CHAPTER FIVE
ENVIRONMENTAL CONSEQUENCES

5.0 INTRODUCTION

This chapter presents an assessment of the environmental impacts of the Sponsor's Proposed Project and its alternatives, including the No Action Alternative. It also presents a discussion of preliminary mitigation measures that the Federal Aviation Administration (FAA) and Marin County would consider to avoid and minimize potential adverse environmental effects.

As stated in FAA Order 1050.1E, Change 1, *Environmental Impacts: Policy and Procedures* the environmental consequences chapter forms the scientific and analytical basis for comparing the Sponsor's Proposed Project and reasonable alternatives. It includes considerations of direct and indirect effects and their significance and possible conflicts between the Sponsor's Proposed Project and the objectives of Federal, regional, state, tribal, and local land use plans, policies, and controls for the area concerned.

The following analysis discloses the impacts for the projected future conditions in 2018. The FAA uses 2018 as a basis for analysis because 2018 is the projected implementation year of the proposed runway extension. In addition, specific Airport activity levels and their associated air quality and noise impacts are evaluated for a condition five years beyond the opening year (2023).

Based on the guidance provided by FAA Order 1050.1E, Change 1, the environmental impacts of the Sponsor's Proposed Project and alternatives have been evaluated under the categories listed below. The proposed relocation of navigational aids will occur in areas that are graded and filled for the extension of the runway and parallel taxiway, so the environmental impacts of these relocations are not addressed separately. Similarly, the potential environmental effects of changes in flight procedures – predetermined aircraft maneuvers to approach or depart from an airport – are addressed as part of the overall project's effects on environmental resources such as noise rather than being considered separately. The environmental resource categories addressed in this chapter include:

- Section 5.1: Noise
- Section 5.2: Compatible Land Use
- Section 5.3: Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks
- Section 5.4: Secondary (Induced) Impacts
- Section 5.5: Air Quality
- Section 5.6: Water Quality
- Section 5.7: Department of Transportation, Section 4(f) Resources and Land and Water Conservation Act, Section 6(f) Resources

- Section 5.8: Historical, Architectural, Archaeological, and Cultural Resources
- Section 5.9: Fish, Wildlife, and Plants
- Section 5.10: Wetlands and Streams
- Section 5.11: Floodplains
- Section 5.12: Coastal Resources
- Section 5.13: Wild and Scenic Rivers
- Section 5.14: Farmlands
- Section 5.15: Energy Supply, Natural Resources, and Sustainable Design
- Section 5.16: Light Emissions and Visual Impacts
- Section 5.17: Hazardous Materials, Pollution Prevention, and Solid Waste
- Section 5.18: Construction Impacts

5.1 NOISE

This section presents the aircraft noise exposure to surrounding communities resulting from each of the alternatives identified to be carried forward for detailed analysis in Section 3.4 of Chapter Three, *Alternatives*. The noise effects of each of the runway extension alternatives are identified and compared to the No Action Alternative.

The impact of airport-related noise levels upon the surrounding area is presented in terms of the number and type of noise-sensitive land uses located within the noise contours for the Sponsor's Proposed Project and its alternatives. Noise contours are concentric bands of equal noise exposure that can be drawn over land use basemaps to indicate various levels of exposure. The existing and future land uses surrounding Gnoss Field Airport (DVO or Airport) are described in Chapter Four, *Affected Environment*. A detailed description of the methodology used to prepare the noise contours is provided in Appendix E, *Noise Methodology*.

5.1.1 REGULATORY SETTING

Based on Federal Aviation Administration (FAA) Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures,* aircraft noise impacts are prepared using the Integrated Noise Model (INM). The analysis compares whether noise would increase as a result of implementation of either runway extension Alternative B (Sponsor's Proposed Project), or Alternative D, as compared to noise levels under Alternative A (No Action). An increase in the noise level of CNEL 1.5 decibels (dB) or more for a noise-sensitive land use located within the 65 CNEL noise contour is the threshold FAA uses for determining significant noise impacts.

5.1.2 FUTURE CONDITIONS: 2018

This section provides a summary of the noise analysis of the 2018 conditions for each alternative. An analysis of the 2018 conditions describes potential impacts during the first full year of operation of the runway extension alternatives. The 2018 Alternative A would be compared to each of the two 2018 runway extension alternatives, including the Sponsor's Proposed Project (Alternative B). General descriptions of the operational characteristics of each alternative are provided later in this section.

Alternative A:
<u>No Action</u>

This section provides a summary of the INM input data, the resulting noise contour, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative A in 2018. The noise impact assessment prepared for the 2018 Alternative A provides a basis of comparison against which all other 2018 alternatives are evaluated.

Runway Definition: As noted in Chapter One, *Background and Introduction,* Gnoss Field consists of a single 3,300-foot long and 75 feet wide runway (designated 13/31) that is oriented in northwest to southeast direction. Exhibit 1-2, *Existing Airport Layout* in Chapter One graphically depicts the existing Airport layout. This runway definition was used for the modeling of the future Alternative A noise contour and is the same as that used in Chapter Four for the Existing Conditions (2008) noise analysis.

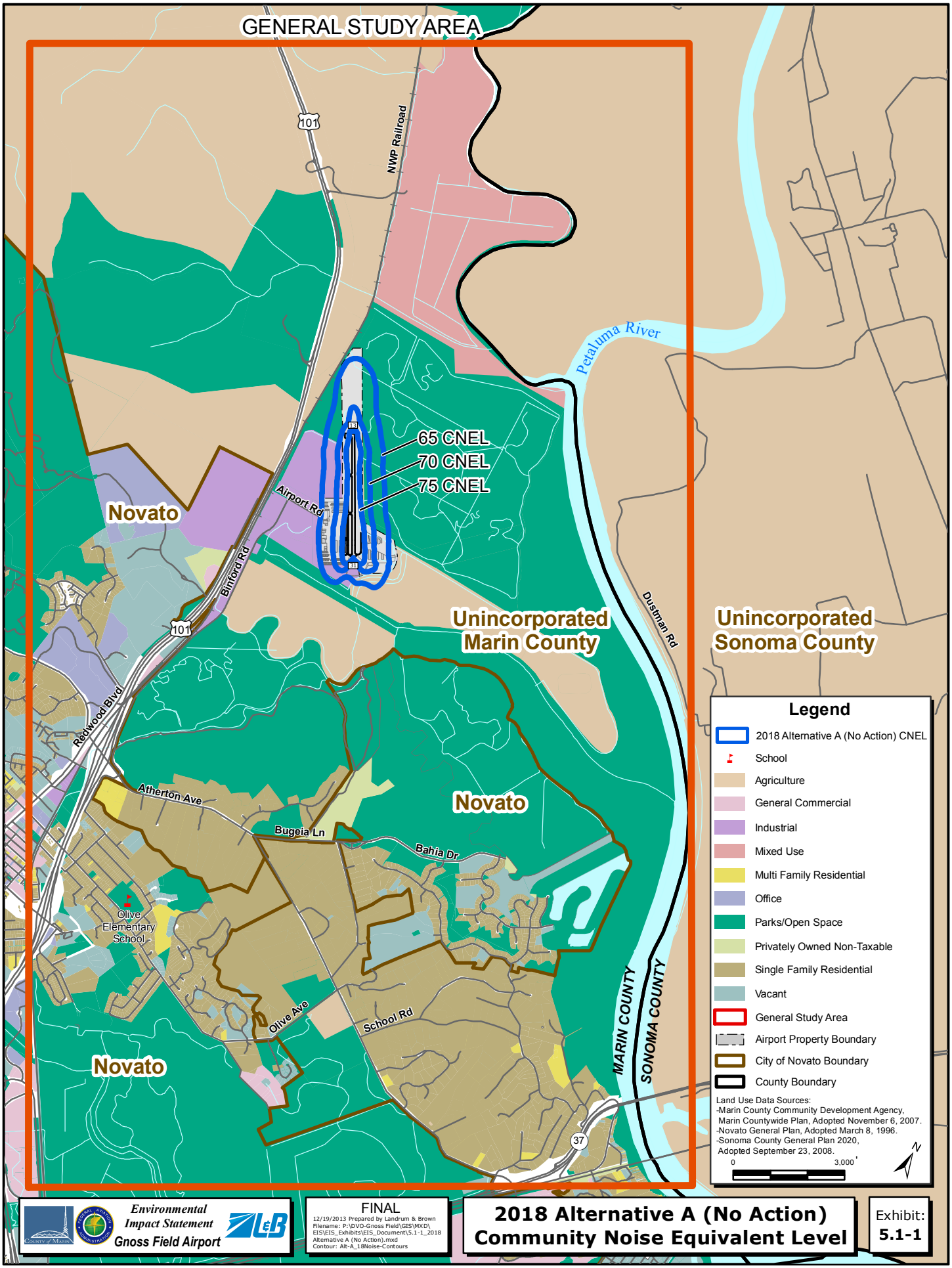
Activity Levels and Fleet Mix: The forecast analysis presented in Section 1.4, *Aviation Activity,* indicates that the operational levels at DVO are expected to grow approximately 19 percent from the 2008 level of 85,500 to the expected 2018 level of 100,500. The proportional mix of aircraft types expected to operate at DVO in 2018 is generally projected to remain constant over the forecast period and would be similar to the proportions currently experienced at the Airport. Thus, the future fleet mix proportions remained the same for the 2018 condition with only the growth in total operations changing. Detailed information on the future fleet mix and operational levels is presented in Appendix E.

Runway End Utilization: The average-annual runway end utilization for the 2018 Alternative A is expected to remain the same as the current condition. Traffic is expected to continue to follow the requested noise abatement runway use with departures on Runway 31 and arrivals on Runway 13. Approximately 90 percent of the departures would occur on Runway 31 with 10 percent on Runway 13. Conversely, about 90 percent of the arrivals are expected to use Runway 13 with only about 10 percent on Runway 31.

Flight Tracks: A flight track is the path over the ground as an aircraft flies to or from the Airport. As noted in Appendix E, radar data was gathered and evaluated to identify the current condition traffic routes. There are two components to flight tracks used for noise modeling: track definition and percentage of use. The flight tracks and proportional traffic distribution modeled for the 2018 future condition are expected to remain the same as those identified for the current conditions.

Noise Contour: The 2018 Alternative A noise contour for 65, 70, and 75 CNEL levels are graphically depicted on **Exhibit 5.1-1**, ***2018 Alternative A (No Action) Community Noise Equivalent Level.***

The size and shape of the noise contours for DVO are a function of the combination of flight tracks and runway use. As noted above, it is expected that traffic would continue to follow the requested noise abatement runway use with departures on Runway 31 and arrivals on Runway 13. As a result, the future 2018 Alternative A noise contour is longer and wider to the north of the Airport than it is to the south.



Environmental Impact Statement
Gnoss Field Airport

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2018 Alternative A (No Action) Community Noise Equivalent Level

Exhibit: **5.1-1**

To the north of the Airport, the noise contour extends approximately one-third of a mile north of the north end of the runway to a point just east of the railroad tracks. The shape of the contour is generally aligned with the runway and reflects the combination of takeoffs to the north and arrivals from the north, which occurs for approximately 90 percent of the activity at the Airport. The noise contour covers an area that is comprised of Airport property and other land uses that are not noise-sensitive. The higher noise levels of 70 and 75 CNEL cover a progressively smaller area of similar land uses to the north. The noise contour runs adjacent to the Airport runway with the contour lines generally parallel to the runway alignment.

To the south, the 65 CNEL noise contour extends 500 feet south of Airport property over both commercial and agricultural land uses. The higher noise levels of 70 and 75 CNEL contours remain largely over Airport property and their shape is associated with the start of takeoff roll noise associated within a high percentage of departures.

Overall, the noise contour is identical in shape and very similar in size to the Existing Condition (2008) noise contour. The only difference is a very slight increase in the size of the Alternative A noise contour resulting from the 17 percent growth in total annual operations at DVO expected to occur between 2008 and 2018. **Table 5.1-1** provides the number and type of noise sensitive land uses within the 2018 Alternative A noise contours.

Table 5.1-1
NUMBER AND TYPE OF NOISE SENSITIVE LAND USES WITHIN THE 2018 ALTERNATIVE A NOISE CONTOURS
Gnoss Field Airport

CONTOUR RANGE	2018 ALTERNATIVE A	
	Number of Non-residential Noise Sensitive Land Uses	Number of Residential Noise Sensitive Housing Units
65-70 CNEL	0	0
70-75 CNEL	0	0
75 + CNEL	0	0
65 + CNEL	***0***	***0***

Source: Landrum & Brown, 2009.

Land Use Impact Assessment: No residential or other noise-sensitive land uses would be exposed to noise levels of 65 CNEL or greater by implementing Alternative A. Therefore, no significant noise impacts would result from implementation of Alternative A.

Alternative B:
Extend Runway 13/31 to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

This section provides a summary of the INM input data, the resulting noise contour, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative B in 2018.

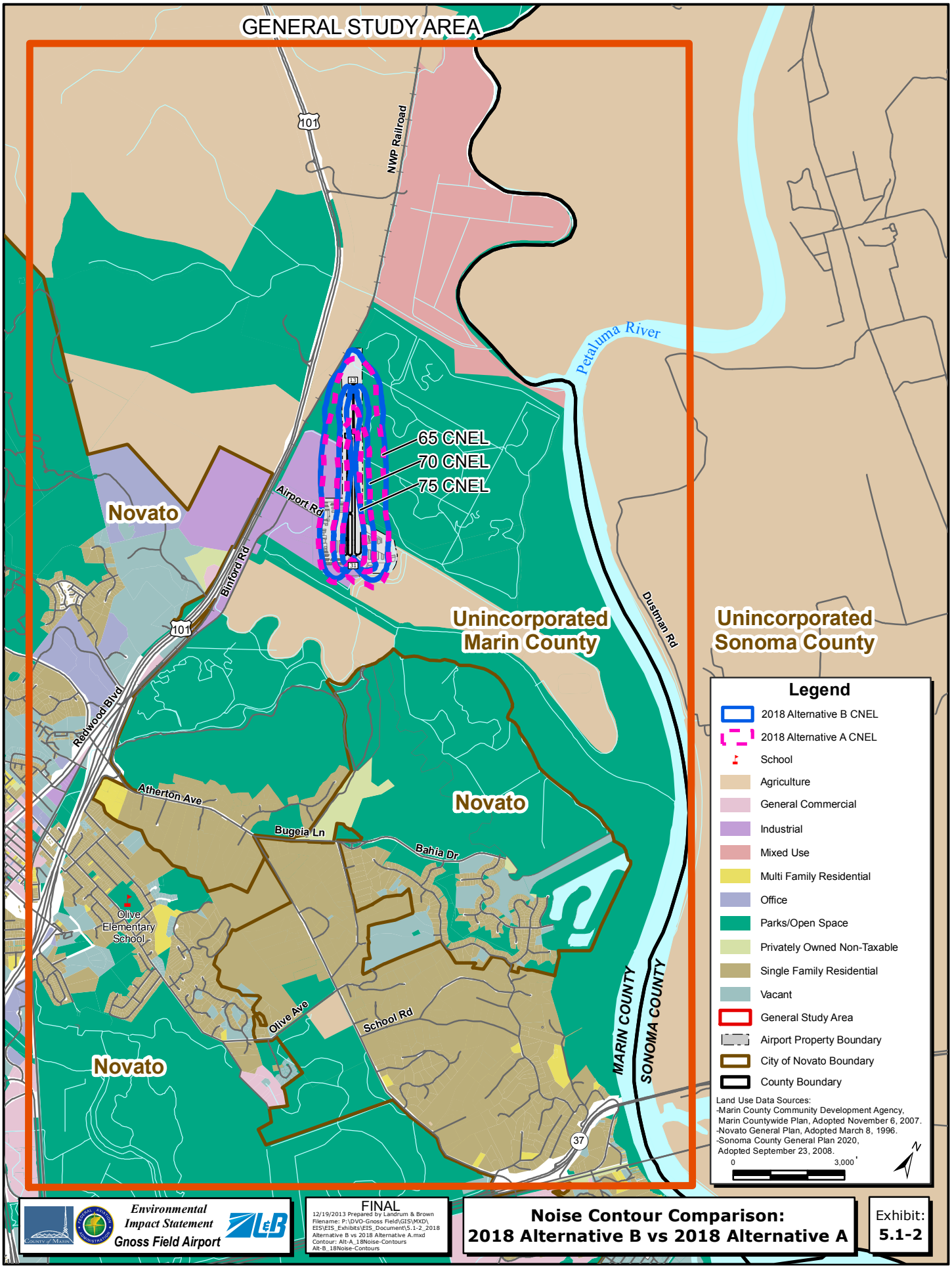
Runway Definition: Alternative B includes a northwesterly extension of Runway 13-31 by 1,100 feet. The resulting runway would be 4,400 feet in length.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2018 Alternative A would remain the same for the 2018 Alternative B evaluation.

Runway End Utilization: The proposed extension of Runway 13/31 is not expected to affect runway use percentages from what was modeled for the Existing Condition (2008) or 2018 Alternative A. Consequently, the runway use for this alternative would be identical to the 2018 Alternative A runway use previously described.

Flight Tracks: The proposed runway extension under Alternative B would have some modest effects on the flight tracks as related to takeoffs and landings to and from Runway 13. These changes are anticipated to be exclusively tied to the new location of the runway end as it relates to the proposed 1,100-foot northwesterly runway extension. Aircraft taking off to the south on Runway 13 would start their takeoff roll 1,000 feet further to the northwest than they currently do and thus be higher south of the Airport as they climb. Further, it is expected that the preferred noise abatement turns to the east would occur further to the northwest than they do now. Arrival tracks to Runway 13 would also be affected as the landing threshold would be moved 1,100 feet to the northwest. It is expected that this would result in aircraft turning onto their final approach slightly further to the northwest than is currently done and the aircraft would tend to be lower at a given point along the final approach north of the airfield. Flight tracks for departures on Runway 31 to the north and arrivals to Runway 31 from the south are not anticipated to change as a result of this alternative. Finally, the alternative would not affect the flight track utilization percentages shown in identified for the current conditions and the 2018 Alternative A scenarios. Appendix E presents more detailed information regarding the flight tracks and distributions modeled for this alternative.

Noise Contour: The 2018 Alternative B noise contour for 65, 70, and 75 CNEL levels are graphically depicted on **Exhibit 5.1-2**, ***Noise Contour Comparison: 2018 Alternative B vs 2018 Alternative A.*** For comparative purposes, the 2018 Alternative A noise contours are mapped in pink.



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Contour: Alt-A_18Noise-Contours
Alt-B_18Noise-Contours

Noise Contour Comparison:
2018 Alternative B vs 2018 Alternative A

Exhibit:
5.1-2

As the map illustrates, the overall size and shape of the Alternative B noise contours for DVO are similar to those of the Alternative A noise contour. To the north of the Airport the Alternative B 65 CNEL noise contour is slightly larger and extends a bit further north than the Alternative A noise contour. This is due to the runway extension and the corresponding shift in the landing threshold for Runway 13 and the start of takeoff roll for Runway 13. More evidence of this effect can be seen in the comparison of the higher noise level contours of 70 and 75 CNEL. As the map notes, most of this change is located on, or immediately adjacent to the Airport property, over land uses that are not noise-sensitive.

To the south, the Alternative B 65 CNEL noise contour would shift to the northwest slightly as a result of the reduced influence in departure noise from Runway 13 departures. This reduction is due to the slightly higher altitudes for departures and the slight northwestward shift in the Runway 13 departure turn to the east. The higher noise level contours of 70 and 75 CNEL are nearly the same as the Alternative A noise contours as these contours are more influenced by noise from the start of takeoff roll from the high percentage of takeoffs on Runway 31. These takeoffs do not change in Alternative B and thus the noise contour very close to the runway does not shift.

Table 5.1-2 provides the number and type of noise sensitive land uses within the 2018 Alternative B noise contours in comparison to that of the 2018 Alternative A noise contours.

Table 5.1-2
COMPARISON OF NUMBER AND TYPE OF NOISE SENSITIVE LAND USES WITHIN THE 2018 ALTERNATIVE A AND B NOISE CONTOURS
Gnoss Field Airport

CONTOUR RANGE	2018 ALTERNATIVE A		2018 ALTERNATIVE B	
	Number of Non-residential Noise Sensitive Land Uses	Number of Residential Noise Sensitive Housing Units	Number of Non-residential Noise Sensitive Land Uses	Number of Residential Noise Sensitive Housing Units
65-70 CNEL	0	0	0	0
70-75 CNEL	0	0	0	0
75 + CNEL	0	0	0	0
65 + CNEL	***0***	***0***	***0***	***0***

Source: Landrum & Brown, 2009.

Land Use Impact Assessment: No residential or other noise-sensitive land uses would be exposed to noise levels of 65 CNEL or greater by implementing Alternative B. Therefore, no significant noise impacts would result from implementation of Alternative B.

Alternative D:
Extend Runway 13/31 to the Southeast by 240 Feet and to the Northwest by 860 Feet

This section provides a summary of the INM input data, the resulting noise contour, and the disclosure of the potential noise impacts resulting from the operation of the Airport under Alternative D in 2018.

Runway Definition: Alternative D includes a northwesterly extension of Runway 13/31 by 860 feet and a southeasterly extension of 240 feet. The resulting runway would be 4,400 feet in length.

Activity Levels and Fleet Mix: The operating levels and fleet mix discussed for the 2018 Alternative A would remain the same for the 2018 Alternative D.

Runway End Utilization: The proposed extension of Runway 13/31 is not expected to affect runway use percentages from what was modeled for the Existing Condition (2008). Consequently, the runway use for this alternative would be identical to the 2018 Alternative A runway use.

Flight Tracks: The proposed runway extension under Alternative D would have some modest effects on the flight tracks at DVO. Like Alternative B, the expected flight track changes would be related to the shifts in takeoff and landing points as they relate to the runway extensions included in the alternative.

Aircraft taking off to the south on Runway 13 would start their takeoff roll 860 feet farther to the northwest than they currently do and thus be higher south of the Airport as they climb. Correspondingly, it is expected that the preferred noise abatement turns to the east would occur further to the northwest than they do now. Arrival tracks to Runway 13 would also be affected as the landing threshold would be moved 860 feet to the northwest. It is expected that this would result in aircraft turning onto their final approach slightly further to the northwest than is currently done and the aircraft would tend to be lower at a given point along the final approach north of the airfield.

Flight tracks for departures on Runway 31 to the north and arrivals to Runway 31 from the south would be expected to shift in a similar way but to a lesser degree as they relate to the 240-foot southeastward extension of the runway. Thus the start of takeoff roll and the landing threshold are expected to move 240 feet to the southeast.

Finally, the alternative would not affect the flight track utilization percentages identified for the current conditions and the 2018 Alternative A scenarios. Appendix E presents more detailed information regarding the flight tracks and distributions modeled for this alternative.

Noise Contour: The 2018 Alternative D noise contour for 65, 70, and 75 CNEL levels are graphically depicted on **Exhibit 5.1-3**, ***Noise Contour Comparison: 2018 Alternative D vs. 2018 Alternative A.*** For comparative purposes, the 2018 Alternative A noise contours are mapped in pink.

As the map illustrates, the overall size and shape of the Alternative D noise contours for DVO are similar to those of the Alternative A noise contour. To the north of the Airport the Alternative D 65 CNEL noise contour is slightly wider but extends about the same distance north as the Alternative A noise contour. The increase in width is due to the northwesterly runway extension and the corresponding shift in the start of takeoff roll for Runway 13 departures. Although the landing threshold is shifted to the north also, that increase in noise to the north is offset by the reduction in departure noise due to takeoffs on Runway 31 being shifted 240 feet further to the southeast. This combined effect keeps the northern extent of the 65 CNEL about the same as in Alternative A. As shown on Exhibit 5.1-3, the 70 and 75 CNEL contours change shape, but continue to closely follow the runway extension with most of this change in noise exposure located on, or immediately adjacent to, the Airport property.

To the south, the Alternative D 65 CNEL noise contour exhibits multiple shifts related to the combined effects of the two runway extensions. On the east side, the contour is similar to the no action contour due to the offsetting effects of the Runway 13 departure noise reduction from the northwest runway extension and the arrival and departure noise increases due to the southeast runway extension.

On the west side, the 65 CNEL noise contour shifts further to the south than Alternative A due to the southeast runway extension and associated shifting of the start of takeoff roll for Runway 31 departures. Again, the higher noise level contours of 70 and 75 CNEL shift to the southeast and closely follow the 240-foot runway extension.

Table 5.1-3 provides the number and type of noise sensitive land uses within the 2018 Alternative D noise contours in comparison to that of the 2018 Alternative A and 2018 Alternative B noise contours.

Land Use Impact Assessment: No residential or other noise-sensitive land uses would be exposed to noise levels of 65 CNEL or greater by implementing Alternative D. Therefore, no significant noise impacts would result from implementation of Alternative D.

