantain (*Plantago lanceolata*), field bindweed (*Convolvulus arvensis*), curly dock (*Rumex crispus*), fiddle dock (*Rumex pulcher*), Italian thistle (*Carduus pycnocephalus*), yellow star thistle (*Centauria solstitialis*), bristly ox-tongue (*Picris echioides*), little hop clover (*Trifolium dubium*), and red-stemmed filaree (*Erodium cicutarium*), among others. Non-native Himalayan blackberry (*Rubus discolor*) is also present. Despite the dominance of non-native annual grasses and forbs, native species are also present in the grasslands. These native species include Fitch's spikeweed (*Centromadia fitchii*), hayfield tarweed (*Hemizonia congesta* ssp. *luzulifolia*), and Spanish-clover (*Lotus purshianus*), among others. Native shrubs including coyote brush (*Baccharis pilularis*) and poison oak (*Toxicodendron diversilobum*)are scattered throughout the non-native grassland but not in sufficient densities to be considered a distinct vegetation community. The majority of the non-native grassland within the study area is subject to grazing.

### *Disturbed/Ruderal*

Disturbed/ruderal habitat occurs in areas such as along roadsides, trails, parking lots, etc. These communities are subjected to ongoing or past disturbances (e.g., vehicle activities, mowing). Ruderal habitat in these disturbed areas supports a diverse weedy flora, primarily composed of non-native invasive species.

Within the study area, ruderal vegetation is found adjacent to roads, in some high-use areas near buildings and in pastures, scattered within the vineyard, and occupying the wastewater treatment overflow basin.

Dominant species vary per locale but include introduced common annual weedy forbs such as bur-clover (*Medicago polymorpha*), red-stem filaree, wild radish (*Raphanus sativus*), black mustard (*Brassica nigra*), field bindweed, milk thistle (*Silybum marianum*), and others. Non-native grasses are also represented including ripgut brome, Italian wildrye, wild oat, and others.

The ruderal vegetation complement in the wastewater treatment overflow basin includes dense areas of broadleaf filaree (*Erodium botrys*) and black mustard in robust growth. Some areas of broadleaf filaree are supplemented by Italian wildrye.

### *Agricultural Lands- Vineyards*

The vineyard occurring in the study area is comprised of cultivated grapes. Vines are intertwined in rows but open between rows. The understory is primarily barren but contains scattered ruderal vegetation as noted above. Most of the east portion of the study area is currently planted in vineyard.

### *Urban/Developed*

Urban habitats are those dominated by plant species introduced by humans and established or maintained by human disturbances or activities (Holland and Keil, 1990). Some are entirely artificial such as areas influenced by urban or suburban landscaping or plantings. Within the study are, urban habitats include roadways, buildings, and the areas around the residences, barns, horse paddocks, and corrals. There are six rural residences within the study area.

Planted trees around the residences include tulip tree (*Liriodendron tulipifera*), coast redwood (*Sequoia sempervirens*), Monterey pine (*Pinus radiata*), English walnut (*Juglans regia*), flowering cherry (*Prunus cerasifera*), pear (*Pyrus communis*), peach (*Prunus persica*), persimmon (*Diospyros kaki*), olive (*Olea europaea*), and apple (*Malus* sp.). Ornamental shrubs include spiraea (*Spiraea* sp.), oleander (*Nerium oleander*), and rose (*Rosa* sp.). Ruderal non-native species present in disturbed areas around the horse paddocks and corrals include Italian thistle, rough pigweed (*Amaranthus retroflexus*), yellow star thistle, spiny cocklebur (*Xanthium spinosum*), horehound (*Marrubium vulgare*), teasel (*Dipsacus sativus*), and other non-native species listed above under non-native grassland.

### *Coast Live Oak Woodland*

Coast live oak woodland is typically found on north-facing slopes and shaded ravines in the southern and inland portions of the state and on more exposed, mesic sites in the north. This community is dominated by coast live oak (*Quercus agrifolia*), which frequently occurs in pure, dense stands with a closed canopy. Coast live oak may be the only overstory species or, on more mesic sites, trees characteristic of mixed evergreen forests mix with coast live oak, such as California bay (*Umbellularia californica*) and madrone (*Arbutus menziesii*).

Within the study area, coast live oak woodland is present in a narrow band along the northern and eastern boundary of the west portion of the study area. This habitat is dominated by coast live oak, with scattered California bay and California buckeye (*Aesculus californica*). Native shrub species include toyon (*Heteromeles arbutifolia*), Himalyan blackberry, and poison oak, among others.

### *North Coast Riparian Scrub/Woodland*

North coast riparian scrub typically consists of shrubby, streamside, open to impenetrable thickets composed of any of several species of willow (*Salix* spp.) and other fast-growing shrubs and vines. This plant community occurs on sand and gravel bars along and at the mouths of streams, within the coastal fog incursion zone from Sonoma County into Oregon usually below 1,000 feet in

elevation. Some tree species are also included in riparian scrub (Holland, 1986). North coast riparian scrub is generally considered "seral," meaning that it typically precedes the development of other riparian woodland or forest communities in the absence of severe flooding.

Dominant overstory species in the study area include red willow (*Salix laevigata*), arroyo willow (*S. lasiolepis*), Pacific willow (*S. lucida* ssp. *lasiandra*), valley oak (*Quercus lobata*), coast live oak, California buckeye, box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*) and California bay. The understory consists of native species such as mugwort (*Artemisia douglasiana*), willow-herb (*Epilobium ciliatum* ssp. *ciliatum*), poison oak, and coyote brush, among others. Non-native understory species include klamathweed (*Hypericum perforatum*) and Himalayan blackberry, among others.

Two occurrences of riparian habitat are found in the study area. One is associated with Coyote Creek, along, and in parts within, the southern boundary of the west portion of the study area (**Figure 1-2**). The other is associated with Porterfield Creek, again along, and in parts within, the western and southern boundary of the east portion of the study area. Different areas along these creeks appear to be at different seral stages, with some areas dense with willows and appearing to be at early successional stages, while others are dominated with more mature valley oaks, coast live oaks and other riparian trees, appearing to be at later successional stages and approaching a more woodland or forest type of structure. In general, riparian habitat along Porterfield Creek is relatively mature, dominated by sometimes moderately large coast live and valley oaks, and with ample presence of Fremont cottonwood (*Populus fremontii*), arroyo willow, red willow, Oregon ash, and California bay. Small areas of relatively recent disturbance are dominated by dense willow growth. Riparian habitat along Coyote Creek is less mature, with most of the corridor dominated by a relatively dense mix of the variety of trees discussed above, occurring at moderate size.

## Aquatic Plant Communities and Habitats

### *Seasonal Wetland*

Seasonal wetlands are ephemeral wetlands that pond or remain flooded for extended periods during a portion of the year, then may dry in spring or early summer. Seasonal wetlands occur in the west portion of the study area, associated with a low-lying area in the southwest corner of the parcel and with a broad drainage swale, draining west to east through the central portion of the study area. Common hydrophytic species in these features include spiny-fruit buttercup (*Ranunculus muricatus*), pennyroyal (*Mentha pulegium*), curly dock, Italian ryegrass, and Mediterranean barley.

### *Freshwater Emergent Wetland*

Freshwater emergent wetland typically occurs in low-lying sites that are permanently flooded or saturated with fresh water and lacking significant current. Freshwater marsh is most extensive where surface flow is slow or stagnant or where the water table is so close to the surface as to saturate the soil from below. This vegetation community characteristically forms a dense vegetative cover dominated by perennial, emergent monocots one to 15 feet high that reproduce by underground rhizomes.

Within the study area, freshwater emergent wetland is restricted to a section of low gradient stream at the western extreme of Coyote Creek. Aquatic plant species recorded here include umbrella sedge, narrow-leaved cattail (*Typha angustifolia*), low bulrush (*Scirpus cernuus*), punctuate smartweed, watercress (*Nasturtium officinale*), dallis grass (*Paspalum dilatatum*), and pennyroyal, among others.

### *Riverine/Intermittent Drainage*

Coyote Creek, an intermittent tributary to Porterfield Creek, flows along the southern boundary of the west portion of the study area. The portions of the creek that that lie within the study area are comprised of well-developed over and understory growth with infrequent openings. The streambanks vary from gently sloping to steeply incised with dense bank vegetation, exposed roots, and areas of active erosion. The main channel is comprised of a low-grade riffle, run, and pool complexes with a limited number of shallow to moderately deep pools up to one foot in depth. The main channel contains root wads, small woody debris, and overhanging vegetation. Overall the substrate is silty, with few gravel to cobble-sized rocks.

Porterfield Creek has similar characteristics, but is wider and with a more mature riparian corridor. At the time of both surveys most of the creek bed was dry, with occasional pools and stretches of creek carrying water.

## 4.2.3 Site Hydrology Overview

The study area is situated in flat to rolling terrain in an area that lies adjacent and west of the south-flowing Russian River. Ground surface elevation ranges from approximately 280 feet msl near to the Russian River, in the southeast corner of the East Parcel, to 330 feet near the northwest corner of the West Parcel. The two creeks within the study area are part of the Russian River Watershed that eventually drains to the Pacific Ocean at Jenner, California. All study area drainage flows into Porterfield Creek within the study area. Porterfield Creek joins the Russian River approximately 400 feet east of the point where Porterfield Creek leaves the study area. The Russian River is a traditional navigable waterway (TNW) (**Figure 4-2**).

Hydrological input to the study area is through culverted drainages from west of the site, creek and channelized drainage from north of the site, and direct rainfall. Some sheetflow from off-site is likely to enter the site from adjacent areas, in addition to runoff from Asti Road and the NWPR ROW. The majority of the study area is drained by surface percolation and intermittent drainages that convey flow to the Russian River.

The primary hydrological input into Coyote Creek is from the west, entering the study area by way of a culvert traversing beneath Highway 101 and Asti Road. This creek did not exist at the time the 1960 Cloverdale USGS quad was created, which was produced prior to the construction of Highway 101 and Asti Road. No stream line is indicated and topography in the area does not suggest any concentrated drainage. Topography in this area was most likely significantly altered for or prior to building of these roadways, or for other purposes, including excavation of the current stream. Judging by the natural appearance of the present-day stream, and the well-developed riparian canopy, the creek has existed in its present form for a moderate length of time. There are no apparent surface level drainages supplying the creek in the developed area west of the Highway 101/Asti Road culvert,

SOURCE: NAIP, 2006; GlobeXplorer, 2007; and ESA, 2008

Cloverdale Rancheria Wetland Delineation . 207737

**Figure 4-2**

Connection of Study Area Waters to TNW

nor in the foothills further west. The source of significant flows observed in Coyote Creek appears to be from groundwater pumping from a commercial facility west of the site. Additional input into Coyote Creek occurs as sheet flow from adjacent pastures. With partial inclusions in the southern part of the west portion of the study area, Coyote Creek flows east, is culverted beneath the NWPR ROW, and then joins Porterfield Creek at the southern tip of the east portion of the study area.