Table 5.1-3
COMPARISON OF NUMBER AND TYPE OF NOISE SENSITIVE LAND USES WITHIN THE 2018 ALTERNATIVE A, B, AND D NOISE CONTOUR
Gnoss Field Airport

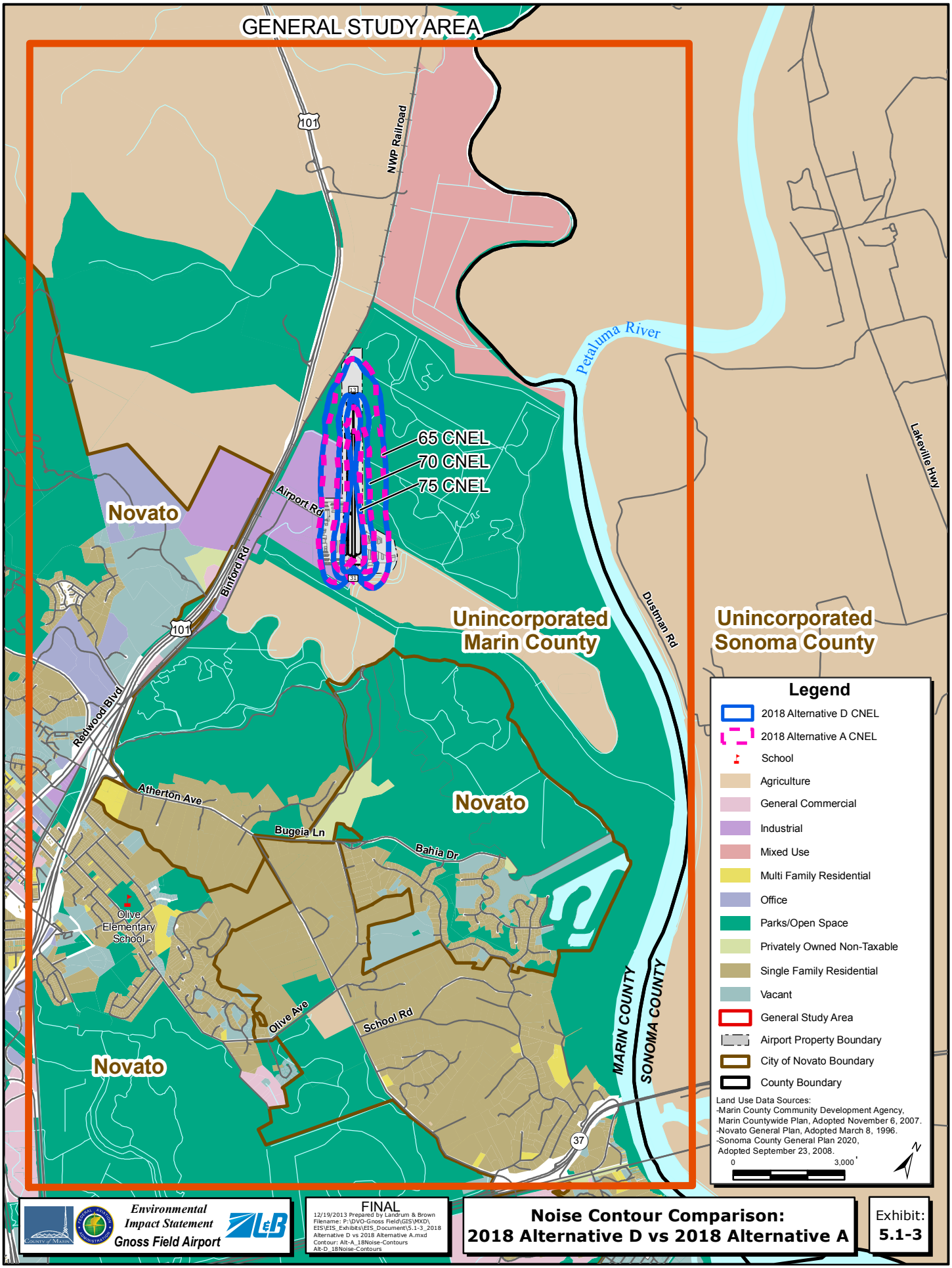
CONTOUR RANGE	2018 ALTERNATIVE A		2018 ALTERNATIVE B		2018 ALTERNATIVE D	
	Number of Non-residential Noise Sensitive Land Uses	Number of Residential Noise Sensitive Housing Units	Number of Non-residential Noise Sensitive Land Uses	Number of Residential Noise Sensitive Housing Units	Number of Non-residential Noise Sensitive Land Uses	Number of Residential Noise Sensitive Housing Units
65-70 CNEL	0	0	0	0	0	0
70-75 CNEL	0	0	0	0	0	0
75 + CNEL	0	0	0	0	0	0
65 + CNEL	***0***	***0***	***0***	***0***	***0***	***0***
Acreage of noise-sensitive land uses within 65 + CNEL	0	0	0	0	0	0

Source: Landrum & Brown, 2009.

5.1.3 FUTURE CONDITIONS: 2023

This section provides an evaluation of the potential increases in noise levels five years beyond the opening of the project (2023) for each alternative. The analysis focuses on the forecasted change in operating levels and fleet mix to determine the potential increase in noise for the community. FAA Order 1050.1E provides guidance for assessing conditions where there is a general overall increase in aircraft operations or changes in the type of aircraft occur. In cases where there are no changes in ground tracks or flight profiles, the analysis may be performed using the FAA's Area Equivalent Method (AEM) computer model. If the AEM calculations indicate that the proposed action would result in less than a 17 percent (approximately a DNL 1 dB) increase in the CNEL 65 dB contour area, it may be concluded that there would be no significant impact over noise sensitive areas and that no further noise analysis is required. For each of the alternatives, a comparison of the conditions between 2018 and 2023 finds that the only difference would be operating levels and fleet mix. Therefore, an evaluation of the difference between the operating levels and fleet mix from 2018 to 2023 will provide an indication of the relative increase in noise levels for any of the alternatives.

The results from the AEM modeling, found that the CNEL 65 dB noise contour would increase in area by 5.9 percent (0.02 square miles), which is less than the 17 percent threshold increase identified in FAA Order 1050.1E, Change 1 for the alternatives. Therefore it can be concluded that there would be no significant impact as a result of the forecasted operating levels and fleet mix and no further noise analysis is required.



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Contour: Alt-A_18Noise-Contours
Alt-D_18Noise-Contours

Noise Contour Comparison:
2018 Alternative D vs 2018 Alternative A

Exhibit:
5.1-3

5.10 WETLANDS AND STREAMS

This section provides detailed descriptions of wetlands and other aquatic resources impacted by the runway extension alternatives. A Geographic Information System program was used to calculate impacts to wetlands and other waters, based on the areas of disturbance, for each alternative.

5.10.1 REGULATORY SETTING

The Clean Water Act (CWA), Section 404 requires that applicants obtain a permit from the U.S. Army Corps of Engineers (USACOE) to place dredged or fill material into aquatic sites within CWA jurisdiction including wetlands, streams, and open waters. The CWA Section 404 (b) (1) Guidelines (Title 40 Code of Federal Regulations (CFR) Part 230, Subparts B-F) requires a sequencing process to first avoid, then minimize, and finally provide compensatory mitigation for impacts to aquatic resources during the CWA Section 404 permit process. The CWA Section 404 (b) (1) Guidelines also limits the USACOE to permitting the least environmentally damaging practicable alternative to accomplish the project purpose.

In addition to the CWA and Rivers and Harbors Act (RHA), the Federal Aviation Administration (FAA) must also follow Executive Order (EO) 11990 Protection of Wetlands and Department of Transportation (DOT) Order 5660.1A *Preservation of the Nation's Wetlands,* which require that Federal assistance to construct an activity in a wetland can only be provided when (1) there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making findings under EO 11990 and DOT Order 5660.1A, the FAA may take into account economic, environmental and other pertinent factors.

Marin County and the FAA met with the USACOE, the U.S. Environmental Protection Agency, the San Francisco Bay Regional Water Quality Control Board, and the Marin County Flood Control District on May 14, 2008 for a CWA Section 404 permit pre-application meeting regarding the Gnoss Field Runway Extension Project. Marin County and the FAA described the project and the FAA EIS process and the USACOE described overall CWA Section 404 permitting requirements.

This section evaluates the potential impacts to wetlands and other aquatic resources of the Sponsor's Proposed Project or its alternatives. Also, as required by the CWA, EO 11990, and DOT Order 5660.1A, this section identifies the least environmentally damaging practicable alternative that meets the project purpose of allowing the critical aircraft for DVO to operate at Maximum Gross Take Off Weight under hot weather and other adverse weather conditions (see Appendix D, *Runway Length Analysis* for details). This section identifies options for compensatory mitigation for impacts to wetlands and waters within CWA jurisdiction necessary to meet the mitigation requirements of the CWA and the National Environmental Policy Act (NEPA). Although portions of the Detailed Study Area (DSA) are also within RHA, Section 10, jurisdiction it is anticipated that meeting CWA Section 404 permit requirements will also address any RHA Section 10 permit compensatory mitigation requirements.

THRESHOLDS OF SIGNIFICANCE

According to FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, a significant impact occurs if the proposed action would:

- Adversely affect the function of a wetland to protect the quality or quantity of municipal water supplies, including sole source, potable water aquifers;
- Substantially alter the hydrology needed to sustain the functions and values of the affected wetland or any wetlands to which it is connected;
- Substantially reduce the affected wetland's ability to retain floodwaters or storm associated runoff, thereby threatening public health, safety or welfare (this includes cultural, recreational, and scientific resources important to the public, or property);
- Adversely affect the maintenance of natural systems that support wildlife and fish habitat or economically-important timber, food, or fiber resources in the affected or surrounding wetlands;
- Promote development of secondary activities or services that would affect the resources mentioned in items (1) through (4) in this section; or
- Be inconsistent with applicable state wetland strategies.

FEDERAL JURISDICTION OF THE WATERS OF THE UNITED STATES

The USACOE regulates discharge of dredged or fill material into waters of the United States under Section 404 of the CWA. "Discharges of fill material" are defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes and subaqueous utility lines [Title 33 CFR § 328.2(f)]. In addition, Section 401 of the CWA (Title 33 USC § 1341) requires any applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification that the discharge would comply with the applicable effluent limitations and water quality standards.

Waters of the U.S. include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of waters is present.

5.10.2 METHODOLOGY

A review of historic and recent aerial photographs, topographic maps, and soils survey data was conducted before a wetland delineation occurred in March and April 2008. Biologists visually inspected the entire site and collected data at points within wetland areas consistent with germane court decisions.[1] Observations were recorded on Wetland Determination Data Forms for the Arid West Region. Correlations were developed between the three parameters (vegetation, hydrology, and soils) to make wetland determinations in accordance with the USACOE wetland delineation manual (USACOE Waterways Experiment Station, Environmental Laboratory, 1987) and appropriate regional supplements to the manual. The determination of other waters of the U.S. was identified based on the potential presence or absence of an ordinary high water mark as defined in Title 33 CFR § 328.3(e).

5.10.3 EXISTING CONDITIONS

WETLANDS

The USACOE issued a CWA and RHA jurisdictional determination for Gnoss Field in August 2009. A copy of the jurisdictional wetland determination letter and map from the USACOE is included in Appendix J, *Wetlands* of this document. The USACOE determined all wetlands on the Airport are within CWA jurisdiction and a portion of the wetlands on the Airport are also within RHA jurisdiction. Jurisdictional wetlands located within the DSA are shown in Chapter Four, *Affected Environment* on Exhibit 4-9*, Wetlands and Waters of the U.S*.

Wetland communities at DVO include depressional seasonal wetlands, riverine seasonal wetlands, slope seep wetlands, high brackish marsh wetlands, perennial drainage and ditches/canals totaling 74.70 acres.[2] Approximately 78.9 percent (58.96 acres) of the delineated wetlands are high brackish marsh wetlands, approximately 4.8 percent (3.59 acres) are depressional seasonal wetlands, and approximately 0.7 percent (0.52 acres) are riverine seasonal wetlands.

Additionally, approximately 4.0 percent (2.95 acres) of the delineated wetlands are seep, approximately 3.3 percent (2.49 acres) are perennial drainage, and approximately 8.3 percent (6.20 acres) are ditches. **Table 5.10-1** provides a summary of the existing wetlands located at DVO.

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[1] Solid Waste Agency of Northern Cook County v. the U.S. Army Corps of Engineers, 531 U.S. 159, (2001) and Rapanos v. United States 547 U.S. 715 (2006).

[2] Foothill Associates, *Delineation of Wetlands and Request for Clean Water Act and Rivers and Harbors Act Jurisdictional Determination for Gnoss Field Airport Marin County, California*, March 2009.

Table 5.10-1
SUMMARY OF WETLANDS AND OTHER WATERS
Gnoss Field Airport

CLASSIFICATION	WETLANDS IN THE DSA (ACRES)		
	SECTION 404 ONLY WATERS[1]	SECTION 404 AND SECTION 10 WATERS[2]	TOTAL
Depressional Seasonal Wetland	3.59	0.00	3.59
Riverine Seasonal Wetland	0.52	0.00	0.52
Slope Seep Wetland	1.89	1.06	2.95
High Brackish Marsh Wetland	51.56	7.40	58.96
Perennial Drainage	1.81	0.67	2.48
Ditch/Canal	5.82	0.38	6.20
Total	**65.20**	**9.51**	**74.70**

[1] Section 404 of the CWA
[2] Section 10 of the RHA – all wetlands within RHA jurisdiction are also within CWA jurisdiction.

Source: *Delineation of Wetlands and Request for CWA and RHA Jurisdictional Determination for Gnoss Field Airport Marin County, California*, Prepared by Foothill Associates, July 2009. See Appendix J.

5.10.4 FUTURE CONDITIONS: 2018

The following discusses the potential impacts to wetlands that would result from implementing the Sponsor's Proposed Project or its alternatives. The FAA conducted an evaluation of alternatives in accordance with the CWA, Section 404 (b)(1) guidelines as part of the alternatives analysis in Chapter Three, *Alternatives*, of this Environmental Impact Statement (EIS). The findings of that evaluation are summarized at the end of this section.

Alternative A:
<u>No Action</u>

Alternative A (No Action) would not result in the loss or conversion of any wetlands, open waters, or streams. No new construction would occur under this alternative. Existing conditions of wetlands and streams would be expected to continue.

Alternative B:
<u>Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)</u>

This alternative includes the proposed 1,100-foot extension of Runway 13/31 at the existing runway width of 75 feet, an equivalent extension of the parallel taxiway, an extension of the existing FAA standard 120-foot wide Runway Safety Area (RSA) centered on the runway centerline to match the length of the runway, construction of FAA standard 240-foot RSA extending beyond each end of Runway 13/31, a corresponding increase in the Airport's existing perimeter levees to surround the

new runway extension, and a corresponding increase in the length of the Airport's existing drainage ditches adjacent to the runway to convey stormwater away from the runways.

As a result of the fill material and the construction staging activities, all of the wetlands within the area of disturbance would be impacted through filling (See **Exhibit 5.10-1, *Alternative B Area of Disturbance Jurisdictional Wetlands and Waters of the U.S.***). The area of disturbance for Alternative B (Sponsor's Proposed Project) is approximately 22.93 acres (22.56 acres on at the north end of Runway 13 and 0.37 acres at the south end of Runway 13). The construction of Alternative B would result in the following impacts on wetlands and aquatic resources within the area of disturbance:

- Fill 10.29 acres of High Brackish Marsh wetland
- Fill 0.59 acres of perennial drainage
- Fill 1.57 acres of ditches/canals
- Fill 0.15 acres of depressional seasonal wetland

As part of this alternative, 1,004 feet of ditch/canal would be removed; however there would be 3,182 feet of ditch/canal created to extend the drainage ditches around the runway and RSA on the north side of the Airport. Therefore this alternative would result in an overall increase in length of 2,178 feet of the ditch/canal features. Although the ditch/canal system would be extended in length, there would be a net decrease in the area of ditch/canal due to the irregular shape of the existing drainage system ditch versus the more uniform shape of the proposed drainage system ditch. 1.57 acres of ditch/canal would be removed as a result of this alternative, but 0.77 acres of new ditch/canal wetlands would be created to extend the drainage ditches around the runway and RSA on the north side of the Airport. Therefore, this alternative would result in an overall decrease in area of 0.80 acres of ditch/canal features.

Implementation of Alternative B would result in significant impacts to wetlands and aquatic resources unless compensatory mitigation is provided. As described in Section 5.10.6 several options for compensatory mitigation for wetland and aquatic habitat losses associated with the implementation of Alternative B are available. A detailed compensatory mitigation plan would be required to obtain the necessary authorizations to construct Alternative B. With implementation of a mitigation plan to compensate for the losses of wetland and aquatic habitat resulting from the construction of Alternative B, the environmental impact of Alternative B would not be significant.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

This alternative includes a 1,100 foot extension of Runway 13/31 (240 feet to the southeast and 860 feet to the northwest) for a total runway length of 4,400 feet at the existing runway width of 75 feet. Alternative D includes the construction and extensions of the parallel taxiways adjacent to the runway extensions to the full length of the extended runway and an extension of the existing FAA standard 120-foot wide RSA centered on the runway centerline to match the length of the runway. This alternative also proposes the construction of a 240-foot RSA extending beyond the end of both runway ends and an expansion of the length of the levee and drainage ditch system.

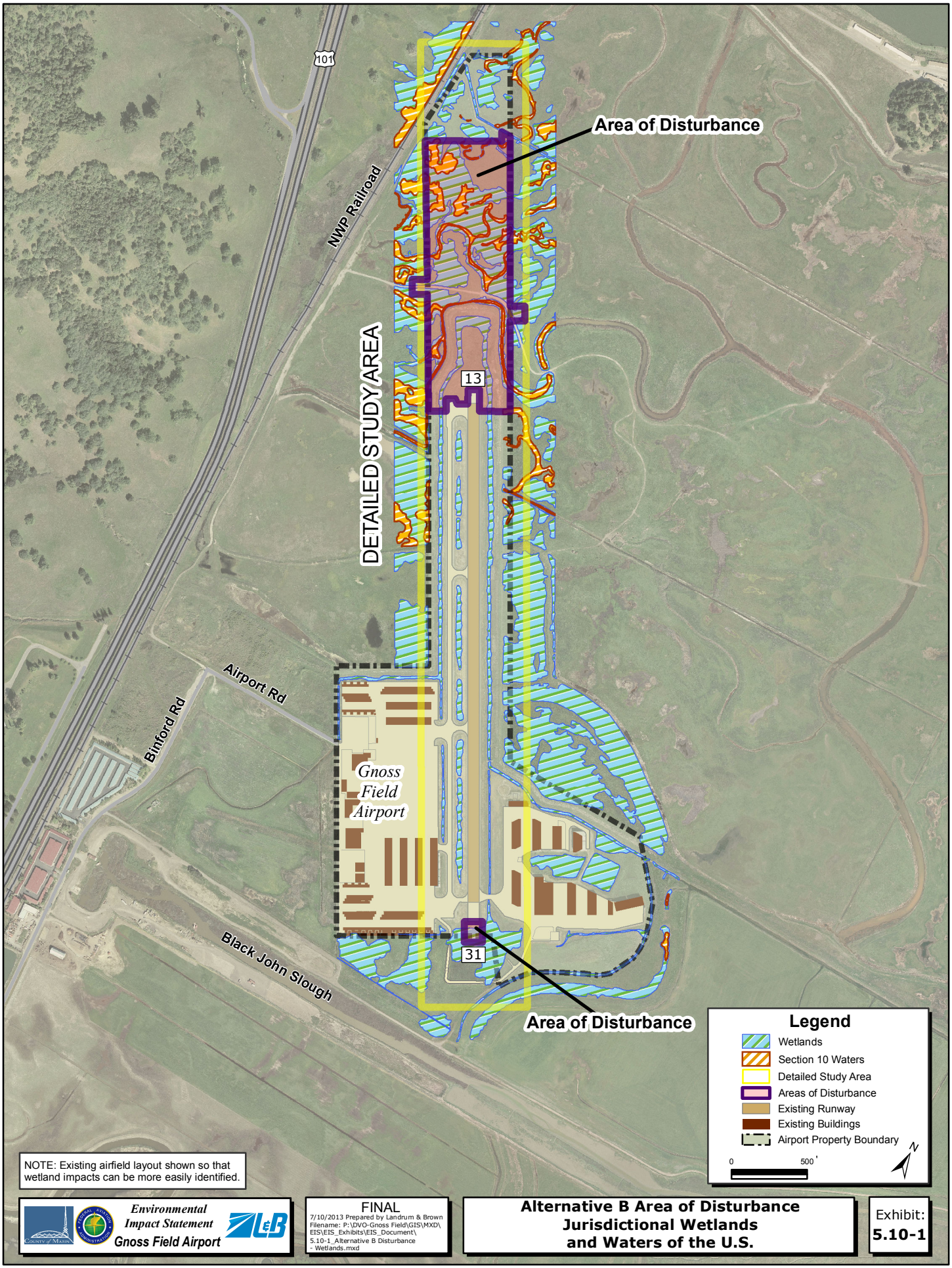
As a result of the fill material and the construction staging activities, all of the wetlands within the area of disturbance would be impacted through filling (See **Exhibit 5.10-2, *Alternative D Area of Disturbance Jurisdictional Wetlands and Waters of the U.S.***). For the purposes of this analysis, the area of disturbance was estimated for Alternative D to be a total of 26.67 acres (19.82 acres north of the existing runway and 6.85 acres south of the existing runway)..

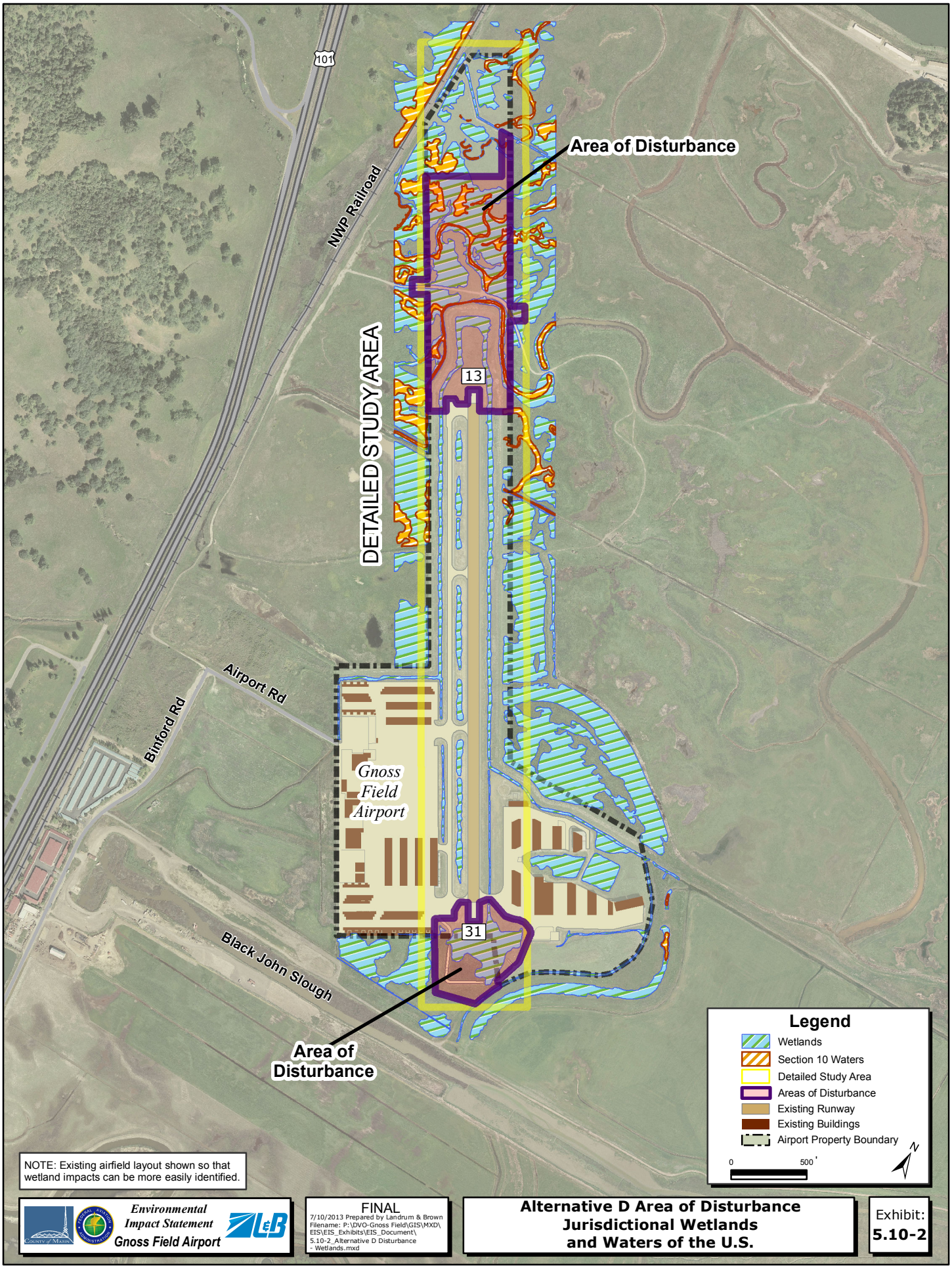
The use of fill material during construction and implementation of Alternative D would result in the following impacts to wetlands within the area of disturbance:

- Fill 11.11 acres of High Brackish Marsh wetland
- Fill 0.59 acres of perennial drainage
- Fill 1.57 acres of ditches/canals
- Fill 0.15 acres of depressional seasonal wetland

As part of this alternative, 1,004 feet of ditch/canal would be removed; however there would be 2,685 feet of ditch/canal created to extend the drainage ditches around the runway and RSA on the north side of the Airport. Therefore this alternative would result in an overall increase in length of 1,681 feet of the ditch/canal features. Although the ditch/canal system would be extended in length, there would be a net decrease in the area of ditch/canal due to the irregular shape of the existing drainage system ditch versus the more uniform shape of the proposed drainage system ditch.1.57 acres of ditch/canal would be removed as a result of this alternative, but 0.69 acres of new ditch/canal wetlands would be created to extend the drainage ditches around the runway and RSA on the north side of the Airport. Therefore, this alternative would result in an overall decrease in area of 0.88 acres of ditch/canal features.