Hydrological input into the large seasonal wetland swale (sw-3) north of Coyote Creek is also by way of a culvert passing beneath Highway 101 and Asti Road. The source of the drainage is from pastures and agricultural fields to the west of Highway 101. This drainage may be supplemented by drainage from the roadways. Additional input into the swale is from direct precipitation and runoff from the pasture slopes adjacent to the swale. After traversing the west portion of the study area, drainage from the swale enters a culvert beneath the NWPR ROW and empties into Porterfield Creek within the ROW.

An intermittent drainage, Heron Creek (I-3) enters the east portion of the study area from the north. The source of the drainage north of the site is unknown, but it essentially follows the course of a blueline stream on the 1960 USGS quadrangle. On the quad, it joins Porterfield Creek near the northwest corner of the vineyard (**Figure 2-3**). This confluence was apparently filled at some point and the stream was diverted to the east, where it currently ponds before entering the site. After entering the site, the feature is confined to a ditch approximately 2-feet wide (**Appendix C**). The ditch is used and maintained for agricultural purposes when water is present. During the time of the January 2009 site visit, the ditch did not have a connection with Porterfield Creek.

On the USGS quadrangle, the blueline turns west near the north end of the present WWTP, traverses Cloverdale and continues into the hills west of Cloverdale. This drainage can be observed on current aerials in Cloverdale, south of the intersection of Upper Westside Drive and South Foothill Blvd and extending west. Downstream of the intersection, it appears to extend as far east as Tarman Drive before perhaps being culverted beneath a few blocks of residential units, then Highway 101 and Asti Road before emptying into the current drainage north of the project site.

Porterfield Creek, originating as two branches and connected tributaries in the foothills west of Cloverdale, traverses a mostly residential area of the city. It then enters the northwest corner of the east portion of the study area after having passed in culverts beneath Highway 101, Asti Road, and the NWPR ROW. The creek then follows the western and southern borders of the study area, occurring within the study area for two segments within the west and south border of the east portion of the study area. In exits the southeast corner of the study area, emptying into the Russian River approximately 400 feet east of this point. Between the points where the creek enters the study area and then leaves it, all study area drainages drain into the creek. Sheet flow from the east portion of the study area, as well as drainage from the NPRR ROW also enters Porterfield Creek along this stretch.

The wetlands occurring in the study areas vary in their hydrology. Freshwater emergent wetlands wetlands are located within the intermittent water features (drainages) and receive water from the water table and storm events. Seasonal wetlands are found in low-lying areas where drainage is slow, and they derive hydrology from surface sources typically associated with precipitation events and/or groundwater.

## 4.2.4 Jurisdictional Waters of the U.S.

A total of 2.36 acres of potential jurisdictional features occur within the study area. Jurisdictional features include 1.60 acres of wetlands and 0.76 acres (3,499.88 linear feet) of other waters of the U.S. Wetlands within the study area include 0.02 acre of freshwater emergent wetland and 1.58 acres of seasonal wetlands. Other waters of the U.S. within the study area include 0.76 acres (3,499.88 linear feet) of intermittent drainage.

The locations and extent of potentially jurisdictional features are depicted in **Figure 4-3**. Wetland determination data sheets are provided as Appendix B. Representative site photographs of wetland and upland communities are provided as Appendix C. A list of plants observed during the survey can be found in Appendix A. A summary of potentially jurisdictional features and their extent (including average width and linear feet for drainages) within the project site is presented in **Table 4-1**.

**TABLE 4-1**
**POTENTIAL JURISDICTIONAL FEATURES WITHIN THE STUDY AREA**

| Map ID | Type of Potentially Jurisdictional Feature | Average Width | Linear Feet | Acres |
|---|---|---|---|---|
| **Wetland** | | | | |
| SW-1 | Seasonal PEM - Seasonal wetland | n/a | n/a | 0.09 |
| SW-2 | Seasonal PEM - Seasonal wetland | n/a | n/a | 0.16 |
| SW-3 | Seasonal PEM - Seasonal wetland | n/a | n/a | 1.33 |
| FEW-1 | PPEM - Freshwater emergent wetland | n/a | n/a | 0.02 |
| | Wetland Subtotal: | n/a | n/a | 1.60 |
| **Intermittent Drainage** | | | | |
| I-1 | Intermittent Channel – Porterfield Creek | 10 | 2,370.20 | 0.61 |
| I-2 | Intermittent Channel – Coyote Creek | 7 | 1,129.68 | 0.15 |
| | Other Waters Subtotal: | – | 3,499.88 | 0.76 |
| | **Total area of potentially jurisdictional features** | | | **2.36** |

NOTES: PEM = palustrine emergent; PPEM = palustrine persistent emergent; n/a = not applicable.

### Jurisdictional Wetlands

The wetland delineation survey conducted by ESA biologists identified seven wetland features within the study area. With the exception of the agricultural ditch, all wetlands in the study area are hydrologically connected to other waters of the U.S. through direct adjacency or drainage patterns resulting in hydrological linkages between wetlands and stream channel.

#### *Seasonal Wetland*

Three seasonal wetland units were identified in the study area. Seasonal wetlands SW-1 and SW-2 (0.09 and 0.16 acres respectively) are associated with a low area in the southwest corner of the west portion of the study area adjacent to Coyote Creek. Seasonal wetland SW-3, (1.33 acres) occupies a west-to-east draining broad swale centrally located in the west portion of the study area.

These wetlands are dominated by moderately to weakly hydrophytic species. Hydrologic input is from a combination of runoff from adjacent uplands, concentrated runoff entering each wetland area through culverts traversing beneath Asti Road, and direct precipitation. Seasonal wetlands are classified as seasonal palustrine emergent using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979). The boundaries of seasonal wetlands were determined based on moderately abrupt changes in vegetation composition, topography, and presence of hydric soil.

### *Freshwater Emergent Wetland*

One freshwater emergent wetland (FEW-1) (0.02 acre) was identified in the study area. This wetland, occurring in a low gradient stretch of Coyote Creek, was primarily dominated by narrow-leaved cattail, a perennial obligate hydrophyte, accompanied by occurrences of low bulrush, punctuate smartweed, watercress, and other hydrophytic species. Freshwater emergent wetlands are classified as palustrine persistent emergent wetland using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979).

## Other Waters of the United States

### *Intermittent Drainage*

Intermittent channels have flowing water only periodically during the year, generally coinciding with the rainy season in the project region. Runoff from rainfall is the primary source of water for stream flow, although groundwater may contribute. Two intermittent channels were identified in the study area: Coyote Creek occurs in two segments along the southern boundary, (0.15 acre; 1,129.68 linear feet) and Porterfield Creek occurs along the western boundary of the east portion of the study area (0.61 acre; 2,370.20 linear feet).

# 4.2.5 Conclusions

A total of approximately 2.36 acres of potential jurisdictional features occur within the study area consisting of approximately 1.60 acres of wetlands and 0.76 acre of other waters of the U.S. (3,499.88 linear feet). The estimated acreages and linear lengths of the individual features are shown in Table 4-1.

This report documents the wetland boundary delineation and best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and verification in writing by the Corps.

| Seasonal Wetlands | Acres |
|---|---|
| SW-1 | 0.09 |
| SW-2 | 0.16 |
| SW-3 | 1.33 |
| TOTAL | 1.58 |

| Freshwater Emergent Wetland | Acres |
|---|---|
| FEW-1 | 0.02 |

| Other Waters of the U.S. | Acres | Length | OHWM |
|---|---|---|---|
| Channel I-1 | 0.61 | 2370 Feet | 10 Feet |
| Channel I-2 | 0.15 | 1130 Feet | 7 Feet |
| Agricultural Ditch | 0.04 | 972 Feet | 2 Feet |
| TOTAL | 0.80 | 4472 Feet | |

| Non-Jurisdictional Features | |
|---|---|
| Sewer Treatment Pond | 3.64 |
| Irrigated Pasture | 0.38 |
| TOTAL | 4.02 |

REFERENCES

Delineators / Surveyors: Mark Fogiel, Kiffanie Stahl, David Beecroft – March 19, 2008
Chariss Tweedy – January 14, 2009

Date of Initial Map Preparation – February 2009 (Revised September 2009)

SOURCE: GlobeXplorer, 2007; ESRI, 2007; and ESA, 2009

Cloverdale Rancheria EIS. 207737

**Figure 4-3**

Wetland Delineation

# SECTION 5
# References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# Appendix A
## Plant List

**APPENDIX A**
**SPECIES OBSERVED AT THE CLOVERDALE RANCHERIA PROJECT SITE**

| Species name | Common name | Wetland Indicator Status |
|---|---|---|
| ACERACEAE | | |
| *Acer negundo var. californicum* | California box elder | **FACW** |
| AMARANTHACEAE | | |
| *Amaranthus retroflexus* | rough pigweed | **FACU** |
| ANACARDIACEAE | | |
| *Toxicodendron diversilobum* | poison oak | **UPL*** |
| APIACEAE | | |
| *Conium maculatum* | poison hemlock | **FACW** |
| *Foeniculum vulgare* | sweet fennel | **FACU** |
| APOCYNACEAE | | |
| *Nerium oleander* | oleander | **UPL*** |
| ASTERACEAE | | |
| *Anthemis cotula* | dog-fennel | **FACU** |
| *Artemisia douglasiana* | mugwort | **FACW** |
| *Baccharis pilularis* | coyote brush | **UPL*** |
| *Carduus pycnocephalus* | Italian thistle | **UPL*** |
| *Centaurea solstitialis* | yellow star-thistle | **UPL*** |
| *Centromadia fitchii* | fitch spikeweed | **UPL*** |
| *Hemizonia congesta ssp. luzulifolia* | hayfield tarweed | **UPL*** |
| *Hypochaeris radicata* | rough cat's ear | **UPL*** |
| *Picris echioides* | bristly ox-tongue | **FAC*** |
| *Silybum marianum* | milk thistle | **UPL*** |