In total, Alternative B would impact approximately 11.83 acres of wetlands regulated under Section 404 of the CWA, of which 2.66 acres are also regulated under Section 10 of the RHA; and Alternative D would impact approximately 12.73 acres of wetlands protected by Section 404 of the CWA, of which 2.56 acres are also regulated under Section 10 of the RHA. A summary of the wetland impacts is provided in **Table 5.10-2**.


101
NWP Railroad
Area of Disturbance
DETAILED STUDY AREA
13
Airport Rd
Binford Rd
Gnoss Field Airport
31
Black John Slough
Area of Disturbance
Legend
Wetlands
Section 10 Waters
Detailed Study Area
Areas of Disturbance
Existing Runway
Existing Buildings
Airport Property Boundary
0
500'
N
NOTE: Existing airfield layout shown so that wetland impacts can be more easily identified.
Environmental Impact Statement
Gnoss Field Airport
FINAL
7/10/2013 Prepared by Landrum & Brown
Filename: P:\DVO-Gnoss Field\GIS\MXD\EIS\EIS_Exhibits\EIS_Document\5.10-1_Alternative B Disturbance - Wetlands.mxd
Alternative B Area of Disturbance
Jurisdictional Wetlands
and Waters of the U.S.
Exhibit:
5.10-1



NOTE: Existing airfield layout shown so that wetland impacts can be more easily identified.

Environmental Impact Statement
Gnoss Field Airport

FINAL
7/10/2013 Prepared by Landrum & Brown
Filename: P:\DVO-Gnoss Field\GIS\MXD\EIS\EIS_Exhibits\EIS_Document\5.10-2_Alternative D Disturbance - Wetlands.mxd

Alternative D Area of Disturbance Jurisdictional Wetlands and Waters of the U.S.

Exhibit: **5.10-2**

Implementation of Alternative D would result in significant impacts to wetlands and aquatic resources unless compensatory mitigation is provided. As described in Section 5.10.6, several options for compensatory mitigation for wetland and aquatic habitat losses associated with the implementation of Alternative D are available. A detailed compensatory mitigation plan would be required to obtain the necessary authorizations to construct Alternative D. With implementation of a mitigation plan to compensate for the losses of wetland and aquatic habitat resulting from the construction of Alternative D, the environmental impact of Alternative D would not be significant.

Table 5.10-2
ACREAGE OF WETLANDS AND OTHER WATERS FILLED BY ALTERNATIVE
Gnoss Field Airport

WETLAND TYPE	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE D
Depressional Seasonal	0.00	0.15	0.15
Riverine Seasonal	0.00	0.00	0.00
Slope Seep	0.00	0.00	0.00
High Brackish Marsh	0.00	10.29	11.11
Perennial Drainage	0.00	0.59	0.59
Ditch/Canal*	0.00	1.57 removed 0.77 created 0.80 net impact	1.57 removed 0.69 created 0.88 net impact
TOTAL	**0.00**	**11.83**	**12.73**

* Both Alternative B and D propose to extend and maintain the ditch/canal system around the new runway and taxiway, offsetting a portion of the area filled. It is expected that potential impacts to the ditch/canal in Alternative B and D would be temporary during construction.

Source: Landrum & Brown analysis, 2009.

5.10.5 COMPLIANCE WITH CLEAN WATER ACT, RIVERS AND HARBORS ACT PERMIT REQUIREMENTS, AND FEDERAL WETLAND POLICIES

Construction of Alternative B or Alternative D would require that Marin County obtain a USACOE CWA Section 404 permit to authorize the filling of wetlands and other waters to construct the project. To obtain a CWA Section 404 permit, Marin County would submit a permit application to the USACOE to place fill in waters within CWA jurisdiction. Marin County typically defers applying for USACOE permits for County projects until after the County has made a determination of the environmental effects of the project under the California Environmental Quality Act (CEQA), and issues a County determination to proceed with the project. Marin County uses this approach to ensure the County does not limit its choice of alternatives or mitigation measures before completion of CEQA compliance in

accordance with the California Code of Regulations, *Title 14, Chapter 3: Guidelines for Implementation of the California Environmental Quality Act, Article 1. Section 15004 (b) (2) Time of Preparation*.[3]

As the amount of fill within CWA jurisdiction for this project exceeds 0.5 acre, the project would need to be authorized by an USACOE Individual (Standard) Permit. The USACOE would follow its regulatory program regulations at Title 33 CFR §§ 320 – 332 during the processing of the CWA permit for this project including:

- Issuing a Public Notice Soliciting Public and Agency Comments on the proposed project;
- Completing an evaluation as to whether the proposed project complies with the CWA Section 404 (b) (1) Guidelines 40 CFR Part 230 *Guidelines for the Specification of Disposal Sites for Dredged or Fill Material*, including whether the proposed avoidance, minimization, and compensatory mitigation measures for the proposed project are sufficient;
- Completing a public interest review of the proposed project;
- Completing a NEPA evaluation of the proposed project;
- Completing compliance with any required special-purpose environmental laws for the proposed project;
- Establish the party responsible for providing compensatory mitigation for environmental impacts to aquatic resources;
- Establishing mitigation ratios for compensatory mitigation for environmental impacts to aquatic resources;
- Evaluating the proposed compensatory mitigation site location, site location protection instrument, mitigation work plan, mitigation objectives, mitigation maintenance plan, ecological performance standards, monitoring requirements long-term management plan, and adaptive management plan;
- Establishing any required financial assurances required for the compensatory mitigation site; and
- Issuing a CWA permit decision for the proposed project including identifying any special conditions for avoidance, minimization, and compensatory mitigation for impacts to wetlands and aquatic resources if the USACOE issues a permit.

The USACOE could choose to adopt this EIS to assist in meeting its evaluation requirements for this project in accordance with Title 40 CFR §1506.3, 33 CFR §230.21, and 33 CFR §325 Appendix B. The USACOE could also choose to accept the FAA's CWA Section 404 (b) (1) Guidelines 40 CFR Part 230 analysis, and the FAA's demonstrated compliance with other special purpose environmental laws including the Endangered Species Act (ESA), Section 7, for endangered species, and the National Historic Preservation Act (NHPA) Section 106 for historic properties during the USACOEs permit evaluation process. Alternatively, the USACOE could also choose to supplement this EIS with more detailed or specific

[3] E-mail from Marin County Environmental Consultant J. Roberto to FAA Environmental Protection Specialist D. Pomeroy, May 2, 2013.

project or compensatory mitigation information that is not available as of the writing of this EIS.

Marin County will use the information in this EIS and the County's Final Environmental Impact Report (EIR) to prepare its CWA Section 404 permit application for this project. If USACOE identifies additional information is needed to process the CWA Section 404 permit application for this project, the County will provide that information as part of the CWA Section 404 permitting process. If significant new circumstances or information bearing on the Proposed Action or relevant to the environmental concerns of the Proposed Action are identified during the USACOE CWA Section 404 permitting process, the FAA would prepare a supplement to this EIS in accordance with 40 CFR §1502.9 (c), FAA Order 1050.1E, paragraph 516, and FAA Order 5050.4B, paragraphs 1401 – 1402.

In order for the USACOE to issue a CWA permit, the proposed activity must comply with the CWA Section 404 (b) (1) Guidelines. These Guidelines establish several requirements including that the USACOE can only permit the least environmentally damaging practicable alternative that meets the overall project purpose.

As discussed in Chapter Two, *Purpose and Need,* Chapter Three, *Alternatives*, and Appendix D, off-site alternatives such as using another airport or another mode of transportation are not practicable as they do not meet the project purpose. No on-site alternatives other than extending the existing runway at DVO by a minimum of 1,100 feet to a total runway length of 4,400 feet would meet the project's purpose and need as described in Chapter Two, *Purpose and Need*. In addition, FAA design standards for an ARC B-I (small) airport require a 240-foot runway safety area at each end of the 4,400 foot runway.

As any runway extension must be the same width as the existing runway, and must be aligned on the same compass direction as the existing runway, the opportunities to avoid and minimize impacts to wetlands and other waters associated with construction of a runway extension and associated runway safety areas at the Airport are limited to how much of the runway extension is constructed on each end of the existing runway, and the overall length of the runway extension. As an 1,100 foot runway extension is the minimum extension that meets the project purpose, as described in detail in Appendix D, the only mitigation measures to avoid or minimize impacts to wetlands relate to how much of the proposed runway extension is constructed on each end of the existing runway.

A detailed evaluation of the project alternatives in relation to the CWA Section 404 (b) (1) Guidelines 40 CFR Part 230 *Guidelines for the Specification of Disposal Sites for Dredged or Fill Material* is included in Chapter Three, *Alternatives* and summarized here. Alternative A – No Action, avoids impacts to wetlands and aquatic resources but does not meet the project purpose. Alternative C – Extend Runway to the Southeast by 1,100 feet, was not evaluated in detail as it would require filling of Black John Slough, and therefore clearly has a greater impact on wetland and aquatic resources than Alternative B or Alternative D. Alternative B – Extend Runway to the Northwest by 1,100 feet, and Alternative D – Extend Runway to the Southeast by 240 feet and to the Northwest by 860 feet, have similar impacts on wetlands and aquatic resources but Alternative D requires filling

11.11 acres of high brackish marsh wetland as compared to 10.29 acres of high brackish marsh wetland under Alternative B. As described in Section 5.9, Alternative B also has a lesser impact on endangered species than Alternative D. As Alternative B and Alternative D have similar environmental impacts, but Alternative B has less impact on endangered species and wetlands, Alternative B is identified as the least environmentally damaging practicable alternative that meets the overall purpose of the proposed project.

Implementation of Alternative B would meet the requirements of EO 11990 *Protection of Wetlands and* DOT Order 5660.1A *Preservation of the Nation's Wetlands*, because there is no less environmentally damaging practicable alternative to constructing the Proposed Project than Alternative B. Alternative B minimizes harm to wetland areas and aquatic resources as compared to Alternative D. Alternatives to implement the Proposed Project that proposed constructing a shorter runway extension of less than 1,100 feet do not meet the project purpose and are not practicable under EO 11990 or DOT Order 5660.1A. Alternatives such as Alternatives C or D, would meet the project purpose, but have greater impacts on wetlands than Alternative B. Implementing Alternative C or Alternative D, when Alternative B is available and practicable, would be inconsistent with EO 11990 and DOT Order 5660.1A.

5.10.6 CONCEPTUAL MITIGATION

5.10.6.1 Regulations for Compensatory Mitigation

The CWA, the NEPA, EO 11990 *Protection of Wetlands*, and DOT Order 5660.1A *Preservation of the Nation's Wetlands*, all require consideration of mitigation measures for adverse environmental impacts. In addition, the USACOE regulations at Title 33 CFR 332 provide detailed requirements regarding the approval of compensatory mitigation. The USACOE regulations at 33 CFR 332.3 (b) also identify the order of preference for different types of compensatory mitigation for aquatic impacts from most preferable to least preferable as:

- Mitigation bank credits
- In-lieu fee program credits
- Permittee-responsible mitigation under a watershed approach
- Permittee-responsible mitigation through on-site and in-kind mitigation
- Permittee-responsible mitigation through off-site and/or out-of-kind mitigation

The USACOE CWA and RHA regulatory program compensatory mitigation regulations at 33 CFR 332.3 (b)(1) state that compensatory mitigation projects should not be located where they will increase the risks to aviation by attracting wildlife to areas where aircraft-wildlife strikes may occur (e.g., near airports). As on-site and in-kind wetland mitigation for this project could potentially attract wildlife and increase the risk of aircraft-wildlife strikes, on-site, in-kind aquatic resource mitigation at DVO would be inconsistent with USACOE compensatory mitigation regulations and FAA Advisory Circular 150/5200-33B *Hazardous Wildlife Attractants on or Near Airports*.

USACOE mitigation regulations at 33 CFR 332.3 (f) also require that compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions, and that a minimum one-to-one acreage or linear foot mitigation compensation ratio be used unless another functional or condition assessment method or other suitable metric is available to evaluate the loss of aquatic resource function. Based on USACOE regulations and the FAA NEPA requirements, a minimum of a one-to-one acreage replacement for aquatic resources eliminated by Alternative B or Alternative D would be necessary to reduce aquatic resource impacts to a not significant level. However, as the following describes, compensatory mitigation for impacts to aquatic resources resulting from implementation of either Alternative B or Alternative D are anticipated to exceed a one-to-one replacement ratio.

The Marin Countywide Plan, Natural Systems and Agriculture Element, Biological Resources Section, Wetland Conservation Biological Goal Bio-3, Policy Bio-3.2 (Marin Countywide Plan page 2-25) identifies County policies of requiring a 2:1 ratio (replaced:impacted) for on-site compensatory wetland mitigation and a 3:1 ratio (replaced:impacted) for off-site compensatory wetland mitigation. As discussed in Section 5.9.5 and Appendix I, *Biological Resources*, Table I-1 of this EIS, the USFWS Biological Opinion for this project requires endangered species habitat compensation for impacts of the proposed project that exceed the minimum one-to-one compensatory mitigation ratio identified in the USACOE CWA mitigation regulations.

As habitat compensation for both the California clapper rail and salt marsh harvest mouse requires off-site habitat compensation, and these species prefer tidal salt marsh, it is likely that Marin County will choose to coordinate the wetland mitigation requirements identified in the CWA Section 404 permit with the habitat compensation requirements of the USFWS Biological Opinion. Such an approach is specifically allowed under the USACOE compensatory mitigation regulations at 33 CFR Part 332. In general, replacing the high brackish marsh and annual grassland to be temporarily or permanently removed as a result of the DVO runway extension project at a compensatory mitigation site considered suitable for restoration to tidal salt marsh in the USFWS *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (USFWS *Draft Recovery Plan*) would result in the establishment or enhancement of tidal salt marsh habitat that would provide greater wetland functions, and improved habitat for the California clapper rail and salt marsh harvest mouse, as compared to the wetlands and other habitat being removed.

The habitat acreages necessary to compensate for wetland and aquatic resource impacts under Alternative B and Alternative D based on the 3:1 (replaced:impacted) off-site habitat compensation ratio identified in the Marin Countywide Plan, Natural Systems Goal Bio-3, Policy Bio-3.2, are shown in **Table 5.10-3** and **Table 5.10-4**. Under Alternative B, 35.49 acres of compensatory mitigation acreage would be needed to compensate at a 3:1 ratio for the removal of 11.83 acres of wetland and aquatic habitat. Under Alternative D, 38.19 acres of compensatory mitigation acreage would be needed to compensate at a 3:1 ratio for the removal of 12.73 acres of wetland and aquatic habitat. These acreage values are different than the endangered species habitat impact acreages provided in EIS Section 5.9 because Section 5.9 includes habitat impacts and habitat compensation for both upland and wetland endangered species habitat impacts, while EIS Section 5.10 is specific to wetland and aquatic resources impacts.

Table 5.10-3
COMPENSATORY MITIGATION WETLAND AND AQUATIC HABITAT ACREAGE REQUIRED – ALTERNATIVE B
Gnoss Field Airport

WETLAND TYPE	ALTERNATIVE B WETLAND AND AQUATIC HABITAT ACRES IMPACTED	ALTERNATIVE B COMPENSATORY MITIGATION RATIO REQUIRED[1]	ALTERNATIVE B COMPENSATORY MITIGATION WETLAND AND AQUATIC HABITAT ACREAGE REQUIRED[2]
Depressional Seasonal	0.15	3:1	0.45
Riverine Seasonal	0.00	-	0.00
Slope Seep	0.00	-	0.00
High Brackish Marsh	10.29	3:1	30.87
Perennial Drainage	0.59	3:1	1.77
Ditch/Canal*	1.57 removed 0.77 created 0.80 net impact	3:1	2.40
TOTAL	**11.83**	**-**	**35.49**

[1] Per Marin Countywide Plan, Natural Systems and Agriculture Element, Biological Resources Section, Wetland Conservation Biological Goal Bio-3, Policy Bio-3.2.
[2] Compensatory Mitigation Acreage Required = Acres Impacted x Compensation Ratio = (example: 0.15 acres x 3 = 0.45 acres)

Table 5.10-4
COMPENSATORY MITIGATION WETLAND AND AQUATIC HABITAT ACREAGE REQUIRED – ALTERNATIVE D
Gnoss Field Airport

WETLAND TYPE	ALTERNATIVE D WETLAND AND AQUATIC HABITAT ACRES IMPACTED	ALTERNATIVE D COMPENSATORY MITIGATION RATIO REQUIRED[1]	ALTERNATIVE D COMPENSATORY MITIGATION WETLAND AND AQUATIC HABITAT ACREAGE REQUIRED[2]
Depressional Seasonal	0.15	3:1	0.45
Riverine Seasonal	0.00	-	0.00
Slope Seep	0.00	-	0.00
High Brackish Marsh	11.11	3:1	33.33
Perennial Drainage	0.59	3:1	1.77
Ditch/Canal*	1.57 removed 0.69 created 0.88 net impact	3:1	2.64
TOTAL	**12.73**		**38.19**

1 Per Marin Countywide Plan, Natural Systems and Agriculture Element, Biological Resources Section, Wetland Conservation Biological Goal Bio-3, Policy Bio-3.2.
2 Compensatory Mitigation Acreage Required = Acres Impacted x Compensation Ratio = (example: 0.15 acres x 3 = 0.45 acres)

5.10.6.2 Use of USACOE Approved Mitigation Bank for Compensatory Mitigation of Aquatic Resources Impacts

The USACOE compensatory mitigation regulations at 33 CFR Part 332 identify use of a USACOE-approved mitigation bank as the most preferable form of compensatory mitigation to offset unavoidable impacts to aquatic resources within CWA Section 404 or RHA Section 10 jurisdiction authorized by a USACOE permit. The USACOE San Francisco District maintains a listing of approved Wetland Mitigation Banks in the San Francisco Bay Area on its public website.[4] As of December 2012, the Burdell Mitigation Bank was the only USACOE approved wetland mitigation bank that included Marin County in its service area.

The Burdell Mitigation Bank is located approximately 4,000 feet east of DVO. As of December 2012, there were 19 wetland mitigation credits available for sale from the Burdell Mitigation Bank[5]. As each credit can be used to mitigate for filling of 0.1 acre of wetlands, Marin County could complete compensatory wetland mitigation for 1.9 acres of wetland fill by purchasing all remaining credits available for sale from the Burdell Mitigation Bank. There are also 12 wetland mitigation

4 Approved Wetland Mitigation Banks, U.S. Army Corps of Engineers, San Francisco District, On-line at: http://www.spn.usace.army.mil/Missions/Regulatory/MitigationBanks/ApprovedBanksforthe SanFranciscoRegulatoryDi.aspx
5 E-mail from Burdell Mitigation Bank representative Anthony Georges to FAA Environmental Protection Specialist Douglas Pomeroy, December 18, 2012.

credits that were purchased from the Burdell Mitigation Bank, which have not yet been used for a specific project. If those additional 12 credits became available and were purchased by Marin County, those credits could be used to provide compensatory mitigation for an additional 1.2 acres of wetland fill. As a maximum of 31 wetland mitigation credits providing compensation for 3.1 acres of wetland fill might be available from the Burdell Mitigation Bank, the Burdell Mitigation Bank could provide part, but not all, of compensatory wetland mitigation for wetland impacts of Alternative B or Alternative D.

The Burdell Mitigation Bank has not been specifically approved for use by the USFWS to provide habitat compensation for impacts to the California clapper rail or the salt marsh harvest mouse. Marin County would need to seek specific authorization from the USFWS to determine whether purchase of wetland mitigation credits from the Burdell Mitigation Bank could also be credited towards the habitat compensation requirements needed to address the endangered species habitat compensation requirements of Alternative B or Alternative D. If the USACOE approves additional mitigation banks with an adequate number and resource type of compensatory mitigation credits available to mitigate for the environmental impacts to aquatic resources prior to Marin County completing the permitting process for this proposed project, Marin County could consider purchasing compensatory mitigation credits from a newly approved mitigation bank to provide compensatory mitigation for the proposed project.

5.10.6.3 Use of USACOE-Approved In-Lieu Fee Program Compensatory Mitigation Bank Credits For Compensatory Mitigation of Aquatic Resources Impacts

The USACOE compensatory mitigation regulations at 33 CFR Part 332 identify use of a USACOE-approved in lieu fee program as the second-most preferable form of compensatory mitigation to offset unavoidable impacts to aquatic resources within CWA Section 404 or RHA Section 10 jurisdiction authorized by a USACOE permit. No USACOE approved in-lieu fee programs are currently available for use as compensatory mitigation for environmental impacts to aquatic resources within the USACOE San Francisco District boundary, which includes Marin County and DVO.[6]

5.10.6.4 Use of USACOE Permittee-Responsible Mitigation under a Watershed Approach for Compensatory Mitigation of Aquatic Resources Impacts

The USACOE compensatory mitigation regulations at 33 CFR Part 332 identify that when the USACOE intends to issue a permit for a regulated activity, and that activity is not in the service area of an approved mitigation bank or in lieu fee program that has an adequate number and resource type of compensatory mitigation credits available to mitigate for the environmental impacts to aquatic resources, that permittee-responsible compensatory mitigation is the only option.

[6] E-mail from Army Corps of Engineers, San Francisco District, Regulatory Division, North Section Supervisor, Laurie Monarres, to Federal Aviation Administration Environmental Protection Specialist Douglas Pomeroy, May 2, 2013.

The USACOE compensatory mitigation regulations at 33 CFR Part 332 identify Permittee-responsible mitigation under a watershed approach as the preferred method of permittee-responsible mitigation.

The USFWS *Draft Recovery Plan*[7] identifies its goal as "…the comprehensive restoration and management of tidal marsh ecosystems." As the USFWS *Draft Recovery Plan*[8] is a comprehensive, watershed level plan incorporating restoration and management of tidal marsh ecosystems, implementation of an aquatic resources and endangered species habitat compensation plan consistent with the USFWS *Draft Recovery Plan* would represent Permittee responsible mitigation under a watershed approach. The USFWS *Draft Recovery Plan*[9], San Pablo Bay Recovery Unit[10] extends from Gallinas Creek in Marin County (at the southwestern end of the recovery unit) around San Pablo Bay north and east to Mare Island in Solano County, and includes Gnoss Field Airport within its boundaries. There are several current, proposed, or potential projects for compensatory mitigation for aquatic resources and endangered species within the USFWS San Pablo Bay Recovery Unit that could provide compensatory mitigation for wetland and aquatic impacts of the Proposed Project.

Potential Sites for Providing Compensatory Mitigation for Adverse Environmental Impacts to Wetlands and Aquatic Sites Associated With the Gnoss Field Airport Runway Extension Project

The potential compensatory mitigation projects for impacts to wetland and aquatic resources (which are also impacts to endangered species habitat) described below are all within the San Pablo Bay Recovery Unit identified in the USFWS *Draft Recovery Plan* and would represent compensatory mitigation options under a watershed approach. The USACOE Regulatory Program regulation 33 CFR Part 332 *Compensatory Mitigation for Losses of Aquatic Resources* §332.4 (b) *Planning and Documentation, Public Review and Comment*, allows USACOE permit applicants to keep confidential certain business information such as the exact location of a proposed compensatory mitigation site that has not yet been secured. Marin County would finalize its compensatory mitigation site and plan for impacts to wetlands and aquatic sites during the USACOE CWA permit process.

San Francisco Bay National Wildlife Refuge

Several San Francisco Bay National Wildlife Refuge (Refuge) projects needing funding are potential mitigation alternatives. Initial contact has been made with Mendel Stewart, Manager of the San Francisco Bay National Refuge and Don Brubaker, North Bay Refuges Manager within the San Francisco Bay National

[7] Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California, Sacramento Fish and Wildlife Office, Sacramento California, Executive Summary, pg. vii, 2010a.
[8] Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California, Sacramento Fish and Wildlife Office, Sacramento California, xvii+636pp, 2010a.
[9] Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California, Sacramento Fish and Wildlife Office, Sacramento California, Chapter III: Recovery Strategies, pg. 146, 2010a.
[10] Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California, Sacramento Fish and Wildlife Office, Sacramento California, Chapter III: Recovery Strategies, pg. 146 and Figure III-3, pg. 149, 2010a.

Wildlife Refuge. Several projects associated with the restoration of tidal marsh habitat areas were discussed. These projects, in general, are relatively large with multi-million dollar costs. As mitigation for impacts to wetlands, the County may contribute towards a larger effort that would be built in the appropriate timeframe. Impacts to wetlands would be compensated by the contribution of funding for in-kind habitat creation or restoration. Potential sites for the tidal marsh creation/restoration include:

- The Cullinan Ranch Restoration Project, which is a 1,549 acre tidal marsh restoration project near Vallejo. The U.S. Fish and Wildlife Service and the California Department of Fish and Game issued a Final Environmental Impact Statement/Environmental Impact Report in May 2009, and the U.S. Fish and Wildlife Service issued a Record of Decision for this project on April 9, 2010. Construction on this project started in September 2011;
- The Sonoma Creek Enhancement Project, which is a 500 acre project associated with the San Pablo Bay National Wildlife Refuge (NWR). The project would be implemented at the mouth of the Sonoma Creek where it enters the bay on the western bank. The project is being funded jointly by the NWR, Audubon Society, and the localized mosquito abatement district. The U.S. Fish and Wildlife Service issued a National Environmental Policy Act, Environmental Assessment for the project in January 2014, but permitting has yet to be completed. Contribution to this project may be a viable alternative; and
- Other alternatives are possible within the San Francisco Refuge complex, but timing and quantification of creation/restoration to complete mitigation are factors that would require continued coordination.

Offsite Restoration by Private Entity

A private individual was contacted regarding a parcel of land they indicated they owned that is approximately 7,500 feet from the Airport. The individual indicated interest in developing wetland habitat to sell for mitigation credits or develop a project-specific agreement with Marin County to use the property for as a project specific wetland mitigation site. There is the potential for Marin County to participate in a project specific wetland mitigation project on the site. By working with a private individual, it may be easier to negotiate terms and conditions to suit the project mitigation requirements.

Offsite Restoration by Conservation Group or Public Entity

The San Francisco Bay Joint Venture (SFBJV) is one of 18 Joint Ventures established under The Migratory Bird Treaty Act and funded under the annual Interior Appropriations Act. It brings together public and private agencies, conservation groups, development interests, and others to restore wetlands and wildlife habitat in San Francisco Bay watersheds and along the Pacific coasts of San Mateo, Marin, and Sonoma counties.

The Sonoma Land Trust's 2,327-acre Sears Point Wetlands and Watershed Restoration Project is one example of a potential off-site restoration site in which participation by Marin County might be considered allowable mitigation by the USACOE. The project is located in southern Sonoma County on the edge of San Pablo Bay between the Petaluma River and Tolay Creek. The project includes diked agricultural baylands, alluvial fans, hillslopes reaching up 400' above sea level, and numerous small drainages.[11]

Marin County could choose to implement its own wetland mitigation project in the Lower Novato Creek Watershed as identified in the USFWS April 3, 2013 Biological Opinion for Alternative B of this EIS. The USFWS Draft Recovery Plan[12] identifies the San Pablo Bay Recovery Unit near the mouth of the Novato Creek watershed adjacent to the Hamilton Field wetland restoration project as a potential tidal marsh restoration area. Such a project could potentially meet the compensatory wetland mitigation requirements of the Clean Water Act, Section 404, permitting process, and the habitat compensation measures identified in the Endangered Species Act, Section 7 consultation, USFWS Biological Opinion for Alternative B.

USFWS Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California, San Pablo Bay Recovery Unit

The USFWS Draft Recovery Plan, Chapter III: Recovery Strategies, Section C. Restoration Maps, includes for the San Pablo Bay Recovery Unit Figure III-10 Segment D, Figure III-11 Segment E, Figure III-12 Segment F, and Figure III-13, Segment G, which all identify areas for "Near Term Restoration, Future Restoration, or Potential Restoration." These figures are provided in Appendix I (see U.S. Fish and Wildlife Service Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California (2010a) Chapter III: Recovery Strategies Figure III-10 Segment D, Figure III-11 Segment E, Figure III-12 Segment F, Figure III-13 Segment G, showing the boundaries of the San Pablo Bay Recovery Unit). These Restoration Maps include the projects previously described and additional areas that the USFWS considers appropriate for near term, future, or potential restoration to tidal marsh ecosystem. Developing a habitat compensation plan for endangered species at the compensation ratios identified in Section 5.9 and Table I-1 of Appendix I would also provide compensatory mitigation for impacts to aquatic resources.

[11] Sonoma Land Trust www.sonomalandtrust.org/pdf/SonomaBaylandsBrochure.pdf accessed November 4, 2011 and Bay Area Integrated Regional Water Management Plan http://bairwmp.org/projects/sears-point-restoration-project accessed on November 4, 2011.

[12] Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California, Sacramento Fish and Wildlife Office, Sacramento California, xvii+636pp, 2010a.

5.10.6.5 Use of USACOE Permittee-Responsible Mitigation through On-Site and In-Kind Mitigation

The USACOE CWA and RHA regulatory program mitigation regulations at 33 CFR § 332.3 (b)(1) state that compensatory mitigation projects should not be located where they will increase the risks to aviation by attracting wildlife to areas where aircraft-wildlife strikes may occur (e.g., near airports). As on-site and in-kind wetland mitigation for this project could potentially attract wildlife and increase the risk of aircraft-wildlife strikes, on-site, in-kind aquatic resource mitigation at DVO would be inconsistent with USACOE compensatory mitigation regulations and FAA Advisory Circular 150/5200-33B *Hazardous Wildlife Attractants on or Near Airports*. Therefore, on-site, in-kind compensatory mitigation for aquatic resources or endangered species that creates or enhances aquatic and/or endangered species habitat is considered impracticable. Reestablishment of vegetation in areas of temporary disturbance of aquatic resources or endangered species habitat that would not represent an additional attractant to wildlife hazardous to aircraft is considered practicable.

5.10.6.6 Use of USACOE Permittee-Responsible Mitigation through Off-Site and Out-Of-Kind Mitigation

The USACOE CWA and RHA regulatory program mitigation regulations at 33 CFR Part 332 identify that Permittee-Responsible Mitigation under a watershed approach is preferable to Permittee-Responsible Mitigation through an off-site and out-of-kind mitigation that has not been based on a watershed approach. As the USFWS Draft Recovery Plan for Tidal Marsh Ecosystems provides a watershed approach for providing compensatory mitigation for impacts to aquatic resources and endangered species for the proposed project, there is no need for the development of a separate compensatory mitigation proposal that does not utilize the existing watershed information.

5.10.6.7 Conclusion

The USFWS San Pablo Bay Recovery Unit in the USFWS *Draft Recovery Plan,* which includes DVO, identifies many potential short-term, mid-term, and potential tidal salt marsh restoration or creation sites. Wetland restoration or creation at one of these sites could provide compensatory mitigation for the wetland, aquatic resource and endangered species impacts identified in Sections 5.9 and 5.10 of this EIS. The FAA concludes that if Marin County provides compensatory mitigation for wetland impacts at the mitigation ratio of 3:1 identified in their Countywide plan or at an alternative ratio identified in a USACOE-approved and issued CWA permit for this project, the impact of this project on wetlands and aquatic resources would not be significant.

In order to rely on mitigation to reduce environmental impacts to a not significant level, the FAA must determine that the proposed mitigation is technically possible to implement. The USFWS *Draft Recovery Plan* identifies numerous examples of successful tidal marsh restoration and creation projects in the San Francisco Bay area, and specifically within the USFWS San Pablo Bay Recovery Unit, which includes DVO within its boundaries. The USFWS *Draft Recovery Plan* identifies

habitat restoration and creation as its primary strategies for recovery of listed species in tidal marsh ecosystems of Northern and Central California and considers such restoration "…highly feasible in the San Francisco Bay Estuary." The FAA considers this sufficient evidence that it is feasible to provide compensatory mitigation for the impacts to wetland and aquatic resources associated with Alternative B or Alternative D.

In order for the FAA to determine that compensatory mitigation will reduce environmental impacts to a not significant level, the FAA must also be able to reasonably conclude that the proposed mitigation will actually be implemented. The USACOE has a compliance and enforcement program to ensure that USACOE permit recipients comply with USACOE permit and CWA requirements. The USACOE compensatory mitigation regulations at 33 CFR Part 332 require that permit applicants submit ecological performance standards, mitigation monitoring standards, mitigation site management plans, and sometimes financial assurances to obtain a USACOE permit. USACOE permit holders with compensatory mitigation plans that do not meet ecological performance standards can be required to undertake corrective actions to ensure their compensatory mitigation addresses the environmental impacts to wetlands and aquatic resources identified in the USACOE permit. In addition, the FAA can also add special conditions that require implementation of compensatory mitigation for impacts to wetland and aquatic resources to any approval of Federal funding assistance to construct the proposed runway extension.

Based on the various regulatory and administrative controls described above, the FAA concludes there are sufficient administrative controls available to ensure that Marin County will adhere to all compensatory mitigation requirements identified for the Proposed Project or its Alternatives. The FAA's decision as to whether to include special conditions regarding compensatory mitigation as part of Federal financial assistance grants to Marin County will be made in the FAA Record of Decision regarding this EIS.

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5.11 FLOODPLAINS

Floodplains are included in the Environmental Impact Statement (EIS) as an assessment category identified in Federal Aviation Administration (FAA) Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*. As discussed in Section 4.5 and shown on **Exhibit 5.11-1, *Floodplains***, all of DVO is located in the 100-year floodplain. This section provides an overview of what is known about the existing floodplain conditions and discusses the potential impacts caused by the Sponsor's Proposed Project and its alternatives of the EIS.

5.11.1 REGULATORY SETTING

Floodplains are defined by Executive Order (EO) 11988, *Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year" (i.e., area inundated by a 100-year flood). U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection,* defines the values served by floodplains to include "natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, and forestry".

Executive Order 11988 directs Federal agencies to take actions to reduce the risk of flood loss, minimize flood impacts on human safety, health and welfare, and restore and preserve floodplain natural and beneficial values. To do this, the Order bans approving activities in a floodplain unless:

(1) No practicable alternative exists; and

(2) Measures to minimize unavoidable short-term and long–term impacts are included.

DOT Order 5650.2 contains policies and procedures for carrying out Executive Order 11988. Based on DOT Order 5650.2, if an action includes development within a floodplain, the analysis shall indicate if the encroachment would be a "significant encroachment," that is, whether it would cause one or more of the following impacts:

(1) The action would have a high probability of loss of human life;

(2) The action would likely have substantial, encroachment-associated costs or damage, including interrupting aircraft service or loss of a vital transportation facility (e.g., flooding of a runway or taxiway; important navigational aid out of service due to flooding, etc.); or

(3) The action would cause adverse impacts on natural and beneficial floodplain values.

FAA Order 1050.1E, Change 1, stresses that impacts to floodplains due to development are to be avoided and minimized by all means practicable. The Order also outlines the options to be considered if encroachment into a floodplain cannot be avoided. These options include: consideration of proposed action and alternatives, mitigation measures (such as elevations, special designs, and minimal fill requirements), determination of a significant encroachment, and the determination of location in a special flood hazard area.

The Marin Countywide Plan provides guidance and recommendations regarding development within floodplains in order to protect people and property from risks associated with flooding and inundation within the County, notably: Policy EH 3.2, Retain Natural Conditions: Ensure that flow capacity is maintained in stream channels and floodplains, and achieve flood control using biotechnical techniques instead of storm drains, culverts, riprap, and other forms of structural stabilization.[1] Additional detail is available in the Marin Countywide Plan including specific goals and implementing programs.

5.11.2 EXISTING CONDITIONS

A Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), dated May 4, 2009,[2] was used to establish the boundary of the 100-year floodplain within the Detailed Study Area (DSA). The FIRM shows that the entire DSA lies within the FEMA designated "100-year Floodplain with Additional Storm Wave Hazards," also known as "Area of Special Flood Hazard Zone VE," which describes high-risk coastal areas with a one percent or greater chance of flooding and an additional hazard associated with storm waves,[3] as shown in Exhibit 4-10, *Floodplains*, in Chapter Four, *Affected Environment*.

Presently, FEMA is not authorized to consider future potential rises in sea level in its preparation of FIRMs. However, in 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act, which included a provision establishing a Technical Mapping Advisory Council (TMAC). The TMAC is charged with developing recommendations that "incorporate the best available climate science to assess flood risks", and determine how FEMA can best "consider the impact of the rise in the sea level." Implementation of this law and its provision regarding the objectives of the TMAC will in the near future allow FEMA to incorporate predictions of future sea level rise into its flooding risk assessments.

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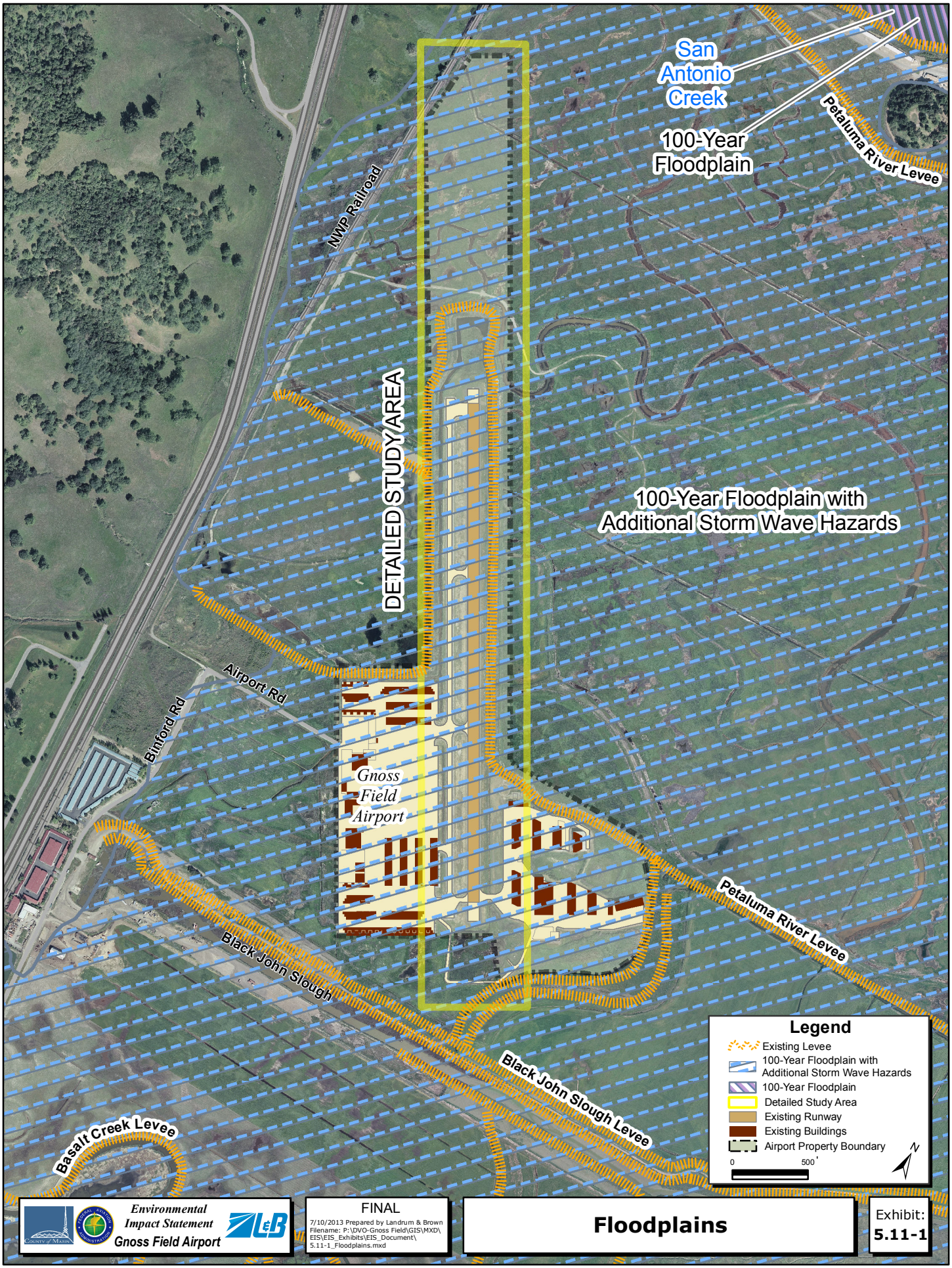
1 *Marin Countywide Plan, 2.6, Environmental Hazards*. Adopted by the Marin County Board of Supervisors, November 6, 2007.

2 Federal Emergency Management Agency, *Flood Insurance Rate Map,* Community Number 0601730175D. Available online at: http://msc.fema.gov/webapp/wcs/stores/servlet/MapSearchResult?storeId=10001&catalogId=10001&langId=1&userType=G&panelIDs=06041C0175D&Type=pbp&nonprinted=&unmapped= Accessed October 18, 2011.

3 *Definitions of FEMA Flood Zone Designations*, On-line at: http://msc.fema.gov. Retrieved October 18, 2013.



Environmental Impact Statement
Gnoss Field Airport

FINAL

7/10/2013 Prepared by Landrum & Brown
Filename: P:\DVO-Gnoss Field\GIS\MXD\EIS\EIS_Exhibits\EIS_Document\5.11-1_Floodplains.mxd

Floodplains

Exhibit: **5.11-1**

Other agencies are already authorized to consider sea level rise during project planning. Within the past four years, the US Army Corps of Engineers (USACOE) has issued two directives regarding consideration of predicted levels of sea level rise in the analysis and design of all of its Civil Works projects, which include flood control projects.[4] In addition, numerous Federal, State of California, and regional organizations are currently studying the potential effects of sea level rise and its implications for land use, flood control, and other public infrastructure and habitat conservation. These include the National Academy of Sciences/National Research Council (NRC), the National Oceanic and Atmospheric Administration (NOAA), FEMA, the US Geological Survey (USGS), USACOE, the US Fish and Wildlife Service (USFWS), the California Natural Resources Agency, the Coastal and Ocean Resources Working Group for the California Climate Action Team (CO-CAT), the San Francisco Bay Conservation and Development Commission (BCDC), and the Point Reyes Bird Observatory (PRBO). Several multi-agency initiatives that address climate change, sea level rise impacts and adaptation strategies are also underway, including the *California Vulnerability and Adaptation Study,*[5] *Adapting to Rising Tides* project,[6] the California Coastal Analysis and Mapping Project (CCAMP), which includes the Open Pacific Coast Study and the San Francisco Bay Area Coastal Study,[7] the *CASCaDE* (Computational Assessments of Scenarios of Change for the Delta Ecosystem) project,[8] and the *Our Coast- Our Future* project.[9] Also, the California Landscape Conservation Cooperative (CA LCC) and its Climate Commons project provide access to up-to-date climate change data and related resources tailored to conservation efforts.[10]

A regional system of manmade ditches and levees constructed along the Petaluma River provides flood protection for the Airport and surrounding areas. In addition, the Airport has its own levees on Airport property to provide further protection for the runway, taxiway, aircraft parking areas, and the administrative offices. However, the FIRM shows the entire Airport property to be located within the 100-year floodplain because the Airport and regional system of levees does not

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4 *Water Resource Policies and Authorities Incorporating Sea-Level Change Considerations in Civil Works Programs*, Circular No. 1165-2-212, USACE, Washington, DC, July 2009; and *Sea Level Change Considerations for Civil Works Programs*, Circular No. 1165-2-212, USACE, Washington, DC, Oct. 2011.

5 *Climate Change Impacts, Vulnerabilities, and Adaptation in the San Francisco Bay Area*, the Third California Climate Change Assessment, referred to as the Vulnerability and Adaptation Study, prepared by UC Berkeley, S. Moser Research & Consulting and Stanford University for the California Energy Commission.

6 The Adapting to Rising Tides (ART) project is a collaborative planning effort initiated by BCDC, in partnership with NOAA's Coastal Services Center, Caltrans, the Metropolitan Transportation Commission, and local Bay Area governments to assist communities in developing sea level rise adaptation strategies, sustainable infrastructure and ecosystem protection.

7 *San Francisco Bay Area Coastal Study- California Coastal Analysis and Mapping Project*, FEMA digital brochure, Sept. 2012, available at: http://www.r9map.org/Documents/120904_FEMA-Brochure_SFBayArea_web.pdf, accessed April 2013.

8 A USGS program in collaboration (and funded by) the State of CA's Delta Stewardship Council, available at: http://cascade.wr.usgs.gov/index.shtm, accessed April 2013.

9 The Our Coast-Our Future project is a collaboration between PRBO, USGS and NOAA with the goal of developing analytical decision- support tools for climate change assessment and for assessing vulnerabilities to natural and build environments.

10 CA LCC website: http://www.californialcc.org/, accessed April 2013.

meet the physical criteria identified in the National Flood Insurance Program (NFIP) requirements as described in Title 44 Code of Federal Regulations (CFR) § 65.10. Therefore, for the purposes of this EIS, the Airport is considered to be located within the 100-year floodplain, but consideration will be given during the impact evaluation to the existing system of ditches and levees that help protect the Airport from flooding.

5.11.3 FUTURE CONDITIONS: 2018

This section addresses the effects of future operations and construction on existing floodplains in the vicinity of DVO. The year 2018 represents the anticipated year of construction completion and commencement of operation of the proposed runway extension. Alternative B (Sponsor's Proposed Project) and Alternative D would include development within the 100-year floodplain. As discussed in Chapter Two, *Purpose and Need*, Chapter Three, *Alternatives*, and Appendix D, *Runway Length Analysis*, off-site alternatives such as using another airport or another mode of transportation are not practicable as they do not meet the project purpose. No on-site alternatives other than extending the runway at DVO by a minimum of 1,100 feet to a total runway length of 4,400 feet would meet the project's purpose and need, which is to allow existing aircraft, as represented by the critical aircraft at DVO, to operate at Maximum Gross Take Off Weight under hot weather and other adverse weather conditions. In addition, FAA design standards require a 240-foot runway safety area at each end of the 4,400 foot runway to meet FAA airport design standards. Therefore, it is not practicable to implement Alternative B or Alternative D without constructing the proposed runway extension in an area currently in the 100-year floodplain.

The purpose of the runway extension project does not include providing 100-year flood protection for Gnoss Field Airport and neighboring property owners in either the short or long term. Such an effort would require regional flood protection planning including the consideration of how an increase in the elevation of mean sea level would affect the evaluation and implementation of regional flood control efforts. Implementing a regional flood control program that includes addressing sea level rise is not required to complete either Alternate B (Proposed Project) or Alternative D, and is beyond the scope of this EIS. Marin County is updating its Countywide Plan to address sea level rise as part of ongoing county planning efforts.

As discussed in more detail in this section, implementation of Alternative A (No Action), Alternative B (Proposed Project), or Alternative D would not result in a significant impact on floodplains.

Alternative A:
No Action

Under Alternative A (No Action), there would be no new development in the existing 100-year floodplain. The Airport would continue to exist within a 100-year floodplain but would also continue to receive flood protection from the system of ditches and levees. Because there would be no construction to directly alter the existing floodplain or cause secondary impacts or changes in hydrology, there would be no significant encroachment as a result of Alternative A.

Alternative B:
Extend Runway 13/31 to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

This alternative includes the proposed 1,100-foot extension of Runway 13, the extension of the parallel taxiway adjacent to the runway, and the extension of the levee and drainage ditch adjacent to Runway 13. All of these improvements would occur within the 100-year floodplain. In order to determine if these improvements would result in a significant encroachment in accordance with DOT Order 5650.2, each of the three issues is addressed below:

(1) *The action would not have a high probability of loss of human life.*

Implementation of Alternative B would not result in a high probability of loss of human life. Alternative B does not result in the construction of any new buildings or structures designed for human habitation within the 100-year floodplain. Alternative B does not alter the available access to and from the Airport. Alternative B does not change the ability to use the Airport during a flood event. Alternative B would not increase the likelihood of flood-induced spills of hazardous materials.

(2) *The action would not have substantial, encroachment-associated costs or damage.*

Implementation of Alternative B would occur within a 100-year floodplain, but the existing ditch and levee system would be extended to provide flood protection for the runway, taxiway, aircraft parking areas, and administrative offices. As a result, the Airport would be at no greater risk for flood damage than under Alternative A.

The development included under Alternative B would occur within a large contiguous floodplain that encompasses the Airport and continues east until reaching the Petaluma River. The size of the contiguous area is approximately 3,875 acres. Alternative B would extend the existing levee and ditch system, runway and taxiway to the northwest, and result in an additional 13 acres of land being protected by a levee. Impounding this relatively small area (less than one percent of contiguous area) would not result in new areas being subject to 100-year floods, nor would it result in existing areas subject to 100-year floods becoming more prone to floods.

(3) *The action would not cause adverse impacts on natural and beneficial floodplain values.*

Implementation of Alternative B would result in the development of additional land and extension of the ditch and levee system in the floodplain. However, due to the large size of the floodplain in and around the Airport, there would be no adverse impacts on the natural and beneficial floodplain values. Based on analysis in this section and in other sections of this EIS, Alternative B would not result in significant impacts to agricultural activities, aquacultural activities, aquatic or terrestrial organisms, flood control, groundwater recharge, or water quality.

Alternative B would enclose approximately 13 additional acres of the existing 100-year floodplain within the DVO Airport levee system. Implementation of Alternative B therefore would result in a 13-acre encroachment on the approximately 3,875-acre 100-year floodplain in the vicinity of DVO, a less than one percent encroachment. Although this represents a floodplain encroachment, these 13 acres would remain within the 100-year floodplain as the DVO Airport levees do not meet FEMA 100-year flood protection standards.