| Species name | Common name | Wetland Indicator Status |
|---|---|---|
| *Xanthium spinosum* | spiny cocklebur | **FAC+** |
| BRASSICACEAE | | |
| *Brassica nigra* | black mustard | **UPL*** |
| *Raphanus sativus* | wild radish | **UPL*** |
| *Rorippa nasturtium-aquaticum* | watercress | **OBL** |
| CALLITRICHACEAE | | |
| *Callitriche sp.* | water starwort | **OBL** |
| CONVOLVULACEAE | | |
| *Convolvulus arvensis* | bindweed | **UPL*** |
| CYPERACEAE | | |
| *Cyperus eragrostis* | umbrella sedge | **FACW** |
| *Scirpus cernuus* | low bulrush | **OBL** |
| DIPSACACEAE | | |
| *Dipsacus sativus* | teasel | **NI** |
| EBENACEAE | | |
| *Diospyros kaki* | persimmon | **UPL*** |
| ERICACEAE | | |
| *Arbutus menziesii* | madrone | **UPL*** |
| FABACEAE | | |
| *Genista monspessulana* | French broom | **UPL*** |
| *Lotus purshianus* | Spanish-clover | **UPL*** |
| *Medicago polymorpha* | burclover | **UPL*** |
| *Trifolium dubium* | little hop clover | **FACU*** |

| Species name | Common name | Wetland Indicator Status |
|---|---|---|
| *Trifolium fragiferum* | strawberry clover | **NI*** |
| *Vicia sp* | vetch | |
| FAGACEAE | | |
| *Quercus agrifolia* | coast live oak | **UPL*** |
| *Quercus lobata* | valley oak | **FAC*** |
| GERANIACEAE | | |
| *Erodium botrys* | broadleaf filaree | **UPL*** |
| *Erodium cicutarium* | red-stemmed filaree | **UPL*** |
| *Geranium dissectum* | cut-leaf geranium | **UPL*** |
| HIPPOCASTANACEAE | | |
| *Aesculus californica* | California buckeye | **UPL*** |
| HYPERICACEAE | | |
| *Hypericum perfolatum* | klammath weed | **UPL*** |
| JUGLANDACEAE | | |
| *Juglans regia* | English walnut | **UPL*** |
| JUNCACEAE | | |
| *Juncus spp* | rush | **FACW** |
| LAMIACEAE | | |
| *Marrubium vulgare* | horehound | **FAC** |
| *Mentha pulegium* | pennyroyal | **OBL** |
| LAURACEAE | | |
| *Umbellularia californica* | California bay laurel | **FAC** |

| Species name | Common name | Wetland Indicator Status |
|---|---|---|
| LILIACEAE | | |
| *Allium sp.* | allium | |
| *Chlorogalum pomeridianum* | soap plant | **UPL*** |
| LYTHRACEAE | | |
| *Lythrum hyssopifolia* | hyssop loosestrife | **FACW** |
| MAGNOLIACEAE | | |
| *Liriodendron tulipifera* | tulip tree | **UPL*** |
| OLEACEAE | | |
| *Fraxinus latifolia* | Oregon ash | **FACW** |
| *Olea europaea* | olive | **UPL*** |
| ONAGRACEAE | | |
| *Epilobium ciliatum ssp. ciliatum* | willow-herb | **FACW** |
| PINACEAE | | |
| *Pinus radiata* | Monterey pine | **UPL*** |
| PLANTAGINACEAE | | |
| *Plantago lanceolata* | English plantain | **FAC-** |
| POACEAE | | |
| *Avena fatua* | wild oats | **UPL*** |
| *Bromus diandrus* | ripgut brome | **UPL*** |
| *Bromus hordeaceus* | soft chess | **UPL*** |
| *Cynosurus echinatus* | hedgehog dogtail grass | **UPL*** |
| *Hordeum marinum ssp. gussoneanum* | Mediterranean barley | **UPL*** |
| *Hordeum murinum ssp. leporinum* | hare barley | **UPL*** |
| *Lolium multiflorum* | Italian ryegrass | **FAC*** |

| Species name | Common name | Wetland Indicator Status |
|---|---|---|
| *Paspalum dilatatum* | dallisgrass | **FAC** |
| *Vulpia myuros* | rattail fescue | **FACU*** |
| POLYGONACEAE | | |
| *Polygonum punctatum* | water smartweed | **OBL** |
| *Rumex crispus* | curly dock | **FACW-** |
| *Rumex pulcher* | fiddle dock | **FAC+** |
| PRIMULACEAE | | |
| *Anagallis arvensis* | scarlet pimpernel | **FAC** |
| RANUNCULACEAE | | |
| *Ranunculus muricatus* | spiny-fruit buttercup | **FACW+** |
| ROSACEAE | | |
| *Heteromeles arbutifolia* | toyon | **UPL*** |
| *Malus sp.* | apple | |
| *Prunus cerasifera* | cherry plum | **UPL*** |
| *Prunus persica* | peach | **UPL*** |
| *Pyrus communis* | pear | **UPL*** |
| *Rosa sp.* | rose | |
| *Rubus discolor* | Himalayan blackberry | **FACW*** |
| *Spiraea sp.* | spiraea | |
| SALICACEAE | | |
| *Populus fremontii ssp. fremontii* | Fremont’s cottonwood | **FACW** |
| *Salix laevigata* | red willow | **FACW** |
| *Salix lasiolepis* | arroyo willow | **FACW** |

| Species name | Common name | Wetland Indicator Status |
|---|---|---|
| *Salix lucida ssp. lasiandra* | Pacific willow | **OBL** |
| SCROPHULARIACEAE | | |
| *Veronica anagallis-aquatica* | water speedwell | **OBL** |
| TAXODIACEAE | | |
| *Sequoia sempervirens* | coast redwood | **UPL*** |
| TROPAEOLACEAE | | |
| *Nasturtium officinale* | watercress | **OBL** |
| TYPHACEAE | | |
| *Typha angustifolia* | narrow-leaf cattail | **OBL** |

# Appendix B
## Wetland Delineation Data Sheets

ESA

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 1/14/09

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DE-01

Investigator(s): Chariss Tweedy | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 89.79354685900 | Long: -123.00873973100 | Datum: NAD 83

Soil Map Unit Name: Alluvial Land, Sandy | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: Data point was taken at the edge of the standing water. Feature appears to have a bed and bank where water flows. There are cattails upstream from data point. Although hydrophytic vegetation and wetland hydrology are present, hydric soil is not. Therefore, this does not qualify as a wetland feature.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Paspallum dilatatum* | 50 | Yes | FAC |
| 2. *Cyperus eragrostis* | 25 | Yes | FACW |
| 3. *Mentha pulegium* | 25 | Yes | OBL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 25 | x 1 = | 25 |
| FACW species | 25 | x 2 = | 50 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | | x 4 = | 0 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 100 (A) | | 225 (B) |

Prevalence Index = B/A = 2.25

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Adjacent vegetation consists of unknown grass seedlings.

## SOIL

Sampling Point: DE-01

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 10YR 3/2 | 100 | | | | | Silty Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks: No redox features or oxidized rhizospheres in soil. No hydrogen sulfide odor present.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ○ | No ◉ | Depth (inches): |
| Water Table Present? | Yes ◉ | No ○ | Depth (inches): 6" |
| Saturation Present? (includes capillary fringe) | Yes ◉ | No ○ | Depth (inches): Surface |

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Data point was taken immediately adjacent to the ponded water.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 5/6/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DE-05

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.79005314380 Long: -123.00352507600 Datum: NAD 83

Soil Map Unit Name: Alluvial Land, Sandy NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: Data point is within riparian canopy with sparse hydrophytic ground cover. Soil without hydric indicators; no wetland hydrology indicators.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Salix laevigata* | 50 | Yes | FACW |
| 2. *Salix lasiolepis* | 50 | Yes | FACW |
| 3. | | | |
| 4. | | | |
| Total Cover: | 100% | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Rubus discolor* | 50 | Yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 50 % | | |
| **Herb Stratum** | | | |
| 1. *Artemisia douglasiana* | 50 | Yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 50 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 50 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 200 | x 2 = | 400 |
| FAC species | | x 3 = | 0 |
| FACU species | | x 4 = | 0 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 200 (A) | | 400 (B) |

Prevalence Index = B/A = 2.00

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Nearby canopy trees includes Populus fremontii.

## SOIL

Sampling Point: DE-05

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/4 | 100 | | | | | Loamy Sand | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-01

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78896852590 Long: -123.00637527200 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: Data point is outside the study area boundaries.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Quercus lobata* | 80 | Yes | FAC* |
| 2. *Salix lasiolepis* | 5 | No | FACW |
| 3. | | | |
| 4. | | | |
| Total Cover: | 85 % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. *Genista monspessulana* | 1 | Yes | UPL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 1 % | | |
| **Herb Stratum** | | | |
| 1. *Chlorogalum pomeridianum* | 1 | Yes | UPL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 1 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 99 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 5 | x 2 = | 10 |
| FAC species | 80 | x 3 = | 240 |
| FACU species | | x 4 = | 0 |
| UPL species | 2 | x 5 = | 10 |
| Column Totals: | 87 (A) | | 260 (B) |

Prevalence Index = B/A = 2.99

**Hydrophytic Vegetation Indicators:**

[ ] Dominance Test is >50%

[X] Prevalence Index is ≤3.0[1]

[ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

[ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Data point taken in mid riparian corridor made up of mixed valley oak, coast live oak, Oregon ash, arroyo willow, red willow, and others. Data point in area of moderately thick litter of oak leaves. Data point is located outside the study area boundaries.

## SOIL

Sampling Point: DW-01

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 7.5YR 3/2 | 70 | 2.5YR 4/6 | 30 | C | M | Silty Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Data point is located near the upper edge of the flood terrace of I-2.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-02

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78822176690 Long: -123.0099320220 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: Sample point is just beyond the upper edge of seasonal wetland SW-1 in horse grazed non-native annual grassland. Site of this data point is somewhat influenced by adjacent wetlands (e.g. degree of soil moisture observed; strong presence of FAC species) but lacking in soil and hydrology indicators.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Cynodon dactylon* | 50 | Yes | FAC |
| 2. *Trifolium dubium* | 25 | Yes | FACU |
| 3. *Plantago lanceolata* | 20 | Yes | FAC |
| 4. *Lotus purshianus var. purshianus* | 4 | No | UPL |
| 5. *Convolvulus arvensis* | 1 | No | UPL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 70 | x 3 = | 210 |
| FACU species | 25 | x 4 = | 100 |
| UPL species | 5 | x 5 = | 25 |
| Column Totals: | 100 (A) | | 335 (B) |

Prevalence Index = B/A = 3.35

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Generally in the study area, Lotus purshianus and Convolvulus arvensis are consistently associated with uplands. One of two types of clover is often dominant; Trifolium dubium in uplands and Trifolium fragiferum in wetlands.

## SOIL

Sampling Point: DW-02

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 100 | | | | | Clay Loam | Relatively high clay content |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Sample point on the upland edge of wetland depression, sampled by DW-03. Soil slightly moist (not as dry and hard as is the soil at higher upland points.)