As this 13-acre encroachment would not result in floodplain conditions that have a high probability to result in a loss of human life, would not result in substantial, encroachment-associated costs or damage, and would not cause adverse impacts on natural and beneficial floodplain values, this floodplain encroachment is not considered a significant floodplain encroachment in accordance with DOT Order 5650.2.

The Marin Countywide Plan provides guidance and recommendations regarding development within floodplains in order to protect people and property from risks associated with flooding and inundation within the County, notably: Policy EH 3.2, Retain Natural Conditions: Ensure that flow capacity is maintained in stream channels and floodplains, and achieve flood control using biotechnical techniques instead of storm drains, culverts, riprap, and other forms of structural stabilization.[11]

As Alternative B results in a 13-acre encroachment on the existing 100-year floodplain, and Alternative D (discussed in the next section) results in a 15-acre encroachment on the existing 100-year floodplain, Alternative B represents the project alternative that meets the project purpose while minimizing short and long term impacts to the 100-year floodplain as required by EO 11998 and DOT Order 5650.2. Implementation of Alternative B would not result in a significant encroachment on the existing 100-year floodplain. Therefore implementation of Alternative B would not result in a significant impact on the 100-year floodplain.

[11] *Marin Countywide Plan, 2.6, Environmental Hazards*. Adopted by the Marin County Board of Supervisors, November 6, 2007.

Alternative D:
Extend Runway 13/31 to the Northwest by 860 Feet and to the Southeast by 240 Feet

This alternative includes the proposed 860-foot extension of Runway 13 to the northwest, 240-foot extension of Runway 31 to the southeast, the extension of the parallel taxiway adjacent to the runway, and the extension of the levee and drainage ditch around the runway. All of these improvements would occur within the 100-year floodplain. In order to determine if these improvements would result in a significant encroachment, each of the three issues are addressed below:

(1) *The action would not have a high probability of loss of human life.*

Implementation of Alternative D would not result in a high probability of loss of human life. Alternative D does not result in the construction of any new buildings or structures designed for human habitation within the 100-year floodplain. Alternative D does not alter the available access to and from the Airport. Alternative D does not change the ability to use the Airport during a flood event. Alternative D would not increase the likelihood of flood-induced spills of hazardous materials.

(2) *The action would not have substantial, encroachment-associated costs or damage.*

Implementation of Alternative D would occur within a 100-year floodplain, but the existing ditch and levee system would be extended to provide flood protection for the runway, taxiway, aircraft parking areas, and administrative offices. As a result, the Airport would be at no greater risk for flood damage than under Alternative As.

The development included under Alternative D would occur within a large contiguous floodplain that encompasses the Airport and continues east until reaching the Petaluma River. The size of the contiguous area is approximately 3,875 acres. Alternative D would extend the existing levee and ditch system, runway and taxiway to the northwest, resulting in an additional 12 acres of land being protected by the DVO Airport levees to the northwest of the runway. To the south, the levee would stay in its current location; however, construction of the runway and taxiway extension would result in an additional three acres of encroachment into the floodplain. The combination of the two areas would result in a total of 15 acres of encroachment within the floodplain. Impounding this relatively small area (less than one percent of contiguous area) would not result in new areas being subject to 100-year floods, nor would it result in existing areas subject to 100-year floods becoming more prone to floods.

(3) *The action would not cause adverse impacts on natural and beneficial floodplain values.*

Implementation of Alternative D would result in the development of additional land and extension of the ditch and levee system in the floodplain. However, due to the size of the floodplain in and around the Airport, there would be no adverse impacts on the natural and beneficial floodplain values. Based on analysis in this section and in other sections of this EIS, Alternative D would not result in significant impacts to agricultural activities, aquacultural activities, aquatic or terrestrial organisms, flood control, groundwater recharge, or water quality.

Alternative D would enclose approximately 12 additional acres of the existing 100-year floodplain within the DVO Airport levee system and construct another three acres of runway and taxiway structure. The three acres of runway and taxiway structure would be located on the southern end of the runway and would also include the Runway Safety Area (RSA). Implementation of Alternative D therefore would result in a 15-acre encroachment on the approximately 3,875-acre 100-year floodplain in the vicinity of DVO, a less than one percent encroachment. Although this represents a floodplain encroachment, these 15 acres would remain within the 100-year floodplain as the DVO Airport levees do not meet FEMA 100-year flood protection standards.

As this 15-acre encroachment would not result in floodplain conditions that have a high probability to result in a loss of human life, would not result in substantial, encroachment-associated costs or damage, and would not cause adverse impacts on natural and beneficial floodplain values, this floodplain encroachment is not considered a significant floodplain encroachment in accordance with DOT Order 5650.2.

The Marin Countywide Plan provides guidance and recommendations regarding development within floodplains in order to protect people and property from risks associated with flooding and inundation within the County, notably: Policy EH 3.2, Retain Natural Conditions: Ensure that flow capacity is maintained in stream channels and floodplains, and achieve flood control using biotechnical techniques instead of storm drains, culverts, riprap, and other forms of structural stabilization.[12]

As Alternative D results in a 15-acre encroachment on the existing 100-year floodplain, and Alternative B results in a 13-acre encroachment on the existing 100-year floodplain, Alternative D has greater floodplain impacts than Alternative B. EO 11998 and DOT Order 5650.2 require that short and long-term impacts to the 100-year floodplain be minimized to the extent practicable. Implementation of Alternative D would not result in a significant encroachment on the existing 100-year floodplain. Therefore, implementation of Alternative D would not result in a significant impact on the 100-year floodplain.

[12] *Marin Countywide Plan, 2.6, Environmental Hazards*. Adopted by the Marin County Board of Supervisors, November 6, 2007.

5.12 COASTAL RESOURCES

The Coastal Zone Management Act (CZMA), as amended (16 USC § 1451-1464) provides for preservation, protection, development, and where feasible, restoration or enhancement of the resources within the nation's coastal zones and barriers. Through the CZMA, a Coastal Zone Management Program was established in each coastal state. In California, there are two agencies that have coastal zone management responsibilities - the California Coastal Commission and the Bay Conservation and Development Commission. The California Coastal Commission's area of responsibility includes the areas defined by the California Coastal Act, but excludes the San Francisco Bay, which is under the coastal zone management responsibility of the Bay Conservation and Development Commission (BCDC).

The California Coastal Commission's coastal zone area of responsibility according to the California Coastal Act is defined as:

> "That land and water area of the State of California from the Oregon border to the border of the Republic of Mexico, specified on the maps identified and set forth in Section 17 of that chapter of the Statutes of the 1975-76 Regular Session enacting this division, extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards. The coastal zone does not include the area of jurisdiction of the San Francisco Bay Conservation and Development Commission, established pursuant to Title 7.2 (commencing with Section 66600) of the Government Code, nor any area contiguous thereto, including any river, stream, tributary, creek, or flood control or drainage channel flowing into such area." [1]

Gnoss Field Airport (DVO or Airport) is located adjacent to the San Francisco Bay, and is therefore outside of the coastal zone under the management responsibility of the California Coastal Commission. There are several tidal marshes extending off of the Petaluma River that come in close proximity to DVO. Located approximately 300 feet south of the Airport is Black John Slough and approximately 875 feet north of the Airport is Burdell Island area. The Airport and the Detailed Study Area, which defines the area of direct physical impacts associated with the Sponsor's Proposed Project and its alternatives, is located more than 100 feet away from these tidal areas. Based on the analysis in other sections (in particular wetlands, water quality, biological resources, and floodplains) no impacts would occur to Black John Slough or the Burdell Island areas as a result of the Sponsor's Proposed Project or its alternatives.

[1] http://www.coastal.ca.gov/coastact.pdf, accessed September 23, 2013.

The Sponsor's Proposed Project and its alternatives are subject to review in accordance with the McAteer-Petris Act, the Bay Plan, the Suisun Marsh Preservation Act, and Local Protection Programs (even if the activities occur inland from the coastal zone) if they have the potential to affect the coastal zone. The BCDC's authority extends to encompass priority use areas designated in the San Francisco Bay Plan. The area to the north of the Airport's property is classified as a wildlife refuge, which is one such area designated as a priority use. Therefore, any project that would extend to the north of the Airport's existing property or would result in impacts to this area would be subject to review. Analysis in other sections of this EIS, including Section 5.9, *Fish, Wildlife, and Plants*; Section 5.10, *Wetlands and Streams*; and Section 5.11, *Floodplains* found no impacts would occur to the Burdell Unit of the Petaluma Marsh Wildlife Area located north of the Airport as a result of the Sponsor's Proposed Project or its alternatives. Coordination with the BCDC occurred in July 2010 regarding the project. The BCDC issued a letter stating that the project would not occur within the BCDC's jurisdiction.[2] Therefore, no permit for this project is required from the BCDC, and construction of the Sponsor's Proposed Project (Alternative B) or Alternative D, would not impact the coastal zone. Therefore, construction of Alternative B or Alternative D on Airport property would not have a significant impact on coastal resources. Compensatory mitigation planning for impacts to endangered species and aquatic resources is in the conceptual stages at this time. Once a specific compensatory mitigation plan for endangered species and aquatic resources is established, additional review of that plan in relation to coastal resources may be required.

[2] Letter from San Francisco Bay conservation and Development District, July 28, 2010.

5.13 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act, as amended (16 USC § 1271-1287), provides protection for free-flowing river areas that "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values". The U.S. Department of the Interior is charged with the responsibility of identifying and inventorying rivers or river segments that could be potential candidates for inclusion in the National Wild and Scenic Rivers System. In addition to the National Wild and Scenic Rivers System, the National Park Service has compiled and maintains the Nationwide Rivers Inventory (NRI). The NRI is a register of rivers that may be eligible for inclusion in the National Wild and Scenic Rivers System. The intent of the NRI is to provide information to assist in making balanced decisions regarding the use of the nation's river resources.

A review of the National Park Service's Wild and Scenic Rivers System list[1] and the NRI register[2] indicated that there are no State or National Scenic Rivers within Marin County. The Lower American River is the closest waterway systems to Gnoss Field Airport (DVO or Airport) that is designated as a State or National Scenic River. The Lower American River is located in Sacramento, California approximately 50 miles northeast of DVO and is not considered within close proximity to the Airport. Therefore, no wild and scenic rivers would be impacted by the Sponsor's Proposed Project or its alternatives and the Act would not apply.

[1] National Park Service, *National Wild and Scenic Rivers System,* accessed on line October 2013, http://www.rivers.gov/california.php

[2] National Park Service, *Trails & Conservation Program: National River Inventory,* accessed on line October 2013, http://www.nps.gov/ncrc/programs/rtca/nri/states/ca.html.

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5.14 FARMLANDS

The *Farmland Protection Policy Act* (FPPA) of 1981 (7 USC § 4201-4209) was enacted to minimize the extent to which Federal programs contribute to unnecessary and irreversible conversion of prime farmland, unique farmland, and farmland of statewide or local importance to non-agricultural uses. Prime farmland is defined as land that possesses the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, without intolerable soil erosion. Unique farmland is considered land other than prime farmland that is used for the production of specific high-value food and fiber crops. Farmland of statewide or local importance includes land that has been designated as important by a State government, county commissioners, county supervisors, or an equivalent elected body.

There are three type of soils found within the Detailed Study Area (DSA) at Gnoss Field Airport.[1] The area occupied by the airfield and those areas adjacent to the airfield are composed of urban land and fill Xerothents. The remaining portions of the DSA are composed of Reyes Clay. According to the U.S. Department of Agriculture (USDA), none of the soils identified within the DSA are associated with prime or unique farmland as outlined in the USDA's Land Inventory and Monitoring project for Marin County Soil Survey.[2] None of the areas within the DSA have been designated farmlands of statewide or local importance. None of the alternatives evaluated in detail in this EIS, including the Sponsor's Proposed Project (Alternative B), the No Action Alternative (Alternative A), or Alternative D, would remove any farmland from active production.

Since no prime or unique farmlands or farmlands of statewide or local importance are present within the DSA, development of the Sponsor's Proposed Project or its alternatives would have no environmental impact on farmland.

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[1] U.S. Soil Conservation Service and United States Department of Agriculture (USDA) Natural Resources Conservation Service,Web Soil Survey, accessed December 2013, http://websoilsurvey.nrcs.usda.gov/app/

[2] California Department of Conservation,Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance: Marin County, Accessed December 2013, http://www.consrv.ca.gov/dlrp/fmmp/pubs/soils/Documents/MARIN_ssurgo.pdf

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5.15 ENERGY SUPPLY, NATURAL RESOURCES, AND SUSTAINABLE DESIGN

This section presents the assessment of the potential impacts on the supply of energy and natural resources available at the Gnoss Field Airport (DVO or Airport) under the Sponsor's Proposed Project and its alternatives. This section will also include a discussion of the Federal Aviation Administration (FAA) policy supporting airport development that demonstrates environmental sustainability. The objective of the assessment is to determine whether the Sponsor's Proposed Project and its alternatives would have the potential to exceed the local energy supply. The assessment also determines whether there would be a requirement for the use of rare natural resources that could potentially deplete the supply of natural resources in the area.

For airport projects, energy and natural resources are consumed through the operation of stationary facilities and aircraft operations, and to some extent, during construction. Stationary facilities require electricity and natural gas (utility power) for lighting, cooling, and heating. Electricity provides cooling and lighting for buildings, lighting for aircraft and vehicle parking areas, and lighting systems for the airfield (runway, taxiways, and aircraft aprons). Natural gas provides heat and hot water for airport buildings. Consequently, airport development projects may result in a change in the demand for utility energy when modifications to stationary sources and aircraft operations are proposed.

Aircraft operations consume fuel energy (Jet A fuel for jets and turboprops, and AvGas for piston aircraft) to operate aircraft and require unleaded gasoline and diesel fuel to power ground support equipment (GSE). As such, an airport development project may result in a change in the demand for fuel energy due to modifications of aircraft movements or the type and number of aircraft operations.

Natural resources may be impacted by a construction project. Proposed construction may require the acquisition of land or require the removal of dirt, rock, or gravel that could diminish or deplete a supply of those and other natural resources.

5.15.1 REGULATORY SETTING

An analysis of impacts to energy supplies and natural resources should provide details sufficient to fully explain the degree of the problem and measures to be taken to minimize the impact when significant impacts are expected.[1] For most airport improvement projects, changes in energy demands or other natural resource consumption will not result in significant impacts, which are defined as major changes in demand that would exceed supply. Natural resources (other than

[1] FAA, Order 1050.1E, *Environmental Impacts: Policies and Procedures (including Change 1)*, Appendix A, Section 13, *Natural Resources and Energy Supply*, Paragraph 13.3, *Analysis of Significant Impacts*, March 20, 2006.

fuel) are evaluated only if the project involves a need for unusual materials or those in short supply. If the analysis indicates the demand for energy or natural resources would not exceed supply, it may be assumed that impacts are not significant.[2]

The impact on energy and natural resources was determined by evaluating projected supply and demand based on the guidelines provided in FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*[3]. The evaluation of demand was further based on operations that consume, produce, and/or conserve measurable amounts of energy (utility power and fuel) and natural resources during construction. The evaluation of available fuel supply was determined through coordination with the various distributors. The power company, Pacific Gas and Electric (PG&E), was contacted to determine the ability of the company to meet the increase in demand for electricity under the Sponsor's Proposed Project and its alternatives.

While there are no specific measurable thresholds that define significant impacts to the supply of energy and natural resources, FAA provides guidelines for airport actions. FAA guidelines state that potential significant impacts would occur if the projected demand for energy and natural resources due to the construction, operation, or maintenance of an airport action would exceed available or future energy or natural resource supplies, and would:

- Cause a substantial increase in demand for energy or natural resource supplies;
- Cause a significant increase in fuel consumption when compared to future no action conditions due to changes in aircraft movements or ground vehicle use;
- Require rare consumable natural resources for construction; and,
- Not be consistent with smart growth requirements of the FAA.

With regard to sustainable design, Executive Order 13123, *Greening the Government Through Efficient Energy Management*,[4] encourages each Federal agency to expand the use of renewable energy in its facilities and for its actions.

Further, FAA directs a review of a Federal action to discern the conservation of resources, use of pollution prevention strategies, minimization of aesthetic effects, and address public (both local and traveling) sensitivity to these concerns.

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[2] FAA, Order 1050.1E, *Environmental Impacts: Policies and Procedures (including Change 1)*, Appendix A, Section 13, *Natural Resources and Energy Supply*, Paragraph 13.2b, *FAA Responsibilities*, March 20, 2006.

[3] FAA, Order 1050.1E, *Environmental Impacts: Policies and Procedures (including Change 1)*, Appendix A, Section 13, *Natural Resources and Energy Supply*, March 20, 2006.

[4] Executive Order 13123, *Greening the Government Through Efficient Energy Management*, 64 FR 30851, June 8, 1999.

The remainder of this section provides an evaluation of the potential for significant impacts on the supply of energy and natural resources under the Existing Conditions (2008) and the future (2018) conditions for each of the alternatives: Alternative A (No Action), Alternative B (Sponsor's Proposed Project), and Alternative D. The information provided in this evaluation is supported by the procedures and methodology described in Appendix K, *Energy Supply, Natural Resources, and Sustainable Design.*

5.15.2 EXISTING CONDITIONS

Table 5.15-1 and the following paragraphs describe the current use of utility and fuel energy and natural resources at DVO.

Table 5.15-1
ANNUAL UTILITY POWER AND FUEL DEMAND
EXISTING CONDITIONS (2008)
Gnoss Field Airport

UTILITY ENERGY		FUEL ENERGY			
Electricity	**Natural Gas**	**Jet A**	**AvGas**	**Unleaded Gasoline**	**Diesel**
222 MMBtu (65,148 kWh)	150 MMBtu (157,895 ft^3)	167,918 gallons	75,258 gallons	500 gallons	500 gallons

Note: MMBtu is million British thermal units per year; kWh is kilowatt hours; and ft^3 is cubic feet. Jet A is jet fuel; AvGas is low-lead (100 octane) aviation gasoline for general aviation aircraft; unleaded gasoline (average 87 octane) and diesel fuel is used for GSE.

Source: Marin County Public Works, 2009; Landrum & Brown analysis, 2009.

Local Supplier: In May 2010, the Marin Energy Authority gained the ability to buy electricity on the free market and have it delivered to its residents over the existing infrastructure owned by the local utility company. This is made possible by Community Choice Aggregation, which results from a State of California law passed in 2002. The electricity provided to Marin County customers is largely generated from renewable sources.[5] Fuel, including Jet A, AvGas, unleaded gasoline, and diesel fuel are provided through contracts with various distributors.

Other Natural Resources: There would be no requirement for construction or use of natural resources of any kind under the Existing Conditions (2008). However, a minimal amount of natural resources, such as gravel and asphalt, would likely be used to repair and maintain existing facilities. These materials are locally available, are not rare, and not in short supply. Therefore, there would be no impact to local supplies of natural resources.

[5] Marin County presents possible model for beefing up clean energy in Boulder, Colorado Daily, May 22, 2010. On-line at: www.coloradodaily.com

Electricity: Electric power is used primarily for air conditioning and lighting for the administration building and aircraft hangars at the Airport. Electricity is also required to light the airfield (runways, taxiways, and apron areas) and public parking areas. The Airport requires approximately 65,148 kilowatt hours (kWh) of electric power per year, which was converted to 222 million British thermal units (MMBtu) per year for ease in comparing the two types of utility power.

Natural Gas: Natural gas provides heat to the administration building, aircraft hangars, and other Airport buildings. Natural gas-powered heating units are generally operated only during the five coolest months of the year. The Airport consumes approximately 157,895 cubic feet (ft^3) of natural gas per year, which was converted to 150 MMBtu per year for ease in comparing the two types of utility power.

Fuel: There is one runway at DVO, Runway 13/31, which is 3,300 feet long, and a helipad that is 60 square feet. The existing runway at DVO is 3,300 feet long and cannot fully accommodate the operations of the critical aircraft, the Cessna 525. Departing without sufficient fuel to reach the destination airport requires an enroute stop to refuel the aircraft. This procedure requires less fuel usage at the Airport as would otherwise be required if a runway of sufficient length were available for these aircraft to carry a greater fuel load. Thus, the annual demand for Jet A fuel at the Airport depends primarily on the type of aircraft, the weight limitations based on the runway length, the number of annual operations, and average taxi time. Users of the Airport consumed 167,918 gallons of Jet A fuel in 2008. Aircraft that use AvGas (typically small single engine aircraft) are less affected by the runway length at DVO. Thus, the annual demand for AvGas depends primarily on the type of aircraft, the number of annual operations, and average taxi time. Users of the Airport consumed 75,258 gallons of AvGas in 2008.

As a general aviation airport, DVO does not require a large fleet of GSE. The Airport operates two fuel trucks, one powered by unleaded gasoline and one diesel-powered fuel truck. Thus, the fuel demand for unleaded gasoline and diesel fuel depends on the number of annual aircraft operations requiring fueling. The Airport used a total of approximately 500 gallons of unleaded gasoline and 500 gallons of diesel fuel for operating GSE in 2008.

Sustainability: The Marin County Department of Public Works manages and is responsible for the general service functions of the Airport.[6] The Airport is funded through the County's Aviation Fund. The mission statement of the Public Works Department includes providing a safe, sustainable environment for the people of Marin County. County initiatives to promote sustainability that may affect the Airport include:[7]

- Develop a "Zero Waste Plan" to guide and further Marin County's waste reduction;
- Install diesel particulate filters on the County's diesel-fueled vehicles;

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[6] Marin County, *County of Marin Proposed Budget FY 2009-2010: Department of Public Works*.
[7] Marin County, *Public Works Final Performance Plan FY 2008-2009*.

- Develop and implement an Above Ground Petroleum Storage Tank Program;
- Procure additional hybrid vehicles for the Marin County motor pool;
- Begin development of a computerized Preventive Maintenance Program for Marin County facilities;
- Conduct upgrades of Gnoss Field hangars to improve moisture sealing and venting; and
- Administer the Waste Management Program to provide hazardous material and waste permitting and oversight of Marin County businesses, and manage the Marin County Solid and Hazardous Waste Joint Powers Authority (JPA).

The Marin County Department of Public Works' proposed budget for 2009-2010[8] states mission accomplishments as:

- Increased percentage of hybrid fleet vehicles to 26 percent; and,
- Expanded the Green Commute Program to 11 percent of County employees carpooling, riding transit, walking or bicycling an average of 3.1 days per week.

The 2009-2010 County Budget lists goals and initiatives that include:

- Enhance quality of life through sustainability and accessibility programs;
- Provide effective infrastructure construction and maintenance;
- Provide effective transportation and regulatory services to the public, including the environmental documentation for the proposed runway extension at Gnoss Field;
- Implement the first phase of the Emission Retrofit Program for county-owned diesel vehicles;
- Implement the new state-mandated program to monitor and issue permits for above ground storage tanks containing hazardous materials;
- Revise the best management practices component of the Airport Storm Water Pollution Prevention Plan;
- Develop an enhanced trash reduction program for the Airport;
- Complete needed repairs to the internal Airport access road bridge decking and approaches; and,
- Maximize utilization of aviation facilities at DVO.

[8] Marin County, *County of Marin Proposed Budget FY 2009-2010: Department of Public Works*.

5.15.3 FUTURE CONDITIONS: 2018

The following paragraphs describe the projected demand for energy and natural resources under Alternative A, Alternative B (Sponsor's Proposed Project), and Alternative D in 2018. Conditions were based on the analysis of demand during the Existing Conditions (2008) period, the anticipated changes to operating conditions due to each alternative, and the number of aircraft operations projected for 2018.

Alternative A:
No Action

Under this alternative, the runway and taxiway configurations, and all other Airport facilities, would remain the same as described for the Existing Conditions (2008). A summary of the annual demand for utility power and fuel for 2018 Alternative A is given in **Table 5.15-2**.

Table 5.15-2
ANNUAL UTILITY POWER AND FUEL DEMAND
2018 ALTERNATIVE A (NO ACTION)
Gnoss Field Airport

UTILITY ENERGY		FUEL ENERGY			
Electricity	**Natural Gas**	**Jet A**	**AvGas**	**Unleaded Gasoline**	**Diesel**
234 MMBtu (68,590 kWh)	158 MMBtu (166,236 ft^3)	176,789 gallons	79,234 gallons	537 gallons	526 gallons

Note: MMBtu is million British thermal units per year; kWh is kilowatt hours; and ft^3 is cubic feet. Jet A is jet fuel; AvGas is low-lead (100 octane) aviation gasoline for general aviation aircraft; unleaded gasoline (average 87 octane) and diesel fuel is used for GSE.

Source: Marin County Public Works, 2009; Landrum & Brown analysis, 2009.

Other Natural Resources: There would be no requirement for construction or use of natural resources of any kind under 2018 Alternative A and impacts would be as described for the Existing Conditions (2008). However, a minimal amount of natural resources, such as gravel and asphalt, would likely be used to repair and maintain existing facilities. These materials are locally available, are not rare, and not in short supply. Therefore, there would be no impact to local supplies of natural resources.

Electricity: No new Airport facilities are proposed for this alternative that would increase the demand for electric power. However, the demand for electric power for air conditioning is expected to increase to 68,590 kWh per year as the number of Airport users is projected to increase with or without the proposed improvements.

Natural Gas: No new Airport facilities are proposed for this alternative that would increase the demand for natural gas power. However, the demand for natural gas power to heat Airport facilities is expected to increase to 166,236 ft^3 per year as the number of Airport users is projected to increase with or without the proposed improvements.

Fuel: No new Airport facilities are proposed for this alternative that would increase the demand for aircraft fuel. However, the total demand for aircraft and GSE fuel is expected to increase to 257,086 gallons per year as the number of aircraft operations is projected to increase with or without the proposed improvements.

Sustainability: Sustainability efforts under the future 2018 Alternative A would be the same as under the Existing Conditions (2008).

Alternative B:
Extend Runway 13/31 to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

The projected annual demand for utility power and fuel at DVO for 2018 Alternative B as compared to 2018 Alternative A is given in **Table 5.15-3**.

Table 5.15-3
ANNUAL UTILITY POWER AND FUEL DEMAND
2018 ALTERNATIVE B
Gnoss Field Airport

Alternative	UTILITY ENERGY		FUEL ENERGY			
	Electricity	Natural Gas	Jet A	AvGas	Unleaded Gasoline	Diesel
A	234 MMBtu (68,590 kWh)	158 MMBtu (166,236 ft^3)	176,789 gallons	79,234 allons	537 gallons	526 gallons
B	253 MMBtu (74,196 kWh)	158 MMBtu (166,236 ft^3)	197,307 gallons	80,641 gallons	537 gallons	526 gallons

Note: MMBtu is million British thermal units per year; kWh is kilowatt hours; and ft^3 is cubic feet. Jet A is jet fuel; AvGas is low-lead (100 octane) aviation gasoline for general aviation aircraft; unleaded gasoline (average 87 octane) and diesel fuel is used for GSE.

Source: Marin County Public Works, 2009; Landrum & Brown analysis, 2009.

Other Natural Resources: Construction of 2018 Alternative B would require the use of asphalt concrete and crushed rock and sand (aggregate). In addition, soil would be required to fill the drainage levee and wetlands. Estimated requirements for natural resources for construction are given in **Table 5.15-4**. None of these materials are considered unusual, rare, or unique. As such, the volume of material required would not significantly deplete the current supply of natural resources.

Table 5.15-4
ESTIMATED REQUIREMENT FOR NATURAL RESOURCES
2018 ALTERNATIVE B
Gnoss Field Airport

MATERIALS	VOLUME REQUIRED (yd^3)
Soil	72,513
Earthwork	67,500
Total Aggregate	12,552
Asphalt Concrete	1,273

Note: yd^3 is cubic yards. Total aggregate is the total volume of crushed rock and sand required.

Source: County of Marin Department of Public Works, *Preliminary Design Report: Runway Extension for Gnoss Field*, FAA AIP Project No. 3-06-0167-08 (December 20, 2002) and Landrum & Brown Analysis, 2009.

Electricity: This alternative includes the proposed extension of Runway 13/31 and the extension of the parallel taxiway to the full length of the extended runway. The new airfield pavement would require edge lighting and increase the demand for electric power to 74,196 kWh, an increase of 5,606 kWh per year. Additional electricity would be generated off-site. The power company, PG&E, was contacted to determine the ability of the company to meet the increase in demand. PG&E indicated that they could serve this load for the Airport with no further infrastructure upgrades.[9] Therefore, the increase would not constitute a significant impact to the supply of electricity.

Natural Gas: No new Airport facilities that would require additional natural gas power are proposed under this alternative. Alternative B does not increase demand for natural gas beyond the level described under 2018 Alternative A.

Fuel: The proposed extension of Runway 13/31 would allow Jet A-fueled aircraft affected by the shorter runway under the Existing Condition (2008) to depart fueled to capacity and capable of reaching the destination airport without stopping enroute to refuel. Furthermore, the proposed extended taxiway for this alternative would require all aircraft to consume additional fuel to taxi to the extended Runway 13 for departure. As a result, implementation of Alternative B would increase the demand for Jet A fuel to 197,307 gallons per year, an increase of 20,518 gallons per year when compared to 2018 Alternative A. The demand for AvGas would increase by 1,407 gallons per year to a total of 80,641 gallons per year when compared to 2018 Alternative A due to the increase in taxi time. Much of the increase in the use of aviation fuel at DVO would be offset by decreases at other regional airports as described in more detail under the Sustainability discussion.

[9] Email correspondence between Consultant and Peter Niewieroski, Account Executive – North Coast (Marin County account representative) Pacific Gas and Electric Company, December 22, 2010. See Appendix K.

It is not anticipated that there would be a change in the number of aircraft operations at the Airport under 2018 Alternative B when compared to 2018 Alternative A. As such, there is no change in the demand for unleaded gasoline and diesel fuel to power GSE under this alternative.

Sustainability: The demand for aviation fuel under this alternative would increase as compared to the 2018 Alternative A. However, while not quantifiable, it is likely that much of the increase in the use of aviation fuel at DVO would be offset by decreases at other regional airports. Currently a portion of the annual departures at DVO are weight-restricted due to the runway length. To accommodate for this, pilots restrict weight by either offloading people/cargo or fuel. If people/cargo is restricted, the pilot may call for an additional aircraft or make two trips. If fuel is restricted then the pilot may fly to another regional airport that has a longer runway and completely fuel up before proceeding on the rest of the flight. The longer runway in Alternative B would allow these aircraft to carry as much people/cargo and fuel as needed. Eliminating additional trips or interim stops would reduce the demand for fuel at other regional airports as well as reduce overall aviation fuel consumption as the landing and takeoff process requires more fuel than flying directly to the final destination.

To the extent possible and feasible, construction planning for the project alternatives would meet FAA policy recommendations that facility development include principles of sustainability in design. The FAA encourages the consideration of energy reduction measures in the planning and design of airport improvement projects. These principles are consistent with FAA policy that requires the use of a "systematic interdisciplinary approach, which would ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making."[10] During construction, Marin County would ensure the construction contractor adheres to the recommendations in FAA AC 150/5370-10F *Standards for Specifying Construction of Airports*, which includes the temporary control measures to prevent temporary air and water pollution, soil erosion, and siltation.[11]

The Sponsor's Proposed Project (Alternative B) will not result in a substantial increase in demand for energy, natural resources, fuel, or rare consumable natural resources, and would allow the critical aircraft operating at DVO to increase its efficiency and sustainability by being able to take off at maximum gross take off weight under all weather conditions. Therefore, Alternative B would not have a significant impact on Energy Supply, Natural Resources, or be inconsistent with Sustainable Design.

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[10] FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* (including Change 1), Appendix A, Section 13, *Natural Resources and Energy Supply*, March 20, 2006.

[11] FAA Advisory Circular, *Standards for Specifying Construction of Airports*, Advisory Circular 150/5370-10F, Item P-156, *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, September 30, 2011.

Alternative D:
Extend Runway 13/31 to the Northwest by 860 Feet and to the Southeast by 240 Feet

The projected annual demand for utility power and fuel at DVO for 2018 Alternative D as compared to 2018 Alternative A and Alternative B is given in **Table 5.15-5**.

Table 5.15-5
ANNUAL UTILITY POWER AND FUEL DEMAND
2018 ALTERNATIVE D
Gnoss Field Airport

Alternative	UTILITY ENERGY (MMBtu)		FUEL ENERGY (gallons)			
	Electricity	Natural Gas	Jet A	AvGas	Unleaded Gasoline	Diesel
A	234 MMBtu (68,590 kWh)	158 MMBtu (166,236 ft^3)	176,789 gallons	79,234 gallons	537 gallons	526 gallons
B	253 MMBtu (74,196 kWh)	158 MMBtu (166,236 ft^3)	197,307 gallons	80,641g allons	537 gallons	526 gallons
D	253 MMBtu (74,196 kWh)	158 MMBtu (166,236 ft^3)	197,307 gallons	80,641g allons	537 gallons	526 gallons

Note: MMBtu is million British thermal units per year; kWh is kilowatt hours; and ft^3 is cubic feet. Jet A is jet fuel; AvGas is low-lead (100 octane) aviation gasoline for general aviation aircraft; unleaded gasoline (average 87 octane) and diesel fuel is used for GSE.

Source: Marin County Public Works, 2009; Landrum & Brown analysis, 2009.

Other Natural Resources: Construction of 2018 Alternative D would require more material (soil and earthwork) as compared to 2018 Alternative B because there is a greater amount of fill required. Estimated requirements for natural resources for construction are given in **Table 5.15-6**. None of these materials are considered unusual, rare, or unique. As such, the volume of material required would not be considered adequate to significantly deplete the current supply of natural resources.

Table 5.15-6
ESTIMATED REQUIREMENT FOR NATURAL RESOURCES
2018 ALTERNATIVE D
Gnoss Field Airport

MATERIALS	VOLUME REQUIRED (yd^3)
Soil	72,787
Earthwork	67,500
Total Aggregate	12,552
Asphalt Concrete	1,314

Note: yd^3 is cubic yards. Total aggregate is the total volume of crushed rock and sand required.

Source: County of Marin Department of Public Works, *Preliminary Design Report: Runway Extension for Gnoss Field*, FAA AIP Project No. 3-06-0167-08 (December 20, 2002) and Landrum & Brown Analysis, 2009.

Electricity: This alternative includes the proposed extension of Runway 13/31 and the extension of the parallel taxiway to the full length of the extended runway. The new airfield pavement would require edge lighting and increase the demand for electric power to 74,196 kWh per year, the same as for 2018 Alternative B. Additional electricity would be generated off-site. The power company, PG&E, was contacted to determine the ability of the company to meet the increase in demand. PG&E indicated that they could serve this load for the Airport with no further infrastructure upgrades.[12] Therefore, the increase would not constitute a significant impact to the supply of electricity.

Natural Gas: No new Airport facilities that would require additional natural gas power are proposed under this alternative. Alternative D does not increase demand for natural gas beyond the level described under 2018 Alternative A.

Fuel: The proposed extension of Runway 13/31 would allow Jet A-fueled aircraft affected by the shorter runway under the Existing Condition (2008) to depart fueled to capacity and capable of reaching the destination airport without stopping enroute to refuel. Furthermore, the proposed extended taxiway for this alternative would require all aircraft to consume additional fuel to taxi to the extended ends of Runway 13/31 for departure. As a result, implementation of Alternative D would increase the demand for Jet A fuel to 197,307 gallons per year, an increase of 20,518 gallons per year when compared to 2018 Alternative A. The demand for AvGas would increase by 1,407 gallons per year to a total of 80,641 gallons per year when compared to 2018 Alternative A due to the increase in taxi time.

It is not anticipated that there would be a change in the number of aircraft operations at the Airport under 2018 Alternative D when compared to 2018 Alternative A. As such, there is no change in the demand for unleaded gasoline and diesel fuel to power GSE under this alternative.

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[12] Email correspondence between Consultant and Peter Niewieroski, Account Executive – North Coast (Marin County account representative) Pacific Gas and Electric Company, December 22, 2010. See Appendix K.

Sustainability: Sustainability efforts described under the 2018 Alternative B would be the same as under 2018 Alternative D.

Alternative D will not result in a substantial increase in demand for energy, natural resources, fuel, or rare consumable natural resources, and would allow the critical aircraft operating at DVO to increase its efficiency and sustainability by being able to take off at maximum gross take off weight under all weather conditions. Therefore, Alternative D would not have a significant impact on Energy Supply, Natural Resources, or be inconsistent with Sustainable Design.

5.16 LIGHT EMISSIONS AND VISUAL IMPACTS

Airports have high-intensity lights to illuminate runways and taxiways, and to supply visual approach navigational aids, which are critical to the safe operation of an airport. This section presents the analysis of the impact of airport-related light emissions and the overall visual impact upon the areas surrounding Gnoss Field Airport (DVO or Airport) resulting from the project alternatives under consideration in this Environmental Impact Statement (EIS).

5.16.1 REGULATORY SETTING

Only in unusual circumstances (e.g., when high-intensity strobe lights would shine directly into people's homes) would the impact of light emissions be considered sufficient to warrant special study and a more detailed examination of alternatives in an EIS. As directed by Federal Aviation Administration (FAA) Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, light emissions are assessed to the "…extent to which any lighting associated with an action will create an annoyance among people in the vicinity or interfere with their normal activities." Airport facilities at DVO are illuminated by various types of lighting emanating from any of the following sources:

- Airfield lighting on runways, runway thresholds, taxiways, and ramps (runway lighting);
- Visual approach aids;
- Obstruction lights;
- Hangar and other Airport facilities lighting; and
- Roadway and parking lot lighting.

Generally, lights located at the runway thresholds and in the approach area pose the greatest concern for potential impact due to their intensity and direction the lights are focused. Therefore, the Precision Approach Path Indicator (PAPI) lighting systems were evaluated. The following information is provided in the assessment for each lighting system:

- Location of existing and future runway threshold lights and approach light systems;
- Descriptions of each airfield lighting system as to its purpose, intensity, color, flashing sequence (as appropriate), and beam angle; and
- Assessment of the extent of annoyance caused by the DVO airfield lighting systems.

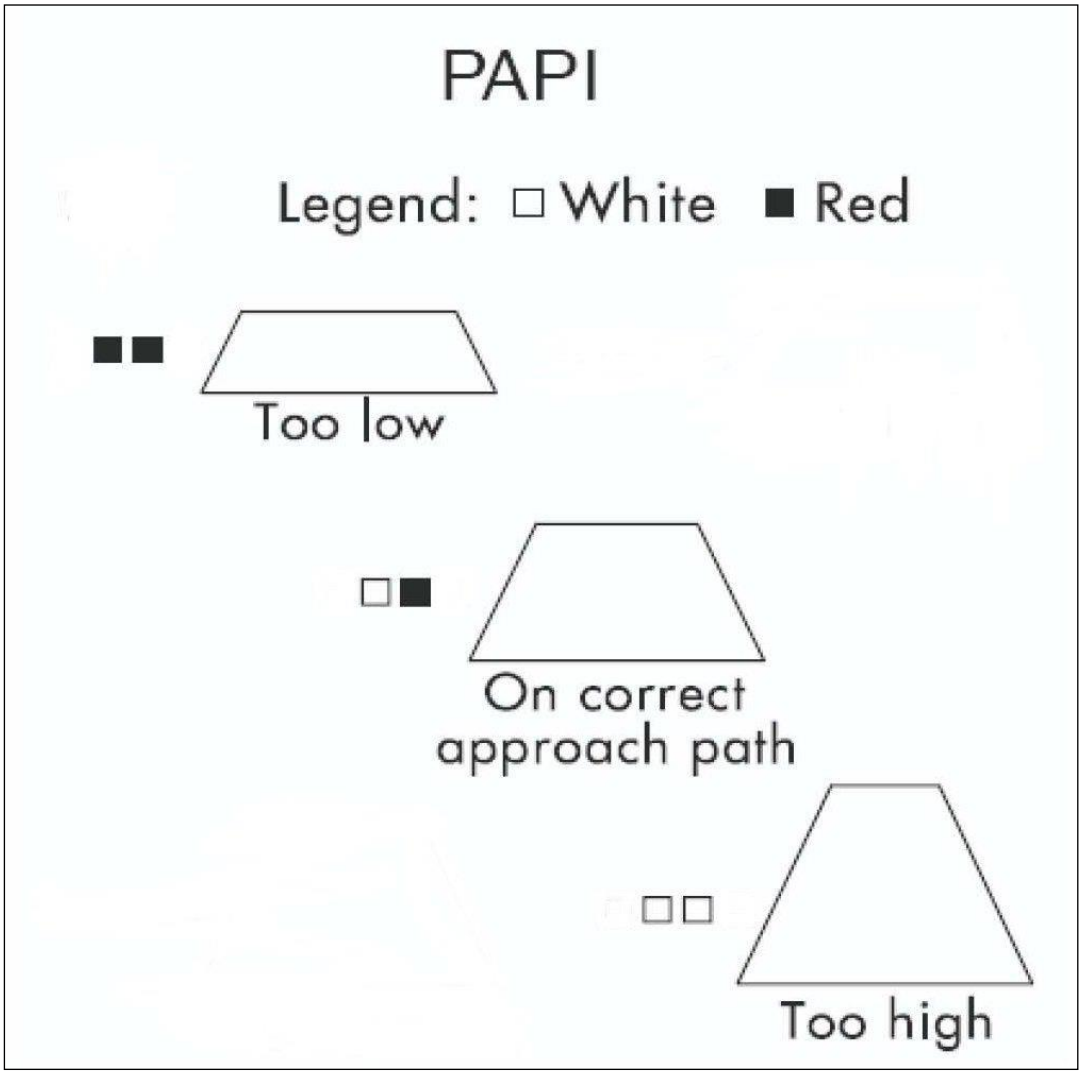
5.16.2 EXISTING CONDITIONS

The following paragraphs discuss the existing lighting systems in use at DVO.

PRECISION APPROACH PATH INDICATOR (PAPI)

The PAPI is a system of lights arranged to provide visual descent guidance information to pilots during the aircraft landing approach.[1] The DVO system provides a specific light pattern when the aircraft is on the desired descent path to the touchdown point. A diagram of a PAPI lighting system is shown in **Figure 5.16-A, *PAPI Lighting System***.

Figure 5.16A
PAPI LIGHTING SYSTEM
Gnoss Field Airport



[1] FAA AC 150/5345-52, *Generic Visual Glideslope Indicators (GVGI)*, 9/5/2007.

A PAPI system includes sets of two or four red-to-white lighting units installed at the approach end of a runway in a single horizontal row.[2] The system is located perpendicular to the runway centerline, at a distance from the threshold that provides the proper threshold crossing height and obstacle clearance.

Each lighting unit projects a split beam of light; the upper segment is white, and the lower segment is red. The transition from white to red, or vice versa, occurs within a vertical angle of five minutes of arc at the beam center and results in a well-defined corridor of light consisting of white (top) and red (bottom) beams. These systems have an effective visual range of about five miles during the day and up to 20 miles at night. The PAPI lights are high-intensity lights that are red and white and are steady burning flashing lights. The lights are installed on poles and the light beam is positioned to project 20 feet above the most critical obstruction in the area.

When using a PAPI, pilots operating on the correct glidepath would see one red light and one white light as they complete the approach to landing. Pilots operating above the glidepath would see two white lights, while pilots operating below the glidepath would see two red lights as they complete their approach to landing; appropriate correction would then be applied in order to join the correct glidepath for the landing approach.

Runway 13 has a two-light PAPI located on the right side of the runway as the pilot approaches from the north. This PAPI provides guidance for a 3.5 degree glide path, which clears any obstacles and the terrain north of the Airport. Runway 31 has a two-light PAPI located on the left side of the runway as the pilot approaches from the south. This PAPI provides guidance for a 4.0 degree glide path, which clears any obstacles, including the elevated terrain approximately one mile south of the Airport.

The nearest residential area to the PAPI lighting system at the approach end of Runway 13 (north of the Airport) is located in the City of Petaluma, approximately 5.5 miles away. Given the distance from the Airport and the angle of the PAPI lights, it is unlikely that residents living in that area would be able to see the PAPI even at night. The nearest residential area to the PAPI lighting system at the approach end of Runway 31 (south of the Airport) is located 1.1 miles away in the City of Novato. The angle of the PAPI on the south side of the Airport is set at 4.0 degrees, which is a steeper angle than the typical 3.0 degree approach. The reason for this increased angle is to provide an additional margin of safety for pilots approaching over the elevated areas south of the Airport. Therefore, the PAPI lights are directed above the residential areas located on the elevated terrain. It is possible that residents at the highest points of this residential area may be able to see the PAPI lights, but given the angle and the distance, these lights would not be intrusive.

[2] Federal Aviation Administration, *Aeronautical Information Manual*, Change 3, August 27, 2009. On-line at: http://www.faa.gov/air_traffic/publications/ , accessed October 8, 2013.

OTHER AIRPORT LIGHTING

A rotating beacon identifies the location of the Airport at night and is identified by projecting a green and white beam of light 180 degrees apart.

Obstructions in the vicinity of the Airport are also marked or lighted to warn pilots of their presence. These obstructions may be identified by a steady-red, flashing-red, or white strobe light. These obstructions are identified for pilots on approach and sectional Visual Flight Rules (VFR) charts and on the official Airport Obstruction Chart, published by the National Oceanic and Atmospheric Administration (NOAA).

Other lighting exists along the taxiways and ramps for low visibility purposes and to assist aircraft movement on the airfield, such as hold position lights, stop bar lights, and runway and taxiway signage. Each of these additional light systems is located within the Airport complex and represents no impact upon neighboring communities.

5.16.3 FUTURE CONDITIONS: 2018

The following section describes the conditions that would result from the lighting required by each of the proposed runway alternatives during the first full year in which the proposed runway extension is anticipated to be operational. While the same types of lighting systems described for the existing conditions are expected to be used for each of the proposed runway alternatives, the location of lighting equipment in relation to homes would change due to the proposed relocation of the runway approach ends.

Alternative A:
No Action

Under this Alternative, Runway 13/31 would remain in its current location and therefore no changes to the existing lighting equipment or locations would occur.

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

Alternative B (Sponsor's Proposed Project) includes the extension of Runway 13/31 1,100 feet to the northwest. Under Alternative B, the approach end of Runway 13 would move 1,100 feet to the northwest, along with the existing runway's current PAPI lighting system. With the existing PAPI location, the nearest residential area to the PAPI lighting system at the approach end of Runway 13 is located in the City of Petaluma, approximately 5.5 miles away. Under Alternative B, the PAPI would now be located approximately 5.3 miles away from the closest residential area, located in the City of Petaluma. As with the existing condition, it is extremely unlikely that residents of this area would be able to see the PAPI lighting system due to the distance and angle of the lights. Taxiway and runway lights would also

be added to the Airport, but these lights are directed in a way to illuminate specific areas of pavement. These lights would likely be visible by the residential areas to the south that has a view of the Airport, but due to their intensity and distance from the residential areas, the lights would not significantly increase the overall intensity or amount of light emissions created by the Airport. Therefore, these light emissions would not create an annoyance among people in the vicinity of DVO or interfere with their normal activities. Given these conditions potential light impacts are not significant.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

Alternative D includes the extension of Runway 13/31 860 feet to the northwest and 240 feet to the southeast. Under Alternative D, the approach end of Runway 13 would move 860 feet to the northwest and the approach end of Runway 31 would move 240 feet to the southeast, along with each runway's current PAPI lighting system.

With the existing PAPI locations, the nearest residential area to the PAPI lighting system at the approach end of Runway 13 is located in the City of Petaluma, approximately 5.5 miles away; while the nearest residential area to the PAPI lighting system at the approach end of Runway 31 is located 1.1 miles away in the City of Novato. Under Alternative D, the PAPI at the approach end of Runway 13 would now be located approximately 5.4 miles away from the closest residential area, located in the City of Petaluma. As with the existing condition, it is extremely unlikely that residents of this area would be able to see the PAPI lighting system due to the distance and angle of the lights.

The PAPI at the approach end of Runway 31 would now be located approximately 1.04 miles away from the closest residential area, located in the City of Novato. Due to the elevation of the terrain south of the Airport, it is likely that the angle of the PAPI would increase to 4.25 or 4.5 degrees to provide the necessary guidance to pilots approaching from the south of the Airport. As a result, the PAPI lighting system may still be visible to residential areas, but would not create a significantly different lighting situation that exists today. Taxiway and runway lights would also be added to the Airport to provide lighting for the taxiway and runway extensions. The area to the south of the Airport where the southern extension would be located would have additional taxiway and runway lights. These lights are directed in a way to illuminate specific areas of pavement; however they would likely be visible by the residential areas to the south that has a view of the Airport. However, the overall view of an Airport setting would be similar to the existing condition. The given intensity of the Airport lighting and its distance from the residential area south of the Airport, the additional lighting would not be anticipated to annoy people in the residential area or interfere with their normal activities. Given these conditions potential light impacts are not significant.

5.16.4 VISUAL IMPACTS

According to FAA Order 1050.1E, Change 1, "Visual or aesthetic impacts are inherently more difficult to define because of the subjectivity involved." Analysis of visual impacts refers to "…the extent that the development contrasts with the existing environment…"[3] The current visual setting of the area is one that can best be described as an airport setting. Existing views of the site from residential areas to the south, the park areas to the northwest, or from motorists on Highway 101 are of an airport surrounded primarily by vacant land. Because the proposed development would occur entirely on Airport property and not include any new vertical structures such as buildings, the resulting visual character of the site would remain an airport surrounded primarily by vacant land. As such, no adverse visual or aesthetic impacts would occur under Alternative A, B, or D. As discussed under light emissions above, residents located south of the Airport that have a view of the Airport may notice a change in the layout of the runway and taxiway, but the modified view would be consistent with the existing view of an airport and the increase in lights would be consistent with the existing lights at the Airport. Therefore, implementation of Alternative A, B, or D would not result in significant visual or aesthetic impacts.

[3] FAA Order 1050.1E: *Environmental Impacts: Policies and Procedures,* Appendix A, paragraph 12.2b.