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-03

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): Swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78823808870 | Long: -123.00993302200 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: Seasonal wetland is in a swale extension of the low terrace adjacent to the I-2.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Lolium multiflorum* | 45 | Yes | FAC* |
| 2. *Ranunculus muricatus* | 35 | Yes | FACW |
| 3. *Mentha pulegium* | 15 | No | OBL |
| 4. *Rumex crispus* | 5 | No | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 15 | x 1 = | 15 |
| FACW species | 40 | x 2 = | 80 |
| FAC species | 45 | x 3 = | 135 |
| FACU species | | x 4 = | 0 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 100 (A) | | 230 (B) |

Prevalence Index = B/A = 2.30

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Sample point is dominated by strong and moderate hydrophytes with subdominance of obligate Mentha pulegium. There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-03

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 90 | 2.5YR 3/6 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Soil is moist but not saturated at 6-12".

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☒ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Seasonal wetland is in a swale extension of the low terrace adjacent to the I-2 creek. Input is from a culvert beneath Asti Road, sheetflow from adjacent uplands, and perhaps occasional overflow from the I-2. There are deep cow hoof prints present.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-04

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): Swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78826525620 | Long: -123.00993490900 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: Seasonal wetland is in a swale extension of the low terrace adjacent to the I-2.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Ranunculus muricatus* | 45 | Yes | FACW |
| 2. *Lolium multiflorum* | 25 | Yes | FAC |
| 3. *Mentha pulegium* | 20 | Yes | OBL |
| 4. *Rumex crispus* | 5 | No | FACW |
| 5. *Trifolium gragiferum* | 5 | No | UPL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 20 | x 1 = | 20 |
| FACW species | 50 | x 2 = | 100 |
| FAC species | 25 | x 3 = | 75 |
| FACU species | | x 4 = | 0 |
| UPL species | 5 | x 5 = | 25 |
| Column Totals: | 100 (A) | | 220 (B) |

Prevalence Index = B/A = 2.20

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Sample point is dominated by strong and moderate hydrophytes with subdominance of obligate Mentha pulegium. Trifolium fragiferum is consistently associated with hydrophyte dominated wetlands in the study area. There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-04

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/2 | 80 | 2.5YR 3/6 | 10 | C | M | Clay Loam | |
| | | | 10YR 5/6 | 10 | C | M | | |
| 6-12 | 10YR 3/2 | 90 | 10YR 5/6 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☒ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Seasonal wetland is in a swale extension of the low terrace adjacent to the I-2 creek. Input is from a culvert beneath Asti Road, sheetflow from adjacent uplands, and perhaps occasional overflow from the I-2. There are deep cow hoof prints present.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-05

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78828624900 Long: -123.00993724100 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area** |
| Wetland Hydrology Present? | Yes ( ) | No (●) | **within a Wetland?** Yes ( ) No (●) |

Remarks: Sample point is just beyond the upper edge of seasonal wetland SW-1 in horse grazed non-native annual grassland. Site of this data point is somewhat influenced by adjacent wetlands (e.g. presence of redox features in soil; moderate presence of FAC species) but lacking in vegetation and hydrology indicators.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium dubium* | 70 | Yes | FACU |
| 2. *Cynodon dactylon* | 20 | Yes | FAC |
| 3. *Plantago lanceolata* | 7 | No | FAC |
| 4. *Erodium dissectum* | 1 | No | UPL |
| 5. *Convolvulus arvensis* | 1 | No | UPL |
| 6. *Mentha pulegium* | 1 | No | OBL |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 1 | x 1 = | 1 |
| FACW species | | x 2 = | 0 |
| FAC species | 27 | x 3 = | 81 |
| FACU species | 70 | x 4 = | 280 |
| UPL species | 2 | x 5 = | 10 |
| Column Totals: | 100 (A) | | 372 (B) |

Prevalence Index = B/A = 3.72

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks: Generally in the study area, Lotus purshianus and Convolvulus arvensis are consistently associated with uplands. One of two types of clover is often dominant; Trifolium dubium in uplands and Trifolium fragiferum in wetlands.

## SOIL

Sampling Point: DW-05

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 90 | 2.5YR 3/6 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks: Percentage of redox concentrations is a limit for indicator status. Sample point represents the limit of the extension of hydrological influence of adjacent depression (SW-1) as pertains to soils.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Sample point on the upland edge of wetland depression SW-1, sampled by DW-04.

## WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-06

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78786777370 Long: -123.00986312400 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 9-15% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: Sample point is in a low terrace area adjacent to the I-2 creek which has a low bank.

### VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Mentha pulegium* | 25 | Yes | OBL |
| 2. *Rumex crispus* | 20 | Yes | FACW |
| 3. *Lolium multiflorum* | 5 | No | FAC* |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 50 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 25 | x 1 = | 25 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 5 | x 3 = | 15 |
| FACU species | | x 4 = | 0 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 50 (A) | | 80 (B) |

Prevalence Index = B/A = 1.60

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: 50% open water. Sample point has strong compliment of hydrophytic species. There is a clear disjunction in species complement between wetland and upland.

## SOIL

Sampling Point: DW-06

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2 | gley2.25/10BG | 100 | | | | | Clay Loam | |
| 2-12 | 10YR 3/2 | 90 | 2.5YR 3/6 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☒ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Soil has a very strong odor.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ◉ No ○ Depth (inches): 2"

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Sample point under 2" of water. Hydrological input is from culvert beneath Asti Road (through wetland SW-1), sheetflow from adjacent uplands, and overflow from the adjacent I-2 creek.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-07

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78798758850 Long: -123.00985952900 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 9-15% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: Sample point is in a low terrace area adjacent to the I-2 creek which has a low bank.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Lolium multiflorum* | 50 | Yes | FAC* |
| 2. *Trifolium fragiferum* | 20 | Yes | UPL |
| 3. *Mentha pulegium* | 20 | Yes | OBL |
| 4. *Cyperus eragrostis* | 10 | No | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 20 | x 1 = | 20 |
| FACW species | 10 | x 2 = | 20 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | | x 4 = | 0 |
| UPL species | 20 | x 5 = | 100 |
| Column Totals: | 100 (A) | | 290 (B) |

Prevalence Index = B/A = 2.90

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Generally in the study area, one of two types of clover is often dominant- Trifolium dubium in the uplands and Trifolium fragiferum (not listed, given UPL status per Arid West supplement guidelines) in wetlands. The sample point has a strong compliment of hydrophytic species. There is a clear disjunction in species complement between wetland and the adjacent upland.

## SOIL

Sampling Point: DW-07

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 90 | 2.5YR 3/6 | 10 | C | M | Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ◉ No ○ Depth (inches): 2"

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Soil is moist but not saturated at 6-12". Hydrological input is from culvert beneath Asti Road (through wetland SW-1), sheetflow from adjacent uplands, and overflow from the adjacent I-2 creek.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-08

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78805359700 Long: -123.00987512100 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 9-15% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area** |
| Wetland Hydrology Present? | Yes (●) | No ( ) | **within a Wetland?** Yes ( ) No (●) |

Remarks: The sample point is is a broad swale that contains areas of wetlands above (SW-1) and below (SW-2) it. The swale begins at a culvert outlet from beneath Asti Road, flows through seasonal wetland SW-1, then though a length of broad swale with weak soil and hydrological indicators, but lacking vegetation indicators, then into seasonal wetland SW-2, then into I-2.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Bromus hordeaceus* | 50 | Yes | FACU |
| 2. *Trifolium dubium* | 30 | Yes | FACU |
| 3. *Lotus purshianus var. purshianus* | 10 | No | UPL |
| 4. *Dipsacus sativus* | 8 | No | UPL |
| 5. *Geranium dissectum* | 2 | No | UPL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | | x 3 = | 0 |
| FACU species | 80 | x 4 = | 320 |
| UPL species | 20 | x 5 = | 100 |
| Column Totals: | 100 (A) | | 420 (B) |

Prevalence Index = B/A = 4.20

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks:

## SOIL

Sampling Point: DW-08

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/2 | 95 | 2.5YR 3/6 | 5 | C | M | Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks: Point is located in a broad swale between seasonal wetlands SW-1 and SW-2. Apparently period of saturation is sufficient for the development of observed redox feature.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Oxidized rhizospheres few, in upper 4". Sample point is in broad swale area between seasonal wetlands SW-1 and SW-2.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-09

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Convex | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78978895460 | Long: -123.01038998700 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The sample point is in grazed upland adjacent to seasonal wetland SW-3. The sample point is within the area subject to the hydrological regime of the adjacent wetland, enough so to result in slight soil and hydrological indicators, but not to support hydric vegetation.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Hordeum marinum ssp. gussoneanum* | 40 | Yes | FAC |
| 2. *Trifolium dubium* | 20 | Yes | FACU |
| 3. *Hypochaeris radicata* | 15 | No | UPL |
| 4. *Allium sp.* | 10 | No | UPL |
| 5. *Erodium cicutarium* | 10 | No | UPL |
| 6. *Plantago lanceolata* | 5 | No | FAC* |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 45 | x 3 = | 135 |
| FACU species | 20 | x 4 = | 80 |
| UPL species | 35 | x 5 = | 175 |
| Column Totals: | 100 (A) | | 390 (B) |

Prevalence Index = B/A = 3.90

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks: Vegetation at the sample has weak hydric tendencies, but not within the range to be a hydric indicator. The sample point was within the upland portion of the clearly visible disjunction between upland and wetland vegetation at SW-3.

## SOIL

Sampling Point: DW-09

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 4/3 | 85 | 7.5YR 4/6 | 15 | C | M | Clay Loam | Redox features fine |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Oxidized rhizospheres few, in upper 4"..

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-10

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78982610160 Long: -123.01039621400 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area** |
| Wetland Hydrology Present? | Yes (●) | No ( ) | **within a Wetland?** Yes ( ) No (●) |

Remarks: The sample point is in grazed upland adjacent to seasonal wetland SW-3. Further upland than DW-9 The sample point is within the area subject to the hydrological regime of the adjacent wetland, enough so to result in hydrological indicators, but not to support hydric vegetation or soil indicators.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Erodium cicutarium* | 70 | Yes | UPL |
| 2. *Allium sp.* | 15 | No | UPL |
| 3. *Bromus hordeaceus* | 10 | No | FACU |
| 4. *Hypochaeris radicata* | 5 | No | UPL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | | x 3 = | 0 |
| FACU species | 10 | x 4 = | 40 |
| UPL species | 90 | x 5 = | 450 |
| Column Totals: | 100 (A) | | 490 (B) |

Prevalence Index = B/A = 4.90

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks:

## SOIL

Sampling Point: DW-10

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 4/3 | 100 | | | | | Clay Loam | gravelly |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: A few oxidized root channels in the 0-2" layer.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-11

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78993465120 Long: -123.01039995900 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: The sample point is in grazed upland typical for the study area. Clearly lacking in any wetland indicators.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Erodium dissectum* | 80 | Yes | UPL |
| 2. *Avena fatua* | 10 | No | UPL |
| 3. *Trifolium dubium* | 5 | No | FACU |
| 4. *Allium sp.* | 4 | No | UPL |
| 5. *Vicia sp.* | 1 | No | UPL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | | x 3 = | 0 |
| FACU species | 5 | x 4 = | 20 |
| UPL species | 95 | x 5 = | 475 |
| Column Totals: | 100 (A) | | 495 (B) |

Prevalence Index = B/A = 4.95

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks:

## SOIL

Sampling Point: DW-11

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 4/2 | 100 | | | | | Clay Loam | very clayey |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks: Soil is not as compact as DW-9 and DW-10

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-12

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78971600460 | Long: -123.01037587400 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium fragiferum* | 50 | Yes | UPL |
| 2. *Ranunculus muricatus* | 20 | Yes | FACW |
| 3. *Mentha pulegium* | 20 | Yes | OBL |
| 4. *Vulpia myuros* | 5 | No | FACU |
| 5. *Rumex crispus* | 5 | No | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 20 | x 1 = | 20 |
| FACW species | 25 | x 2 = | 50 |
| FAC species | | x 3 = | 0 |
| FACU species | 5 | x 4 = | 20 |
| UPL species | 50 | x 5 = | 250 |
| Column Totals: | 100 (A) | | 340 (B) |

Prevalence Index = B/A = 3.40

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Sample point is dominated by strong and moderate hydrophytes. Trifolium fragiferum is consistently associated with hydrophyte dominated wetlands within the study area. There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-12

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 60 | 7.5YR 4/4 | 40 | C | M | Clay Loam | Very loamy |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Soil is moist, but not saturated.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-13

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78965417070 | Long: -123.01024826600 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Ranunculus muricatus* | 60 | Yes | FACW |
| 2. *Mentha pulegium* | 15 | No | OBL |
| 3. *Rumex crispus* | 15 | No | FACW |
| 4. *Trifolium fragiferum* | 10 | No | UPL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 15 | x 1 = | 15 |
| FACW species | 75 | x 2 = | 150 |
| FAC species | | x 3 = | 0 |
| FACU species | | x 4 = | 0 |
| UPL species | 10 | x 5 = | 50 |
| Column Totals: | 100 (A) | | 215 (B) |

Prevalence Index = B/A = 2.15

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Sample point is dominated by strong and moderate hydrophytes. Trifolium fragiferum is consistently associated with hydrophyte dominated wetlands within the study area. There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-13

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 2/1 | 70 | 5YR 4/2 | 30 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[4]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-14

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78970350910 | Long: -123.01020003200 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Mentha pulegium* | 50 | Yes | OBL |
| 2. *Lolium multiflorum* | 20 | Yes | FAC* |
| 3. *Rumex crispus* | 10 | No | FACW |
| 4. *Callitriche marginata* | 10 | No | OBL |
| 5. *Ranunculus muricatus* | 5 | No | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 95 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 60 | x 1 = | 60 |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | | x 4 = | 0 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 95 (A) | | 150 (B) |

Prevalence Index = B/A = 1.58

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Sample point is dominated by strong and moderate hydrophytes. Sub-dominants are strongly hydrophytic. There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-14

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 2/1 | 70 | 5YR 4/3 | 30 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Near edge of ponded area. Deep cattle hoof prints are present.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-15

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78964924370 | Long: -123.01018549900 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium fragiferum* | 70 | Yes | UPL |
| 2. *Lolium multiflorum* | 20 | Yes | FAC* |
| 3. *Allium sp.* | 3 | No | UPL |
| 4. *Ranunculus muricatus* | 5 | No | FACW |
| 5. *Rumex crispus* | 1 | No | FACW |
| 6. *Polygonum sp.* | 1 | No | FACW |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 7 | x 2 = | 14 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | | x 4 = | 0 |
| UPL species | 73 | x 5 = | 365 |
| Column Totals: | 100 (A) | | 439 (B) |

Prevalence Index = B/A = 4.39

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [x] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Trifolium fragiferum is consistenly associated with hydrophyte dominated wetlands in the study area. This species is not listed on the wetland indicator list and therefore the indicator status of UPL must be used per the Arid West Supplement guidelines. Because of this, the vegetation is considered problematic. However, both soil and hydrology qualify, therefore allowing vegetation to also qualify as problematic.

## SOIL

Sampling Point: DW-15

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 70 | 7.5YR 4/4 | 25 | C | M | Clay Loam | |
| | | | 5YR 4/6 | 5 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-16

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78958767390 Long: -123.01015373900 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium fragiferum* | 40 | Yes | UPL |
| 2. *Lolium multiflorum* | 30 | Yes | FAC* |
| 3. *Allium sp.* | 17 | No | UPL |
| 4. *Ranunculus muricatus* | 5 | No | FACW |
| 5. *Polygonum sp.* | 5 | No | FACW |
| 6. *Plantago lanceolata* | 1 | No | FAC |
| 7. *Trifolium dubium* | 1 | No | FACU |
| 8. *Lotus purshianus var. purshianus* | 1 | No | UPL |
| Total Cover: | 100 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 10 | x 2 = | 20 |
| FAC species | 31 | x 3 = | 93 |
| FACU species | 1 | x 4 = | 4 |
| UPL species | 58 | x 5 = | 290 |
| Column Totals: | 100 (A) | | 407 (B) |

Prevalence Index = B/A = 4.07

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [x] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Trifolium fragiferum is consistenly associated with hydrophyte dominated wetlands in the study area. This species is not listed on the wetland indicator list and therefore the indicator status of UPL must be used per the Arid West Supplement guidelines. Because of this, the vegetation is considered problematic. However, both soil and hydrology qualify, therefore allowing vegetation to also qualify as problematic.

## SOIL

Sampling Point: DW-16

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 80 | 7.5YR 4/4 | 15 | C | M | Clay Loam | some gravel |
| | | | 5YR 4/6 | 5 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-17

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Convex | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78952192770 | Long: -123.01008997700 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ○ | No ◉ | |
| Hydric Soil Present? | Yes ○ | No ◉ | **Is the Sampled Area within a Wetland?** Yes ○ No ◉ |
| Wetland Hydrology Present? | Yes ○ | No ◉ | |

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3. The sample point is within the area subject to the hydrological regime of the adjacent wetland, enough to result in redox features in the soil, but not to support hydric vegetation. No wetland hydrology indicators were observed.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Allium sp.* | 45 | Yes | UPL |
| 2. *Trifolium dubium* | 30 | Yes | FACU |
| 3. *Hordeum marinum ssp. gussoneanum* | 12 | No | FAC |
| 4. *Trifolium fragiferum* | 9 | No | UPL |
| 5. *Hypochaeris radicata* | 1 | No | UPL |
| 6. *Plantago lanceolata* | 1 | No | FAC |
| 7. *Geranium dissectum* | 1 | No | UPL |
| 8. *Ranunculus muricatus* | 1 | No | FACW |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 1 | x 2 = | 2 |
| FAC species | 13 | x 3 = | 39 |
| FACU species | 30 | x 4 = | 120 |
| UPL species | 56 | x 5 = | 280 |
| Column Totals: | 100 (A) | | 441 (B) |

Prevalence Index = B/A = 4.41

**Hydrophytic Vegetation Indicators:**

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ○ No ◉

Remarks: The annual grassland is moderately to heavily grazed by horses.

## SOIL

Sampling Point: DW-17

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 90 | 7.5YR 4/6 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-18

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78962800190 | Long: -123.00977088000 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium fragiferum* | 70 | Yes | UPL |
| 2. *Rumex crispus* | 20 | Yes | FACW* |
| 3. *Lolium multiflorum* | 10 | No | FAC* |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | | x 4 = | 0 |
| UPL species | 70 | x 5 = | 350 |
| Column Totals: | 100 (A) | | 420 (B) |

Prevalence Index = B/A = 4.20

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [x] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Trifolium fragiferum is consistenly associated with hydrophyte dominated wetlands in the study area. This species is not listed on the wetland indicator list and therefore the indicator status of UPL must be used per the Arid West Supplement guidelines. Because of this, the vegetation is considered problematic. However, both soil and hydrology qualify, therefore allowing vegetation to also qualify as problematic.

## SOIL

Sampling Point: DW-18

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 65 | 7.5YR 3/4 | 30 | C | M | Clay Loam | |
| | | | 5YR 4/6 | 5 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Moist but not saturated.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-19

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78946584060 | Long: -123.00969550100 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Lolium multiflorum* | 50 | Yes | FAC* |
| 2. *Rumex crispus* | 20 | Yes | FACW* |
| 3. *Trifolium fragiferum* | 20 | Yes | UPL |
| 4. *Geranium dissectum* | 5 | No | UPL |
| 5. *Mentha pulegium* | 5 | No | OBL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 5 | x 1 = | 5 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | | x 4 = | 0 |
| UPL species | 25 | x 5 = | 125 |
| Column Totals: | 100 (A) | | 320 (B) |

Prevalence Index = B/A = 3.20

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-19

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 65 | 7.5YR 3/4 | 30 | C | M | Clay Loam | |
| | | | 5YR 4/6 | 5 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct. Heavy clay.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Moist but not saturated.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-20

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Convex | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78933243100 | Long: -123.00975188000 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Bromus hordeaceus* | 60 | Yes | FACU |
| 2. *Allium sp.* | 20 | Yes | UPL |
| 3. *Trifolium dubium* | 8 | No | FACU |
| 4. *Geranium dissectum* | 5 | No | UPL |
| 5. *Plantago lanceolata* | 5 | No | FAC |
| 6. *Ranunculus muricatus* | 1 | No | FACW* |
| 7. *Vicia sp.* | 1 | No | UPL |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 1 | x 2 = | 2 |
| FAC species | 5 | x 3 = | 15 |
| FACU species | 68 | x 4 = | 272 |
| UPL species | 26 | x 5 = | 130 |
| Column Totals: | 100 (A) | | 419 (B) |

Prevalence Index = B/A = 4.19

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks: The annual grassland is moderately to heavily grazed by horses.