5.17 HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

This section assesses the potential exposure to hazardous materials, pollution prevention measures, and solid waste that would occur as a result of implementing the Sponsor's Proposed Project or its alternatives.

5.17.1 HAZARDOUS MATERIALS

A waste is considered hazardous if it exhibits hazardous characteristics, such as corrosivity, reactivity, ignitibility, or is specifically listed as such by the U.S. Environmental Protection Agency (USEPA). Wastes excluded from regulation as hazardous waste include household wastes, animal wastes, flyash, oil, petroleum, slag, and wastes from ore processing. There are several Federal acts that regulate the handling of hazardous materials.

5.17.1.2 Regulatory Setting

The Resource Conservation and Recovery Act of 1976 (RCRA) is intended to provide "cradle to grave" management of hazardous and solid wastes and regulation of underground storage tanks (USTs) containing chemical and petroleum products. The RCRA allows the USEPA to set standards for entities producing, storing, handling, transporting, and disposing of hazardous waste. The RCRA was amended with the Hazardous and Solid Waste Amendments of 1984 (HSWA) that addressed corrective actions and permitting of hazardous waste issues.

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) provides the authority with which the Federal government can compel people or companies responsible for creating hazardous waste sites to clean them up. Nicknamed "Superfund," it created a public trust fund to assist with the cleanup of inactive and abandoned hazardous waste sites and accidentally spilled or illegally dumped hazardous materials. Only sites listed on the National Priorities List (NPL) are eligible for funding from the "Superfund."

The Toxic Substances Control Act of 1976 (TSCA) was enacted by Congress to give the USEPA the ability to track the 75,000 industrial chemicals currently produced or imported into the U.S. The USEPA repeatedly screens for these chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. In addition, the USEPA can ban the manufacture and import of those chemicals that pose an unreasonable risk.

The Pollution Prevention Act of 1990 (PPA) established the national policy that pollution should be prevented or reduced at the source whenever feasible. The PPA was established to reduce or eliminate waste at the source by modifying production processes, promoting the use of non-toxic or less-toxic substances, implementing conservation techniques, and re-using materials rather than putting them into waste streams.

In addition, Executive Orders (EO) associated with the PPA include EOs 12088 (*Federal Compliance with Pollution Control Standards*), 13101 (*Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*), and 13148 (*Greening the Government through Leadership in Environmental Management*). The EOs were created to support methods to prevent and control pollution in the environment.

FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures,* identifies actions that involve property listed (or potentially listed) on the NPL are considered significant pursuant to National Environmental Policy Act (NEPA). In addition, consideration of exposure to hazardous materials is required, but the impact can be mitigated below significance through project controls.

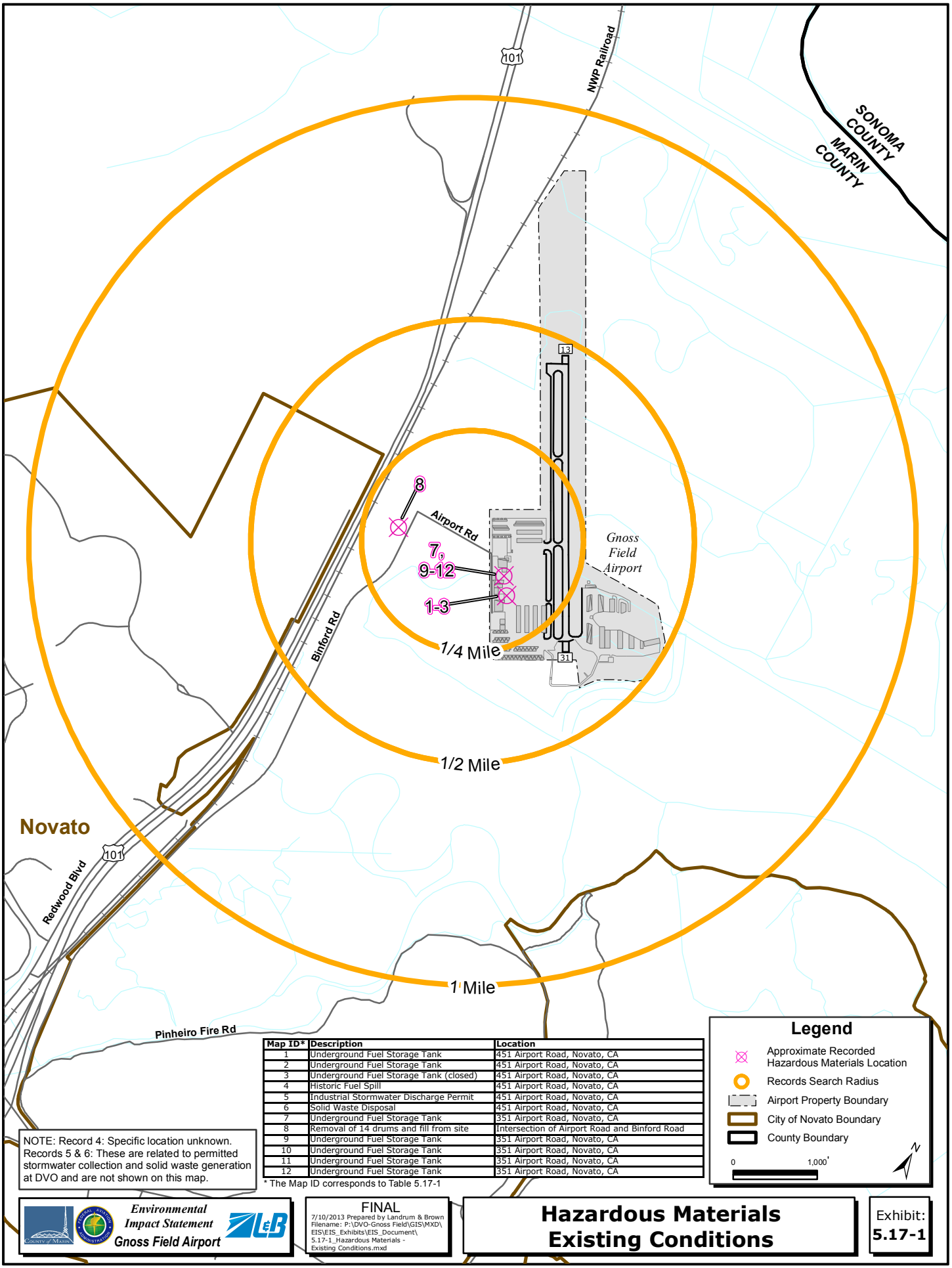
5.17.1.3 Existing Conditions

The proposed runway extension and runway safety areas for Runway 13/31 extend into areas of previously developed or otherwise human-altered land. The local area of the Gnoss Field Airport (DVO or Airport), including the areas proposed for runway extension, have been highly disturbed by land use practices including: historical Bay/Delta-lands reclamation, historical and on-going agricultural activities including cattle grazing, levee construction, channelization, and construction of the Airport facilities and the railroad grade.

As part of the Environmental Impact Statement (EIS) development process, field reconnaissance was conducted of the areas that would be disturbed by the Sponsor's Proposed Project or its alternatives. No evidence of hazardous materials, solid wastes, discolored soil or water, stressed vegetation, above or underground storage tanks, pits, ponds, or lagoons were observed (see Appendix L, *Hazardous Materials*).

Review of several Federal, state, and local databases revealed that 12 records involving past, present, and potential generation, transportation, storage, uses or releases of hazardous materials have occurred within the American Society for Testing and Materials standard search distances of ¼, ½, and 1 mile of the Airport, as shown on **Exhibit 5.17-1, *Hazardous Materials – Existing Conditions***, and listed in **Table 5.17-1**. Of those 12 sites, six locations were identified at DVO's 451 Airport Road address. This database search is limited in its ability to identify the specific location of sites as it reports only the street address. Through discussions with Airport staff, more information is available for some of the sites.

The records for Location 4 reported the release of 40 gallons of aviation fuel from an aircraft that went off the runway and into a ditch adjacent to the runway on July 5, 2006. No further records were available and the status of the release is unknown. Because of the relatively small volume of the release and the time that has passed since the release, this site is not considered to be of importance in determining significant hazardous waste impacts.



Map ID*	Description	Location
1	Underground Fuel Storage Tank	451 Airport Road, Novato, CA
2	Underground Fuel Storage Tank	451 Airport Road, Novato, CA
3	Underground Fuel Storage Tank (closed)	451 Airport Road, Novato, CA
4	Historic Fuel Spill	451 Airport Road, Novato, CA
5	Industrial Stormwater Discharge Permit	451 Airport Road, Novato, CA
6	Solid Waste Disposal	451 Airport Road, Novato, CA
7	Underground Fuel Storage Tank	351 Airport Road, Novato, CA
8	Removal of 14 drums and fill from site	Intersection of Airport Road and Binford Road
9	Underground Fuel Storage Tank	351 Airport Road, Novato, CA
10	Underground Fuel Storage Tank	351 Airport Road, Novato, CA
11	Underground Fuel Storage Tank	351 Airport Road, Novato, CA
12	Underground Fuel Storage Tank	351 Airport Road, Novato, CA

* The Map ID corresponds to Table 5.17-1

NOTE: Record 4: Specific location unknown. Records 5 & 6: These are related to permitted stormwater collection and solid waste generation at DVO and are not shown on this map.

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Gnoss Field Airport

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Hazardous Materials Existing Conditions

Exhibit: **5.17-1**

Table 5.17-1
HAZARDOUS MATERIAL RECORDS WITHIN 1-MILE RADIUS OF DVO
Gnoss Field Airport

MAP ID*	DESCRIPTION	LOCATION
1	Underground Fuel Storage Tank	451 Airport Road, Novato, CA
2	Underground Fuel Storage Tank	451 Airport Road, Novato, CA
3	Underground Fuel Storage Tank (closed)	451 Airport Road, Novato, CA
4	Historic Fuel Spill	451 Airport Road, Novato, CA
5	Industrial Stormwater Discharge Permit	451 Airport Road, Novato, CA
6	Solid Waste Disposal	451 Airport Road, Novato, CA
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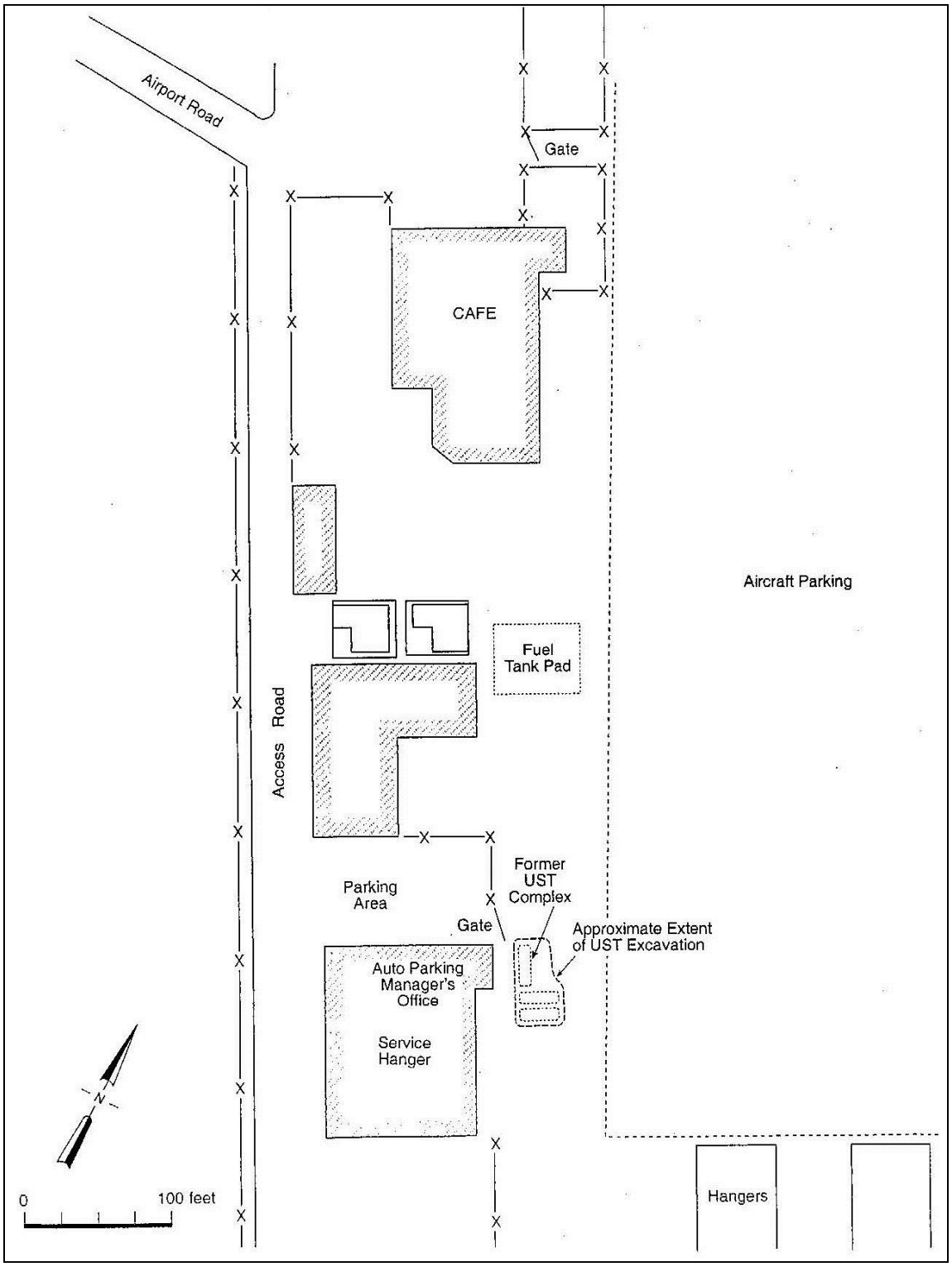
8	Removal of 14 drums and fill from site	Intersection of Airport Road and Binford Road
9	Underground Fuel Storage Tank	351 Airport Road, Novato, CA
10	Underground Fuel Storage Tank	351 Airport Road, Novato, CA
11	Underground Fuel Storage Tank	351 Airport Road, Novato, CA
12	Underground Fuel Storage Tank	351 Airport Road, Novato, CA

* Note: The Map ID corresponds to the labels in Exhibits 5.17-1, 5.17-2, and 5.17-3.
Source: Environmental Data Resources Inc., EDR Radius Map Report, May 18, 2009.

The records for the first three of the six locations identified at the 451 Airport Road address indicate that they were reported underground storage tanks (USTs) containing diesel, aviation fuel, or jet fuel, that have since been removed. In 1991, one jet fuel and two aviation gasoline USTs, each with a capacity of 10,000 gallons, were removed from Airport property, east of the manager's office. See **Figure 5.17-A, *Locations of Former Underground Storage Tanks*,** for the location of the former USTs. During removal, it was determined that the USTs and product lines were pitted and had holes in them. In 1999, during excavation work to replace a section of the storm drain sewer line, groundwater with a sheen and solvent-like and petroleum odors were encountered. Sixty-three tons of soil and 9,600 gallons of groundwater were subsequently removed from the excavation and transported off-site to proper disposal facilities. Soil samples of the excavated soil were also completed. It was recently determined by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) that this subsurface contamination poses a potential threat to human health and water quality and needs to be addressed. Marin County was issued a Requirement for Technical Report in June 2009. Marin County submitted a Technical Report in September 2009 and is currently coordinating with the RWQCB to address this situation. The area in question is located immediately east of the Airport manager's office and would not be affected by the Sponsor's Proposed Project or its alternatives. As such, it is assumed for the purposes of this EIS that any impact to water quality that is present due to this site would be remediated with or without implementation of the Sponsor's Proposed Project or its alternatives. Therefore, this information will be included in the discussion of cumulative impacts (see Appendix L for a copy of the correspondence regarding this issue).

Figure 5.17-A
LOCATIONS OF FORMER UNDERGROUND STORAGE TANKS
Gnoss Field Airport



The records for Location 5 identified at the 451 Airport Road address are for an active National Pollutant Discharge Elimination System (NPDES) permit with the RWQCB for the industrial storm water permit for Airport operations. Because this routine operations permit and its reporting activity are for the control of storm water runoff, this record is not considered to be of importance in determining significant hazardous waste impacts. NPDES permitting requirements are discussed in Section 5.6, *Water Quality*, Subsection 5.6.2.3, *Existing Permits*.

The records for Location 6 identified at the 451 Airport Road address indicate that the Airport facility produces approximately 0.33 tons per year of solid waste, which is classified as household waste. Because this is a routine reporting activity, this record is not considered to be of importance in determining significant hazardous waste impacts.

The record for Location 7 was for a historical UST at 351 Airport Road in 1968. No records were provided indicating the status of this UST and there are no reports of any releases from this UST. Based on the location of this site relative to the proposed runway extension and safety areas and the lack of any records indicating a release, Location 7 would not be affected by the Sponsor's Proposed Project or its alternatives.

The record for Location 8 was for the reported removal of 14 drums and fill from the intersection of Airport and Binford Roads in 1996, west of Airport property. The records and a check of the state GeoTracker website indicate that the case was issued a no further action letter. Given the status and the location of this site, Location 8 would not be affected by the Sponsor's Proposed Project or its alternatives.

Locations 9 through 12 are located at 351 Airport Road, west of Airport property. Each of these sites has one record of the presence of one or more active or removed USTs. There were no records of releases from any of these USTs. Based on the location of these sites relative to the proposed runway extension and safety areas and the lack of any records indicating a release, Locations 9 through 12 would not be affected by the Sponsor's Proposed Project or its alternatives.

Based on the research and interviews conducted for the presence of hazardous materials, it is concluded that no NPL or potentially eligible NPL sites are present within the DSA. The records of previous spills or actions find that none of these sites are located within the areas that would be disturbed for the Sponsor's Proposed Project or its alternatives.

5.17.1.4 Future Conditions: 2018

This section presents the impacts from the Sponsor's Proposed Project and its alternatives to the existing or potential hazardous materials at DVO and surrounding properties.

Alternative A:
No Action

Because the 2018 No Action Alternative would not result in further development, this alternative would have no impacts on the existing hazardous materials at DVO.

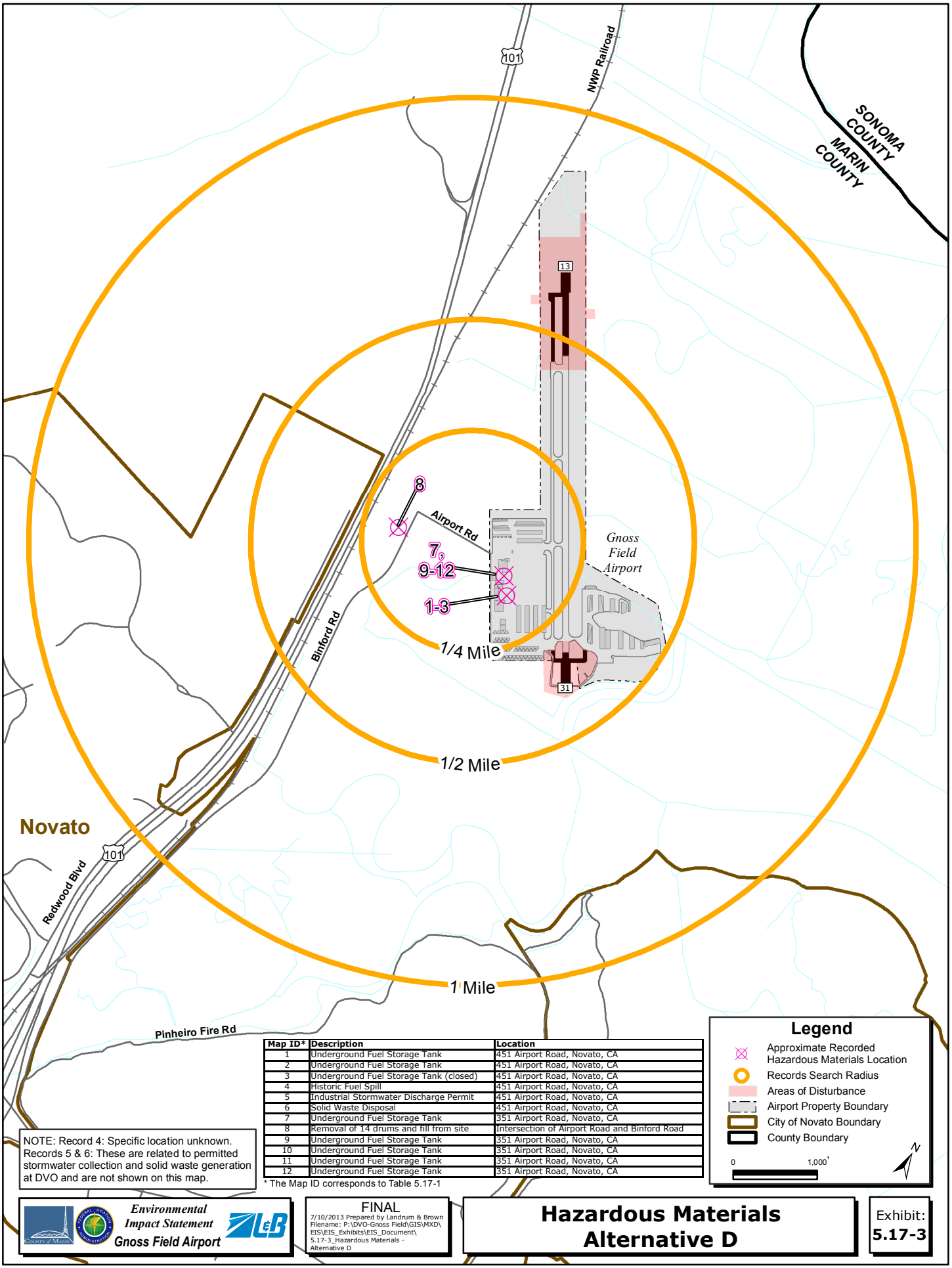
Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

Based on the research and interviews conducted for the presence of hazardous materials, it is concluded that no NPL or potentially eligible NPL sites are present within the area of disturbance for Alternative B (Sponsor's Proposed Project) (see **Exhibit 5.17-2, *Hazardous Materials – Alternative B***). The records of previous spills or actions find that none of the sites are located within the areas that would be disturbed for Alternative B. Therefore, Alternative B would not result in significant impacts to known hazardous materials.

Construction activities associated with Alternative B are expected to include the short-term use or generation of hazardous and non-hazardous materials and waste common to construction including petroleum hydrocarbon-based fuels, lubricants, and oils, paints, and cleaning solvents for the construction equipment. In addition, asphalt and/or concrete materials would be used to construct the runway and taxiway extensions and paints would be used for the markings. Marin County would include pollution prevention measures in contracts with contractors to control and properly manage these materials. Appropriate material management measures would be followed to prevent pollution and to minimize the use and manage disposal of hazardous and non-hazardous substances. Examples of these measures include a stormwater pollution control plan and best management practices (BMPs) for construction activities. A more complete list is included in Appendix L.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

Based on the research and interviews conducted for the presence of hazardous materials, it is concluded that no NPL or potentially eligible NPL sites are present within the area of disturbance for Alternative D (see **Exhibit 5.17-3, *Hazardous Materials – Alternative D***). The records of previous spills or actions find that none of the sites are located within the areas that would be disturbed for Alternative D. Therefore, Alternative D would not result in significant impacts to known hazardous materials.