## SOIL

Sampling Point: DW-20

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 90 | 7.5YR 4/6 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-21

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78986820770 Long: -123.00973284400 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (•) | |
| Hydric Soil Present? | Yes ( ) | No (•) | **Is the Sampled Area within a Wetland?** Yes ( ) No (•) |
| Wetland Hydrology Present? | Yes ( ) | No (•) | |

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Allium sp.* | 30 | Yes | UPL |
| 2. *Bromus hordeaceus* | 20 | Yes | FACU |
| 3. *Trifolium dubium* | 20 | Yes | FACU |
| 4. *Erodium dissectum* | 20 | Yes | UPL |
| 5. *Plantago lanceolata* | 5 | No | FAC |
| 6. *Anagallis arvensis* | 5 | No | FAC |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 40 | x 4 = | 160 |
| UPL species | 50 | x 5 = | 250 |
| Column Totals: | 100 (A) | | 440 (B) |

Prevalence Index = B/A = 4.40

**Hydrophytic Vegetation Indicators:**

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (•)

Remarks: The annual grassland is moderately to heavily grazed by horses.

## SOIL

Sampling Point: DW-21

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 4/3 | 100 | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks: Soil is very dry.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-22

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78963143690 | Long: -123.00924973100 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium fragiferum* | 40 | Yes | UPL |
| 2. *Rumex crispus* | 30 | Yes | FACW* |
| 3. *Lolium multiflorum* | 23 | Yes | FAC* |
| 4. *Ranunculus muricatus* | 5 | No | FACW |
| 5. *Mentha pulegium* | 1 | No | OBL |
| 6. *Vulpia myuros* | 1 | No | FACU |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 1 | x 1 = | 1 |
| FACW species | 35 | x 2 = | 70 |
| FAC species | 23 | x 3 = | 69 |
| FACU species | 1 | x 4 = | 4 |
| UPL species | 40 | x 5 = | 200 |
| Column Totals: | 100 (A) | | 344 (B) |

Prevalence Index = B/A = 3.44

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-22

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 2/2 | 60 | 7.5YR 4/4 | 20 | C | M | Clay Loam | |
| | | | 5YR 4/6 | 20 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Moist but not saturated.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-23

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Convex | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78950886990 | Long: -123.00916902400 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium dubium* | 40 | Yes | FACU |
| 2. *Erodium dissectum* | 30 | Yes | UPL |
| 3. *Bromus hordeaceus* | 20 | Yes | FACU |
| 4. *Plantago lanceolata* | 10 | No | FAC |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 60 | x 4 = | 240 |
| UPL species | 30 | x 5 = | 150 |
| Column Totals: | 100 (A) | | 420 (B) |

Prevalence Index = B/A = 4.20

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks: The annual grassland is moderately to heavily grazed by horses.

## SOIL

Sampling Point: DW-23

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/4 | 100 | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-24

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range:

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78988786480 | Long: -123.00882626000 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Lolium multiflorum* | 50 | Yes | FAC* |
| 2. *Rumex crispus* | 40 | Yes | FACW* |
| 3. *Geranium dissectum* | 1 | No | UPL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 91 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 9 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 40 | x 2 = | 80 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | | x 4 = | 0 |
| UPL species | 1 | x 5 = | 5 |
| Column Totals: | 91 (A) | | 235 (B) |

Prevalence Index = B/A = 2.58

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-24

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 2/2 | 85 | 10YR 4/1 | 15 | C | M | Clay Loam | |
| 6-12 | 10YR 4/1 | 60 | 5YR 3/4 | 20 | C | M | Clay Loam | |
| | | | 10YR 2/2 | 20 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Moist but not saturated.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-25

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78981116700 Long: -123.00878338800 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium dubium* | 60 | Yes | FACU |
| 2. *Vulpia myuros* | 15 | No | FACU |
| 3. *Bromus hordeaceus* | 10 | No | FACU |
| 4. *Unknown annual herb* | 13 | No | UPL |
| 5. *Plantago lanceolata* | 1 | No | FAC |
| 6. *Erodium dissectum* | 1 | No | UPL |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 1 | x 3 = | 3 |
| FACU species | 85 | x 4 = | 340 |
| UPL species | 14 | x 5 = | 70 |
| Column Totals: | 100 (A) | | 413 (B) |

Prevalence Index = B/A = 4.13

**Hydrophytic Vegetation Indicators:**

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks: The annual grassland is moderately to heavily grazed by horses.

## SOIL

Sampling Point: DW-25

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 4/6 | 90 | 10YR 5/6 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria City/County: Sonoma Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture State: CA Sampling Point: DW-26

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): C - Mediterranean California Lat: 38.78986744580 Long: -123.00829987700 Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: The sample point was taken in grazed upland adjacent to seasonal wetland SW-3.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Bromus hordeaceus* | 60 | Yes | FACU |
| 2. *Trifolium dubium* | 27 | Yes | FACU |
| 3. *Vulpia myuros* | 7 | No | FACU |
| 4. *Unknown annual herb* | 5 | No | UPL |
| 5. *Rumex crispus* | 1 | No | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 1 | x 2 = | 2 |
| FAC species | | x 3 = | 0 |
| FACU species | 94 | x 4 = | 376 |
| UPL species | 5 | x 5 = | 25 |
| Column Totals: | 100 (A) | | 403 (B) |

Prevalence Index = B/A = 4.03

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks: The annual grassland is moderately to heavily grazed by horses.

## SOIL

Sampling Point: DW-26

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 4/4 | | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks: Soil is dry.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-27

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.78996948580 | Long: -123.008285009300 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Lolium multiflorum* | 60 | Yes | FAC* |
| 2. *Rumex crispus* | 25 | Yes | FACW* |
| 3. *Vulpia myuros* | 9 | No | FACU |
| 4. *Trifolium fragiferum* | 5 | No | UPL |
| 5. *Trifolium dubium* | 1 | No | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 25 | x 2 = | 50 |
| FAC species | 60 | x 3 = | 180 |
| FACU species | 10 | x 4 = | 40 |
| UPL species | 5 | x 5 = | 25 |
| Column Totals: | 100 (A) | | 295 (B) |

Prevalence Index = B/A = 2.95

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-27

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 80 | 7.5YR 3/4 | 20 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-28

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.79049618300 | Long: -123.00712318300 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Lolium multiflorum* | 50 | Yes | FAC* |
| 2. *Rumex crispus* | 20 | Yes | FACW* |
| 3. *Ranunculus muricatus* | 10 | No | FACW |
| 4. *Medicago polymorpha* | 1 | No | UPL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 81 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 9 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 30 | x 2 = | 60 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | | x 4 = | 0 |
| UPL species | 1 | x 5 = | 5 |
| Column Totals: | 81 (A) | | 215 (B) |

Prevalence Index = B/A = 2.65

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Algal matting. There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-28

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/2 | 80 | 7.5YR 4/6 | 20 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features are very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☒ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 3/19/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-29

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Convex | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.79043415280 | Long: -123.00713272200 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: The sample point was taken in grazed upland adjacent to DW-28 in seasonal wetland SW-3.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Medicago polymorpha* | 70 | Yes | UPL |
| 2. *Bromus diandrus* | 27 | Yes | UPL |
| 3. *Vulpia myuros* | 1 | No | FACU |
| 4. *Ranunculus muricatus* | 1 | No | FACW |
| 5. *Lotus purshianus var. purshianus* | 1 | No | UPL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | 1 | x 2 = | 2 |
| FAC species | | x 3 = | 0 |
| FACU species | 1 | x 4 = | 4 |
| UPL species | 98 | x 5 = | 490 |
| Column Totals: | 100 (A) | | 496 (B) |

Prevalence Index = B/A = 4.96

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks:

## SOIL

Sampling Point: DW-29

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/3 | 100 | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 1/14/09

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-30

Investigator(s): Chariss Tweedy | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): none | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 38.78780368030 | Long: -123.00987386200 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 9-15% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: Sample point is at the edge of a Freshwater Emergent Wetland. Water source is from culvert under road. Wetland feeds into Coyote Creek (I-2).

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | 0 % | | |
| **Herb Stratum** | | | |
| 1. *Nasturtium officinale* | 50 | Yes | OBL |
| 2. *Typha angustifolia* | 25 | Yes | OBL |
| 3. *Polygonum amphibium var. emersum* | 10 | No | OBL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 85 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 15 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 85 | x 1 = | 85 |
| FACW species | | x 2 = | 0 |
| FAC species | | x 3 = | 0 |
| FACU species | | x 4 = | 0 |
| UPL species | | x 5 = | 0 |
| Column Totals: | 85 (A) | | 85 (B) |

Prevalence Index = B/A = 1.00

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: Cattails are very thick in most of the wetland. Data point was taken at the edge of a more open area.

## SOIL

Sampling Point: DW-30

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | Gley 2 2.5/10G | 100 | | | | | Sandy Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes (●) No ( )

Remarks: Soil is very mucky and has a very strong odor.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Thin Muck Surface (C7)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ( ) No (●) Depth (inches):

Water Table Present? Yes ( ) No (●) Depth (inches):

Saturation Present? (includes capillary fringe) Yes (●) No ( ) Depth (inches): Surface

**Wetland Hydrology Present?** Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks: Data point is located at the edge of the standing water. Saturated at the surface.

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 5/6/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-31

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.79007005090 | Long: -123.00778598300 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes (●) | No ( ) | |
| Hydric Soil Present? | Yes (●) | No ( ) | **Is the Sampled Area within a Wetland?** Yes (●) No ( ) |
| Wetland Hydrology Present? | Yes (●) | No ( ) | |

Remarks: The seasonal wetland SW-3 sampled by this data point is part of a large swale. Input is a the culvert beneath Asti Road and sheetflow from adjacent uplands. The swale flows to the east where it empties into a culvert which traverses beneath a dirt road and the railroad ROW, eventually draining into Porterfield Creek.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Hordeum marinum ssp. gussoneanum* | 60 | Yes | FAC |
| 2. *Lolium multiflorum* | 35 | Yes | FAC* |
| 3. *Mentha pulegium* | 4 | No | OBL |
| 4. *Convolvulus arvensis* | 1 | No | UPL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100 % | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 4 | x 1 = | 4 |
| FACW species | | x 2 = | 0 |
| FAC species | 95 | x 3 = | 285 |
| FACU species | | x 4 = | 0 |
| UPL species | 1 | x 5 = | 5 |
| Column Totals: | 100 (A) | | 294 (B) |

Prevalence Index = B/A = 2.94

**Hydrophytic Vegetation Indicators:**

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes (●) No ( )

Remarks: There is a clear disjunction in species complement between wetland and adjacent upland.

## SOIL

Sampling Point: DW-31

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 2/1 | 90 | 10YR 3/4 | 10 | C | M | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks: Redox features very distinct.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Cloverdale Rancheria | City/County: Sonoma | Sampling Date: 5/6/08

Applicant/Owner: Cloverdale Rancheria Tribal Venture | State: CA | Sampling Point: DW-32

Investigator(s): Mark Fogiel, Kiffanie Stahl, David Beecroft | Section, Township, Range: Rincon De Musalacon Land Grant

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): Convex | Slope (%):

Subregion (LRR): C - Mediterranean California | Lat: 38.79010346760 | Long: -123.00781510000 | Datum: NAD 83

Soil Map Unit Name: Positas Gravelly Loam, 0-9% slopes | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ( ) | No (●) | |
| Hydric Soil Present? | Yes ( ) | No (●) | **Is the Sampled Area within a Wetland?** Yes ( ) No (●) |
| Wetland Hydrology Present? | Yes ( ) | No (●) | |

Remarks: The sample point was taken in grazed upland adjacent to DW-31 in seasonal wetland SW-3.

## VEGETATION

| Tree Stratum (Use scientific names.) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| Total Cover: | % | | |
| **Sapling/Shrub Stratum** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| Total Cover: | % | | |
| **Herb Stratum** | | | |
| 1. *Trifolium dubium* | 80 | Yes | FACU |
| 2. *Hordeum murinum ssp. leporinum* | 10 | No | UPL |
| 3. *Colvolvulus arvensis* | 9 | No | UPL |
| 4. *Lolium multiflorum* | 1 | No | FAC* |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| Total Cover: | 100% | | |
| **Woody Vine Stratum** | | | |
| 1. | | | |
| 2. | | | |
| Total Cover: | % | | |

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | 0 |
| FACW species | | x 2 = | 0 |
| FAC species | 1 | x 3 = | 3 |
| FACU species | 80 | x 4 = | 320 |
| UPL species | 19 | x 5 = | 95 |
| Column Totals: | 100 (A) | | 418 (B) |

Prevalence Index = B/A = 4.18

**Hydrophytic Vegetation Indicators:**

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes ( ) No (●)

Remarks:

## SOIL

Sampling Point: DW-32

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture[3] | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 4/2 | 100 | | | | | Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils:[4]**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Hydric Soil Present?** Yes ○ No ◉

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Thin Muck Surface (C7)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

# Appendix C
## Photo Appendix

ESA

PHOTOGRAPH 1. West Study Area – Coyote Creek (I-2)

PHOTOGRAPH 2. West Study Area – Seasonal Wetland SW-1

SOURCE: ESA, 2008

PHOTOGRAPH 3. West Study Area – Seasonal Wetland SW-3

PHOTOGRAPH 4. West Study Area – Upland Non-Native Grassland (pasture)

SOURCE: ESA, 2008

PHOTOGRAPH 5. West Study Area – Freshwater Emergent Wetland (January 14, 2009)

PHOTOGRAPH 6. East Study Area – Porterfield Creek



SOURCE: ESA, 2008

**Appendix C-3**
Project Site Photographs

PHOTOGRAPH 7. East Study Area – Porterfield Creek

PHOTOGRAPH 8. East Study Area – Wasterwater Treatment Plant Overflow Basin

SOURCE: ESA, 2008

PHOTOGRAPH 9. East Study Area – Agricultural Ditch (January 14, 2009)

PHOTOGRAPH 10. East Study Area – Ponded Area Feeding into Agricultural Ditch (January 14, 2009)



SOURCE: ESA, 2009

**Appendix C-5**
Project Site Photographs

# Appendix P
## LM?? Dgqfcpgcq _lb
## USFWS Letters

**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

July 18, 2011

In response refer to:
2010/06482

Amy Dutschke, Regional Director
Bureau of Indian Affairs, Pacific Region
2800 Cottage Way
Sacramento, California 95825

Dear Ms. Dutschke:

Thank you for your letter of December 1, 2010, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 as amended (ESA), and the Essential Fish Habitat (EFH) provisions of the Magnuson Stevens Fishery Conservation and Management Act (MSA) for the proposed fee-to-trust conveyance and subsequent development of the Cloverdale Rancheria of Pomo Indians' Resort Hotel and Casino project on 69.77± acres near the City of Cloverdale in Sonoma County California. These consultations pertain to a Bureau of Indian Affairs, U.S. Department of the Interior (BIA) proposed fee-to-trust conveyance of six parcels of real property totaling approximately 69.77 acres. The fee-to-trust conveyance of the 6 parcels is proposed by BIA on behalf of the Cloverdale Rancheria of Pomo Indians (Tribe). The property is proposed by the Tribe for fee-to-trust conveyance for development of a Resort Hotel and Casino on the proposed parcels.

NMFS staff has reviewed the Cloverdale Rancheria of Pomo Indians Fee-to-Trust Conveyance and Resort Casino Draft Environmental Impact Statement (DEIS) (Environmental Science Associates, August 2010) and the Biological Assessment prepared for the BIA (Environmental Science Associates, March 2009). NMFS staff visited the site and walked the property and stream channels on February 22, 2011, and has reviewed the additional hydrological reports we requested at that time, which were received April 19, 2011 (Hydrometrics, April 2011).

The project proposal includes construction of a two story, 211,445 square foot Casino and support services building, a 287,000 square foot Hotel complex of up to four stories tall, a two story, 48,600 square foot Convention Center, a 28,100 square foot Entertainment Center building, and a 20,000 square foot Tribal Government Administration building. Approximately 3,400 parking spaces would be constructed, including a parking garage structure up to five stories above ground level and surface parking sites. Ancillary components of the project include the drainage system, water supply, wastewater services, driveways, fire protection and

law enforcement for the project site. Both the water supply system and waste water treatment will either be provided privately onsite or in partnership with the City of Cloverdale Municipal water supply and wastewater treatment facilities.

**Endangered Species Act (ESA)**

Available information indicates that ESA listed species of the following Distinct Population Segments [DPS] or Evolutionarily Significant Units [ESU]) may occur near the project site:

**California Coastal Chinook salmon ESU** (*Oncorhynchus tshawytscha*)
**Threatened** (June 28, 2005, 70 FR 37160)
Designated critical habitat (September 2, 2005, 70 FR 52488)

**Central California Coast (CCC) coho salmon ESU** (*Oncorhynchus kisutch*)
**Endangered** (June 28, 2005; 70 FR 37160)
Designated critical habitat (May 5, 1999; 64 FR 24049)

**Central California Coast steelhead DPS** *(O. mykiss)*
**Threatened** (January 5, 2006; 71 FR 834)
Designated critical habitat (September 2, 2005; 70 FR 52488)

The project site is in the upper reach of the Alexander Valley and bounded on the eastern side by the Russian River which is designated critical habitat for the three species listed above. Chinook salmon and steelhead are known to migrate, spawn and rear in the river in the upper Alexander Valley. Coho salmon distribution in the Russian River is not currently known to extend above Dry Creek, a tributary that joins the Russian River downstream of Alexander Valley, just below the city of Healdsburg, nearly 30 miles downriver. The six parcels of the project site are bisected by a tributary to the Russian River, Porter Creek, and bounded on the southern side by a tributary to Porter Creek, named Coyote Creek. Steelhead are known to spawn, migrate and rear in these two creeks. Chinook salmon and coho salmon are not known to utilize these two creeks, nor are they expected to due to the small size of the creeks. Porter Creek through the project site is an ephemeral stream, going dry in the late spring through fall period. Coyote Creek is a spring fed stream which maintains surface flow to near the confluence with Porter Creek throughout the year and supports rearing steelhead year round.

NMFS has evaluated the proposed project for potential effects to ESA-listed anadromous salmonids and their designated critical habitat. Direct and indirect effects of proposed project actions which have potential to affect ESA listed Pacific salmonids, designated critical habitat, and EFH could include altering hydrology of the site, release of potentially contaminated runoff from impervious surfaces entering the stream system and Russian River, encroachment on riparian vegetation, groundwater pumping, wastewater discharges, and construction of points of discharge (POD) for storm drainage and wastewater treatment facilities.

Direct effects to salmonids and critical habitat are not expected to result from the project as all construction will occur in upland sections of the action area well away from stream and river channels. Encroachment into riparian areas is limited to 0.11 acres of the current total of 1.37 acres, resulting in an 8 percent reduction. However, the project's proposed 70 foot setback from

tributary channels and 200 feet from the river channel for all construction will allow for re-establishment of native riparian vegetation in disturbed areas near the channels in which the riparian zones are historically degraded from use as pasture. Construction of PODs to Porter Creek will occur when the stream is without flow or standing water in the summer period.

The potential for indirect effects on listed salmonids and critical habitat from project actions have been minimized to discountable levels by incorporating into the project conservation measures to either avoid or mitigate potential impacts. The storm water hydrology of the action area is not likely to be significantly altered because existing roads, constructed driveways and parking areas will be surfaced with porous concrete, and runoff from roofs will be discharged directly to landscaping areas and driveways. Surface runoff from driveways and parking areas will be routed through bioswales to remove potential contaminants and into an upland drainage-detention-and- release system designed to handle a 10-year precipitation event, rather than being discharged directly into action area stream channels. The project's Storm Water Pollution Prevention Plan includes best management practices (BMPs) during construction to prevent erosion and transport of fine sediments to stream channels. Landscaping and use of slope protection measures such as hydroseeding, planting native vegetation, use of natural fiber soil reinforcement mats and retaining wall construction will prevent erosion and transport of fine sediments into the Russain River and area streams after the project site construction.

As described above and in the DEIS, the project's water supply system will either use water furnished by the City of Cloverdale municipal system, or from onsite wells near the Russian River. If onsite wells are used, NMFS does not expect onsite well pumping will have an impact on summer surface flows in the action area. Well testing by an accredited engineering firm found there was not a significant capture effect on Russian River flows induced by extended well pumping (HydroMetrics, April 2011). The potential onsite use of wells near the Russian River are also not expected to effect the perennial flow of Coyote Creek which supports summer rearing of steelhead, as this short section of perennial flow is upstream of the wellhead location and the springs which feed this perennial section of stream are far removed (> ¼ mile) and are at a significantly higher elevation than the well head.

Also as described above and in the DEIS, the waste water system servicing the project will either be provided by the Cloverdale City municipal system, or from a system developed by the Tribe. If wastewater is handled by the Cloverdale municipal system, no adverse effects to salmonids or critical habitat are anticipated as the quality, quantity and season of discharges to the Russian River are regulated by the California Regional Quality Control Board to insure no adverse impacts to aquatic life and habitat. If an onsite system is developed by the Tribe, as a sovereign entity, permits will be required from the Environmental Protection Agency (EPA), and thus NMFS will conduct ESA section 7 consultation with the EPA for the issuance of the requisite discharge permits at that time.

Based on the best available scientific information, NMFS concurs with the BIA's determination that the proposed action and subsequent project development is not likely to adversely affect listed salmonids or their designated critical habitat. This concludes consultation in accordance with 50 CFR §402.13(a) for the proposed fee-to-trust conveyance and subsequent development of the Cloverdale Rancheria of Pomo Indians' Resort Hotel and Casino project. However,

further consultation may be required if: (1) new information becomes available indicating that listed species or critical habitat may be affected by the project in a manner or to an extent not previously considered; (2) current project plans change in a manner that causes an effect to listed species or critical habitat in a manner not previously considered; or (3) a new species is listed or critical habitat designated that may be affected by the action.

**Magnuson-Stevens Fishery Conservation and Management Act**

The project is located in the Russian River watershed within an area identified as EFH for various life stages of fish species managed with the following Fishery Management Plans (FMP) under the MSA:

**Pacific Salmon FMP** – Chinook salmon and Coho salmon.

NMFS has evaluated the proposed project for potential adverse effects to EFH pursuant to section 305(b)(2) of the MSA. NMFS concludes that with implementation of BMPs during construction, construction of the Storm Water Pollution Prevention Plan system designed specifically for the project site, the use of porous paving materials, and the project's incorporation of tributary stream and river setbacks into the design plan, the proposed project will not adversely affect EFH present in the Russian River adjacent to the project site. Therefore NMFS does not have further EFH conservation recommendations for this proposed project.

This concludes EFH consultation for the proposed fee-to-trust conveyance and subsequent development of the Cloverdale Rancheria of Pomo Indians' Resort Hotel and Casino project near Cloverdale California. Pursuant to 50 CFR 600.920(l) of the EFH regulations, the BIA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations.

If you have any questions about these consultations, please contact John McKeon at (707) 575-6069.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: John Rydzik, BIA, Sacramento
Patrick O'Mallan, BIA, Sacramento
Carl Wilcox, CDFG, Yountville
Copy to file, ARN 151422SWR2010SR00456

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

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2009 JUL 16 PM 1:

PACIFIC REGIONAL OFFICE

In Reply Refer To:
81420-2009-I-0618

JUL 16 2009

Reg Dir Amy
Dep Reg Dir Todd
Reg Adm Ofcr
Route DecRms
Response Required No
Due Date
Memo Ltr
Tele

**Memorandum**

**To:** Regional Director, Pacific Region, Bureau of Indian Affairs, Sacramento, California

**From:** Assistant Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California Cay C. Woods

**Subject:** Informal Consultation on the Proposed Cloverdale Rancheria Casino Development Project, City of Cloverdale, Sonoma County, California

This is in response to the Bureau of Indian Affairs (BIA) March 20, 2009, request for informal consultation with the U.S. Fish and Wildlife Service (Service) on the Proposed Cloverdale Rancheria Casino Development Project near the City of Cloverdale in Sonoma County, California. Your request was received by the Service on March 24, 2009. At issue are the potential effects to the endangered California freshwater shrimp (*Syncaris pacifica*), threatened tidewater goby (*Eucyclogobius newberryi*), threatened delta smelt (*Hypomesus transpacificus*), threatened California red-legged frog (*Rana aurora draytonii*) (red-legged frog), threatened marbled murrelet (*Brachyramphus marmoratus*), threatened northern spotted owl (*Strix occidentalis caurina*), and endangered Pennell's bird's beak (*Cordylanthus tenius capillaries*). This response is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*) (Act).

It is our understanding that the proposed project consists of the placement of 6 parcels of land totaling 69.77 acres into federal trust for the Pomo Indian Tribe and the subsequent development of casino, hotel, convention center, entertainment center, and other ancillary facilities.

Based on our review of the information provided by the BIA, a May 12, 2009, site visit attended by the Service and ESA Associates, and other information available to the Service, we concur that the proposed project is not likely to adversely affect the California freshwater shrimp, tidewater goby, delta smelt, marbled murrelet, northern spotted owl, or Pennell's bird's beak. The project site is either out of the known range of these species or suitable habitat does not exist within the action area. However, the proposed project site is located within the range of the red-legged frog and suitable foraging and dispersal habitat is available on site.

The California red-legged frog is the largest native frog in the western United States. Adult red-legged frogs typically use dense, shrubby, or emergent riparian vegetation closely associated with deep (>2.3 feet), still, or slow-moving water (Hayes and Jennings 1988). However, individuals also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. This species disperses upstream and downstream of their breeding habitat to forage and seek sheltering habitat. Habitats include nearly any area within 1-2 miles of a breeding site that stays moist and cool throughout the summer (Fellers 2005). Potential sheltering habitat for California red-legged frogs is all aquatic, riparian, and upland areas within the range of the species and includes any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. California red-legged frogs have been documented using a variety of upland habitats as well as riparian corridors for migration. They have been recorded migrating overland in approximately straight lines without apparent regard to vegetation type or topography. A study in northern Santa Cruz County found that the animals traveled distances from 0.25 miles to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger *et al.* 2003).

The proposed project site contains open grassy upland areas, an ephemeral drainage with mature riparian vegetation, and a seasonal wetland, suitable to red-legged frogs as dispersal and foraging habitat. In addition, there are several ponds capable of providing breeding habitat within dispersal distance of this amphibian. Although Redwood Highway to the west and the Russian River to the east may act as physical barriers and reduce the likelihood of dispersing red-legged frogs from utilizing the project site, there are several culverts beneath Redwood Highway, in the vicinity of the project site, that would allow dispersing amphibians to reach the proposed project site. According the California Natural Diversity Database (CNDDB 2009), the nearest red-legged frog occurrence is located approximately 16 miles southwest of the proposed project site. Based on the biology of the species and habitat within and adjacent to the action area, we recommend a red-legged frog site assessment and protocol level surveys be conducted to determine the potential presence/absence of this listed amphibian.

By this letter, we give you our approval to implement a site assessment and protocol surveys for the California red-legged frog at the Proposed Cloverdale Rancheria Casino Development Project site. The site assessment and protocol survey must be conducted in accordance with the *Revised Guidance on Site Assessment and Field Surveys for the California Red-legged Frog*, dated August 2005, or the results will not be considered valid by the Service. We caution that given our current understanding of the red-legged frog, as well as the conditions at the project site, negative results may not be accepted by the Service.

If you have any questions or concerns regarding our response on the Proposed Cloverdale Rancheria Casino Development Project, please contact Ben Solvesky or Ryan Olah of my staff at the letterhead address, telephone (916) 414-6600, or electronic mail at Ben_Solvesky@fws.gov or Ryan_Olah@fws.gov.

Olah of my staff at the letterhead address, telephone (916) 414-6600, or electronic mail at Ben_Solvesky@fws.gov or Ryan_Olah@fws.gov.

cc:
Scott Wilson, California Department of Fish and Game, Yountville, California
Richard Fitzgerald, California Department of Fish and Game, Yountville, California

**Literature Cited**

Bulger, J. B., N. J. Scott, Jr., and R. B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. Biological Conservation 110:85-95.

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Hayes, M.P., and M.R. Jennings. 1988. Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylii*): implications for management. Pages 144-158 *in* R. Sarzo, K. E. Severson, and D. R. Patton (technical coordinators). Proceedings of the symposium on the management of amphibians, reptiles, and small mammals in North America. United States Department of Agriculture, Forest Service, Rocky Mountain Range and Experiment Station, Fort Collins, Colorado. General Technical Report (RM-166): 1-458.

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2009-I-0618-2

NOV 30 2009

**Memorandum**

**To:** Regional Director, Pacific Region, Bureau of Indian Affairs, Sacramento, California

**From:** FOR ~~Assistant Field Supervisor~~, Sacramento Fish and Wildlife Office, Sacramento, California

**Subject:** Informal Consultation on the Proposed Cloverdale Rancheria Casino Development Project, City of Cloverdale, Sonoma County, California

This is in response to the Bureau of Indian Affairs (BIA) March 20, 2009, request for informal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Cloverdale Rancheria Casino Development project near the City of Cloverdale in Sonoma County, California. Your request was received by the Service on March 24, 2009. On July 16, 2009, we sent you a memo outlining our concerns regarding the potential presence of the threatened California red-legged frog (*Rana aurora draytonii*) (red-legged frog) and authorized you to conduct red-legged frog protocol level surveys. This response is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*) (Act).

It is our understanding that the proposed project consists of the placement of 6 parcels of land totaling 69.77 acres into federal trust for the Pomo Indian Tribe and the subsequent development of casino, hotel, convention center, entertainment center, and other ancillary facilities.

The proposed project site contains open grassy upland areas, two ephemeral drainages with mature riparian vegetation that flow to the Russian River, and a shallow seasonal wetland. The Russian River is located approximately 500 feet east of the project site. Although occurrences are known from the Russian River watershed, there are no known occurrences from the mainstem of the Russian River and red-legged frogs are not known to use larger rivers for foraging or breeding due to the presence of predatory fishes and swift moving water. No aquatic features, capable of providing breeding or dry-season aquatic foraging habitat, are located within the proposed project site. Redwood Highway to the west and the Russian River to the east act as physical barriers; reducing the likelihood that dispersing amphibians could reach the site. According the California Natural Diversity Database (CNDDB 2009), the nearest documented red-legged frog occurrence is located approximately 16 miles southwest of the proposed project

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site and the second nearest occurrence is located in Mendocino County, 21.5 miles west of the proposed project site. Based on negative protocol levels survey results, a lack of documented red-legged frog occurrences within 5 miles of the project site, physical barriers that reduce the probability of dispersal to the site, and a lack of quality habitat with the action area, the Service believes the proposed Cloverdale Rancheria Casino Development project may affect, but is not likely to adversely affect the red-legged frog.

Therefore, unless new information reveals effects of the project that may affect federally listed species or critical habitat in a manner not identified to date, or if a new species is listed or critical habitat is designated that may be affected by the proposed action, no further action pursuant to the Act is necessary.

If you have any questions or concerns regarding our response on the proposed Cloverdale Rancheria Casino Development project, please contact Ben Solvesky or Ryan Olah of my staff at the letterhead address, telephone (916) 414-6600, or electronic mail at Ben_Solvesky@fws.gov or Ryan_Olah@fws.gov.

cc:
Scott Wilson, California Department of Fish and Game, Yountville, California
Jamie Galos, ESA Land Management, Sacramento, California

Regional Director, Pacific Region

**Literature Cited**

California Natural Diversity Data Base (CNDDB). 2009. Natural Heritage Division. California Department of Fish and Game, Sacramento, California.