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* The Map ID corresponds to Table 5.17-1

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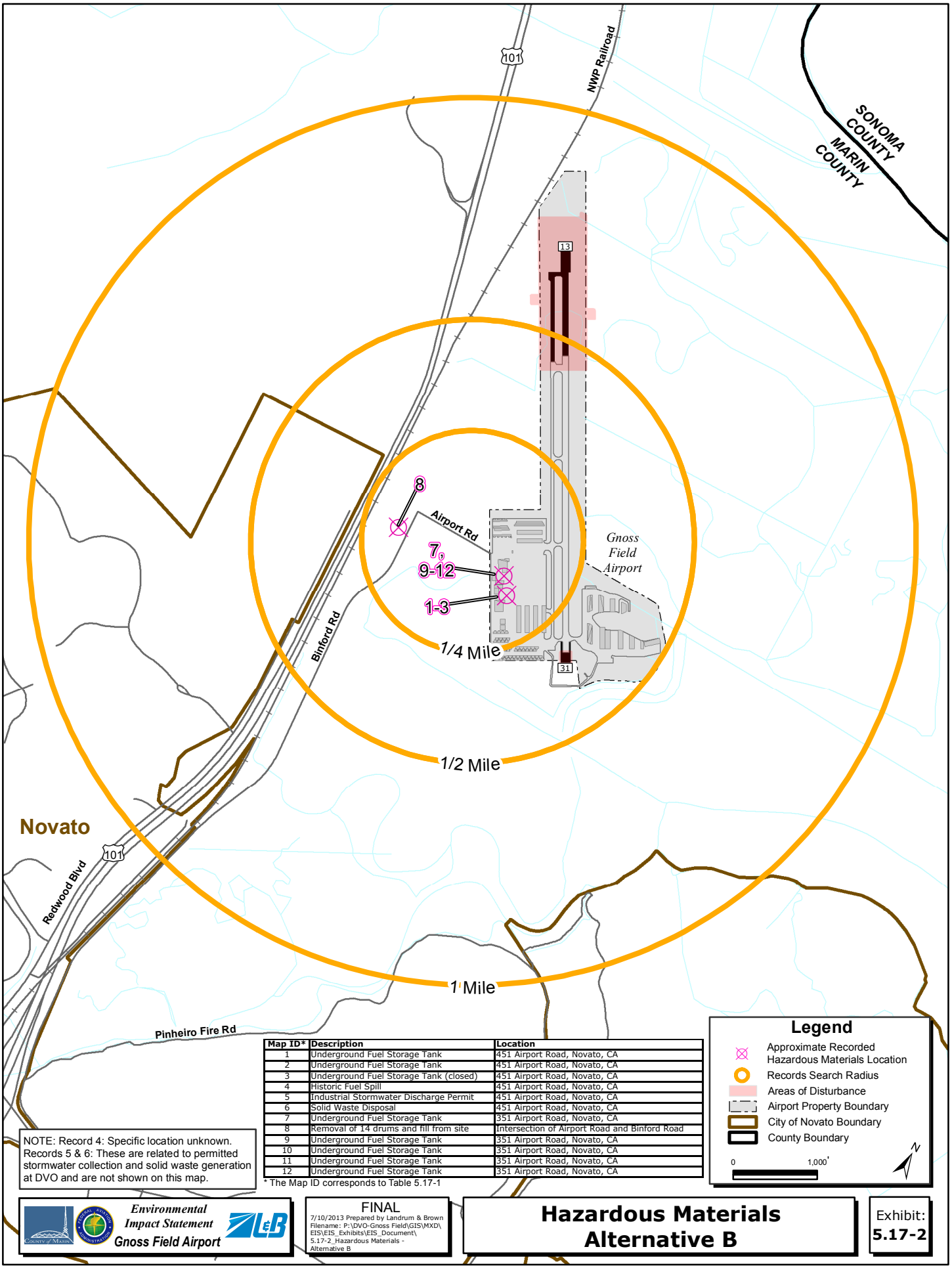
Hazardous Materials Alternative D

Exhibit: **5.17-3**



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Hazardous Materials Alternative B

Exhibit: **5.17-2**

Construction activities associated with Alternative D are expected to include the short-term use or generation of hazardous and non-hazardous materials and waste common to construction including petroleum hydrocarbon-based fuels, lubricants, and oils, paints, and cleaning solvents for the construction equipment. In addition, asphalt and/or concrete materials would be used to construct the runway and taxiway extensions and paints would be used for the markings. Marin County would implement pollution prevention measures into contracts with contractors to control and properly manage these materials. Appropriate materials management measures would be followed to prevent pollution and to minimize the use and manage disposal of hazardous and non-hazardous substances. Examples of these measures include a stormwater pollution control plan and BMPs for construction activities. A more complete list is included in Appendix L.

5.17.2 POLLUTION PREVENTION

FAA Order 1050.1E, Change 1, (Appendix A, Section 10) states that the RCRA, as amended by the Federal Facilities Compliance Act of 1992, governs the generation, treatment, storage, and disposal of hazardous wastes. The CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA or Superfund) and the Community Environmental Response Facilitation Act of 1992 provide for consultation with Natural Resources Trustees and cleanup of any release of hazardous substances (excluding petroleum) into the environment.

EO 12088, *Federal Compliance with Pollution Control Standards*, as amended, directs Federal agencies to comply with applicable pollution control standards in the prevention, control, and abatement of environmental pollution; and consult with the USEPA, state, interstate, and local agencies concerning the best techniques and methods available for the prevention, control, and abatement of environmental pollution.

EO 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention*, requires Federal agencies to report, in a public manner, toxic chemicals entering any waste-stream from their facilities, including any releases to the environment. This is required to ensure that generated waste is recycled to the maximum extent practicable, as well as to ensure that any remaining wastes are stored, treated, or disposed of in a manner protective of public health and the environment. This is further required in an effort to improve local emergency planning, response, and accident notification. Finally, the requirement is designed to encourage clean technologies and safe alternatives to extremely hazardous substances or toxic chemicals. This is to be accomplished through revisions to specifications and standards, the acquisition and procurement process, and the testing of innovative pollution prevention technologies at Federal facilities.

The Pollution Prevention Act of 1990, encourages taking a broader look at waste with a view towards reducing pollution. All pollutants are to be minimized and waste creation is to be controlled, not just during the production process, but also in the design of products that will have less impact on the environment while in use and after disposal. Section 10.2a of FAA Order 1050.1E, Change 1, Appendix A, states that, with regard to pollution prevention with proposed actions, the FAA must

comply with the applicable pollution control statutes and requirements, as listed in Appendices A, B, and C of FAA Order 1050.10B, as amended by FAA Order 1050.10C. There would be no changes to the existing airfield configuration and Airport facilities with the No Action Alternative. It is expected that Marin County would continue its current pollution prevention control through waste minimization with the implementation of any of the alternatives. Since pollution prevention programs will not change under Alternative A, B, or D, implementation of any of these alternatives would not have a significant impact on pollution prevention programs.

5.17.3 SOLID WASTE

In accordance with 42 USC § 6901, a solid waste is considered to be any garbage, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. Solid waste does not include solid or dissolved material in domestic sewage or irrigation return flows, or industrial discharges that are point sources subject to permits under 33 USC § 1342, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended.[1]

5.17.3.1 Regulatory Setting

The RCRA of 1976, which amended the Solid Waste Disposal Act, addresses non-hazardous (Subtitle D) and hazardous (Subtitle C) waste management activities. RCRA established an Interagency Coordinating Committee on Federal Resource Conservation and Recovery Activities which has the responsibility for coordinating all activities dealing with resource conservation and recovery from solid waste carried out by the USEPA, the Department of Energy, the Department of Commerce, and all other Federal agencies which conduct such activities pursuant to this chapter or any other act. The term "resource conservation and recovery activities" includes, but is not limited to, all research development and demonstration projects on resource conservation or energy; material recovery from solid waste; and all technical or financial assistance for state or local planning for, or implementation of, projects related to resource conservation, energy, or material recovery from solid waste.[2]

5.17.3.2 Existing Conditions

Municipal waste, the largest component of the solid-waste stream, includes garbage, refuse, and similar solid-waste material discarded from residential, commercial, institutional, and industrial sources. Marin County contracts with Novato Disposal (North Bay Corporation) for solid waste collection and diversion. The majority of solid waste produced at the Airport ultimately is received at the Redwood Landfill (RLI). The RLI is a 420-acre site owned by WMI and located at

[1] 42 USC § 6903
[2] 42 USC § 6911

8950 Redwood Highway, Novato, California. Roughly 222.5 acres of the property is dedicated to waste disposal/landfill activities. It is estimated that RLI accepts roughly 750,000 tons of solid waste each year. The highest current operating elevation at the RLI is approximately 86-88 feet.[3] The currently permitted maximum height for the landfill is 122 feet at the north peak and 166 feet at the south peak. According to Marin County, Environmental Health Services, the most recent aerial survey of the landfill was conducted on April 22, 2011. At that time, there were an estimated 18,288,000 tons of material (waste and cover) in place. The permitted maximum capacity of the landfill is 26,077,000 tons, inclusive of waste and cover. In addition, Marin County manages a solid and hazardous waste recycling program for the County. Since 1990, Marin's public agencies and private waste haulers and facility operators have worked together to develop Marin's Integrated Waste Management Plan and to implement the recycling programs necessary to meet the State of California's 25 to 50 percent waste reduction mandates.[4] WMI estimates that nearly 50 percent of the solid waste received at RLI is recycled or reused. DVO currently produces 300 cubic yards of solid waste trash each year, which translates to approximately 52.5 tons per year. Another 260 cubic yards of material is recycled through the use of designated recycle dumpsters, which translates to approximately 13 tons per year.[5]

5.17.3.3 Future Conditions: 2018

The volume of solid waste generated at an airport is typically related to the number of people using the facility. Since DVO is a general aviation airport and no passenger records are available, the volume of solid waste is estimated based on the number of operations. Annual operations would increase in the future regardless of whether the proposed development is implemented and a proportional increase in the amount of solid waste generated would be expected. The runway extension proposed for the Airport would create solid waste from debris during construction.

Alternative A:
<u>No Action</u>

Alternative A does not include any new development or construction activity, so the amount of solid waste generated by DVO under Alternative A is based on the projected increase of operations through the year 2018. The projected 17.5 percent increase in operations would be expected to generate up to an additional 50 cubic yards of solid waste for a total of 350 cubic yards per year (~61 tons). It is also anticipated that an additional 43 cubic yards of material for a total of 303 cubic yards would be recycled or reused either through the Marin County recycling program or by WMI (~15 tons). Given that the RLI is permitted to nearly double its capacity, and currently receives approximately 750,000 tons of solid waste each year, the additional solid waste generated at DVO would be easily

[3] http://redwoodlandfill.wm.com/index.jsp, accessed on October 18, 2011.
[4] http://www.marinrecycles.org/about_jpa.cfm, accessed on October 18, 2011.
[5] Estimated cubic yards to tons conversion based on 350 lbs./cubic yard for trash and 100 lbs./cubic yard for recyclable material.

accommodated. Based on these findings, the additional waste produced by the Airport would not have a significant impact on the County's or WMI's ability to transport and dispose of solid waste.

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

According to forecasted operational activity at DVO, increased activity would occur at the same levels with or without the development proposed under Alternative B. However, some additional solid waste is expected to be produced during construction of the proposed runway and taxiway extension. Because Alternative B does not include demolition of existing structures, the solid waste that would be generated by construction is expected to be minimal and include packaging materials for products and equipment, metal and wood products from framing activities, and other miscellaneous trash. The additional solid waste produced at the Airport is anticipated to be no more than 10 tons over the course of the construction period. Much of this waste, such as cardboard, plastic wrapping, and plywood, may be reusable or recyclable, which would further reduce the amount of solid waste being deposited in the RLI. This additional solid waste would not have a significant impact on the County's or WMI's ability to transport and dispose of solid waste due to the capacity of the RLI. After construction, the amount of solid waste would return to the levels discussed for Alternative A, because the runway extension is not anticipated to increase activity at the Airport.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

According to forecasted operational activity at DVO, increased activity would occur at the same levels with or without the development proposed under Alternative D. However, some additional solid waste is expected to be produced during construction of the proposed runway and taxiway extension. Because Alternative D does not include demolition of existing structures, the solid waste that would be generated by construction is expected to be minimal and include packaging materials for products and equipment, metal and wood products from framing activities, and other miscellaneous trash. The additional solid waste produced at the Airport is anticipated to be no more than 10 tons over the course of the construction period. Much of this waste, such as cardboard, plastic wrapping, and plywood, may be reusable or recyclable, which would further reduce the amount of solid waste being deposited in the RLI. This additional solid waste would not have a significant impact on the County's or WMI's ability to transport and dispose of solid waste due to the capacity of the RLI. After construction, the amount of solid waste would return to the levels discussed for Alternative A, because the runway extension is not anticipated to increase activity at the Airport.

5.18 CONSTRUCTION IMPACTS

This section provides a description of the general types and nature of construction and the measures proposed to minimize potential adverse effects under Alternative B (Sponsor's Proposed Project) and Alternative D proposed for Gnoss Field (DVO or Airport). Construction of new Airport facilities can cause temporary impacts relative to air and water quality; soil erosion; ambient noise levels; hazardous materials and solid waste; fish, wildlife, and plants; surface transportation patterns; and socioeconomic conditions. However, the long-term impacts of project implementation are typically greater than the temporary impact of construction. Therefore, the purpose of the discussion of construction impacts as a separate section of the Environmental Impact Statement (EIS) is to summarize impacts from the various sections that have a relationship to construction.

5.18.1 REGULATORY SETTING

The requirement for a general description of the type and nature of construction proposed for a Federal action is given in Federal Aviation Administration (FAA) Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures.*[1] The construction impacts section, when one is included in an EIS, should include the measures expected to minimize potential adverse effects caused by construction. Measures to minimize potential adverse effects by controlling pollution (including fugitive dust), erosion, and siltation is recommended in the FAA Advisory Circular, *Standards for Specifying Construction of Airports*.[2] While generally used as a guideline, the specifications are mandatory for the airport sponsor for airport construction funded under the Airport Improvement Program (AIP) or Passenger Facility Charges (PFC).

Construction impacts alone are unlikely to be significant relative to the requirements under the National Environmental Policy Act (NEPA). No significant impact thresholds are applicable except where noted in the evaluation discussions of air quality and water quality. A more thorough investigation of construction impacts is not required except under unusual circumstances where impacts cannot be mitigated and significant consequences would occur for any of the environmental resource categories. For the impact assessment, the potential impacts from the various sections that have a relationship to construction will be discussed.

5.18.1.1 Air Quality

The Clean Air Act Amendments of 1990 (CAA) requires an inventory of construction emissions for a Federal action in a nonattainment or maintenance area. Section 5.5, *Air Quality*, includes a discussion of the air quality status of Marin County and notes the County is nonattainment for ozone and fine particulate matter ($PM_{2.5}$). As such, the project alternatives would be subject to the CAA General

[1] Federal Aviation Administration (FAA) Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Section 5, *Construction Impacts* (2004).

[2] FAA Advisory Circular *Standards for Specifying Construction of Airports* (AC 150/5370-10D) Item P-156, *Temporary Air and Water pollution, Soil Erosion, and Siltation Control* (September 20, 2008).

Conformity Rule. A thorough discussion of the rule and the inventory of construction emissions are required and are provided in Section 5.5, *Air Quality*, and Appendix F, *Air Quality*. As discussed in Section 5.5, air emissions resulting from implementation of Alternative B, including air emissions during construction, are below Clean Air Act de minimus thresholds, and are not significant.

5.18.1.2 Water Quality

Adverse impacts to water quality due to erosion and subsequent sedimentation are primary concerns during an airport construction project. The increase in suspended sediment concentrations, caused by an increase of eroded materials entering waterways, could induce impacts on aquatic life in the vicinity of the Airport. Impacts could also result from pollutants released from construction materials and equipment, such as fuels, lubricants, bitumen, concrete, and wash water from concrete mixing. To prevent discharge of these materials into surface water and groundwater, construction activities would be undertaken in accordance with the Marin County Stormwater Ordinances,[3] the Marin County Watershed Management Plan,[4] and the Stormwater Quality Manual for Development Projects in Marin County.[5]

The primary mechanism for delivery of sediment from construction and borrow sources is stormwater runoff. Sediment yields and temporary increases in total suspended solids (TSS) from construction activities would depend on the effectiveness of erosion and sediment controls, fillslope and cutslope lengths, widths of existing buffers of vegetation, topographic benches and depressions that act as sinks for eroded material, and available sediment delivery pathways (e.g., ditches and culverts).

The U.S. Environmental Protection Agency (USEPA) regulates stormwater discharges through Title 40 Code of Federal Regulations (CFR) § 122.26, *Storm Water Discharges*. Under 40 CFR § 122.26, construction would require a National Pollutant Discharge Elimination System (NPDES) industrial stormwater permit. A permit may not be required if another individual or general NPDES permit already covers the construction discharge. Authorized under the Clean Water Act (CWA), the NPDES permit program controls water pollution by regulating the discharge of pollutants into waters of the U.S.

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[3] Marin County Stormwater Ordinances identified by the Marin County Stormwater Pollution Prevention Program: Title 23 NATURAL RESOURCES-Chapter 23.18 URBAN RUNOFF POLLUTION PREVENTION, Title 11 HARBORS AND WATERWAYS-Chapter 11.08 WATERCOURSE DIVISION OR OBSTRUCTION. On-line at: http://library.municode.com/index.aspx?clientId=16476&stateId=5&stateName=California and www.mcstoppp.org, access October 18, 2011.

[4] Marin County Watershed Management Plan, 2004, On-line at: http://www.co.marin.ca.us/depts/CD/main/comdev/Watershed/WMP_Pt1.pdf, access October 18, 2011.

[5] Marin County Stormwater Pollution Prevention Program (MCSTOPPP), Stormwater Quality Manual for Development Projects in Marin County, February 2008, On-line at: http://www.mcstoppp.org/acrobat/GuidanceforApplicantsv_2-5-08.pdf, access October 18, 2011.

The NPDES program is implemented on the state level by the California Water Resources Control Board (CWRCB). According to the California Construction Stormwater Program, dischargers whose projects disturb one or more acres are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity. To comply with state and Federal regulations, Marin County would be required to obtain coverage under the Construction General Permit Order 2009-0009-DWQ (effective July 1, 2010). The permit would require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs), including erosion and sediment control, to reduce or eliminate construction-related impacts on receiving water quality.

5.18.2 GENERAL TYPE AND NATURE OF CONSTRUCTION

Alternative A (No Action) includes no construction activities or development of any kind. Therefore, no construction program would be implemented.

Both Alternatives B and D would result in an extension of Runway 13/31 by 1,100 feet. Both alternatives would also require an extension of the parallel taxiway and an extension of the levee and ditch system that protects the Airport from flooding. The general type and nature of construction would be the same under both of the project alternatives. Construction tasks would include:

- Land clearing, grading, and site preparation, including excavation and phased filling to create runway pad, and hauling aggregate material to the site to construct the subbase and base of the runway and taxiway extensions;
- Construction of the runway and taxiway extensions to meet FAA standards for Airport construction; includes installation of utilities (drains and lights) and overlay of asphalt for paving;
- Preparation of the Runway Safety Area (RSA) at the end of both runways; and
- Extension of the existing levee and drainage ditch adjacent to the runways requiring excavation and transport of fill material.

Construction of the project alternatives would involve using typical construction vehicles. The number of vehicles would vary due to project timing, funding, budget constraints, weather, scope of work, and other unforeseen factors, but the types of equipment would remain relatively constant. Equipment common to the project alternatives would be backhoes, bulldozers, dump trucks, excavators, graders, loaders, rollers, and scrapers, and asphalt pavers. Some equipment may have a unique purpose suited only to a specific element of the project.

A comprehensive evaluation of the characteristics of construction for both project alternatives is provided in Appendix F, which is based on the Marin County's *Preliminary Design Report: Runway Extension for Gnoss Field*.[6]

[6] County of Marin Department of Public Works, *Preliminary Design Report: Runway Extension for Gnoss Field*, FAA AIP Project No. 3-06-0167-08 (December 20, 2002).

The remainder of this section discusses the project alternatives separately for 2018 and 2023, including a summary of the potential construction impacts.

5.18.3 FUTURE CONDITIONS: 2018

This section describes the construction activity that is anticipated to take place through 2018, which represents the first year that the Sponsor's Proposed Project or its alternatives would be operational.

Alternative A:
No Action

Alternative A includes no development or construction. Therefore, there would be no potential for significant construction impacts.

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

This alternative includes a proposed 1,100-foot extension of Runway 13/31 to the northwest and the equal extension of the parallel taxiway adjacent to the runway extension. The alternative also proposes the construction of a 240-foot RSA extending beyond each of the runway ends and an expansion of the levee and drainage ditch to allow for the extension of the runway to the north.

Air Quality: Airport construction activities would have a short-term adverse impact on air quality. Air pollution during the construction period would be a consequence of direct emissions from construction equipment and fugitive dust created due to ground disturbance. The evaluation of construction emissions showed the annual net emissions would be below the *de minimis* thresholds established under the CAA conformity rules and below California's Bay Area Air Quality Management District's thresholds of significance. Therefore, construction would not cause a significant adverse air quality impact.

While no significant adverse air quality impacts are anticipated, measures would be applied to the extent possible by Marin County during construction to limit emissions of dust and other fugitive particulate matter. Best Management Practices would be incorporated into the project construction plan in accordance with FAA Advisory Circular, *Standards for Specifying Construction of Airports,*[7] which describes the following as acceptable methods of controlling dust and other air pollutants:

- Minimizing the area of erodible earth;
- Applying temporary mulch with or without seeding;
- Using water sprinkler trucks;

[7] FAA Advisory Circular *Standards for Specifying Construction of Airports* (AC 150/5370-10D) Item P-156, *Temporary Air and Water pollution, Soil Erosion, and Siltation Control* (September 20, 2008).

- Using covers over the cargo area of haul trucks;
- Using dust palliatives or penetration asphalt on haul roads; and
- Using plastic sheet coverings.

See Appendix F for additional State of California mitigation measures. Marin County has the authority to limit the surface area of erodible earth exposed by clearing and grubbing, by excavation, and fill operations. The project construction contractor would be required by Marin County to incorporate all permanent air pollution control features into the project at the earliest practicable date as outlined in the project schedule. Temporary air pollution control measures would be used to correct conditions that develop during construction that were not foreseen during the design stage or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features of the project.

Water Quality: Alternative B would disturb approximately 25.66 acres of area for the extension of the runway of which 22.93 acres is plant and wildlife habitat, 2.31 acres is open water ditch/channel, and 0.42 acres is paved area. This area of disturbance allows for the runway and taxiway extension, an RSA extending beyond both runway ends, expansion of the levee and drainage ditch, and an area adjacent to both runway ends for staging of construction equipment. Because the project would disturb more than one acre of land, Marin County would be required to obtain coverage under the Construction General Permit Order 2009-0009-DWQ (effective July 1, 2010). The permit would require the development and implementation of a SWPPP that specifies erosion and sediment control BMPs to reduce or eliminate construction-related impacts on receiving water quality. Refer to Section 5.6, *Water Quality*, for additional details.

Under Alternative B, the levee and drainage ditches extending beyond the northwest end of existing Runway 13 would be modified to allow for construction of the extended runway and taxiway. Measures to protect water quality during construction of the extension are outlined in FAA Advisory Circular, *Standards for Specifying Construction of Airports*.[8] Marin County would direct the contractor to provide immediate permanent or temporary control measures to minimize contamination of adjacent streams or other watercourses, lake, ponds, or other areas of water impoundment.

Soil Erosion: Construction under Alternative B could cause soil erosion requiring control measures to avoid impacts to drainage systems and water quality. During the site-preparation phase of construction, existing land would be cleared and excavation would occur to remove any existing pavement, vegetation, or utility lines. BMPs described in FAA Advisory Circular, *Standards for Specifying*

[8] FAA Advisory Circular *Standards for Specifying Construction of Airports* (AC 150/5370-10D) Item P-156, *Temporary Air and Water pollution, Soil Erosion, and Siltation Control* (September 20, 2008).

Construction of Airports[9] would be incorporated into the proposed project construction planning as needed to control and minimize soil erosion. Marin County would be required to incorporate all permanent soil erosion control features into the project at the earliest practicable date as outlined in the project schedule. Temporary erosion control measures would be used to correct conditions that develop during construction that were not foreseen during the design stage or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features of the project. In the case of any conflict between standard requirements and other regulatory standards, the pollution control regulations and laws that are the most stringent would be applied.

Further potential construction impacts would be reduced through the implementation of an erosion and sediment control plan as described in an approved SWPPP. The primary mechanism for delivery of sediment from construction and borrow sources is in stormwater runoff. Sediment yields and temporary increases in TSS from construction activities would depend on the effectiveness of erosion and sediment controls, fillslope and cutslope lengths, widths of existing buffers of vegetation, topographic benches and depressions that act as sinks for eroded material, and available sediment delivery pathways (e.g., ditches and culverts). Elements of an erosion and sediment control plan would include an interconnected system of erosion and stormwater runoff controls, including structural erosion control methods, such as phased clearing and grading, confining construction to the dry season whenever possible, sediment traps and ponds, interceptor dikes and swales, mulching, filter fabric fencing, hydroseeding, and terracing. Although implementation of an effective erosion and sediment control plan would not remove all TSS, it is expected to successfully mitigate potential TSS loading and temporary construction impacts on the water quality within the Airport environs.

Noise: Noise impacts may occur when there is the use of heavy construction equipment. Earthwork and site preparation activities would result in elevated levels of noise generated by the types of equipment used on most construction sites. Noise from this equipment would vary from model to model, and would change according to the operation involved. Noise levels resulting from operation of construction equipment are generally higher than those generated by normal traffic flows. However, noise generated by construction activities at DVO would be localized and would often be overshadowed by other noises from the freeway, railroad and by aircraft. Since existing Runway 13/31 would remain operational during many stages of construction, there would be little to no effect on aircraft noise impacts outside the construction area.

[9] FAA Advisory Circular *Standards for Specifying Construction of Airports* (AC 150/5370-10D) Item P-156, *Temporary Air and Water pollution, Soil Erosion, and Siltation Control* (September 20, 2008).

Table 5.18-1 depicts an estimate of the typical sound level energy from typical units of construction equipment at various distances from that equipment. The total sound energy is essentially a product of a machine's sound level, the number of such units in service, and the average time the units operate. Although pile drivers and rock drills produce the highest sound levels, dump trucks, air compressors, and concrete mixers, due to their greater number and/or longer operating times, produce the most total sound energy.[10]

Table 5.18-1
CONSTRUCTION EQUIPMENT NOISE
Gnoss Field Airport

CONSTRUCTION EQUIPMENT	MAXIMUM SOUND LEVEL (dBA) AT 50 FEET	SOUND LEVEL (dBA) AT RECEIVER BY DISTANCE (FEET)					
		1,000	2,500	5,000	7,500	10,000	15,000
Dump Truck	88	62	54	48	44	42	38
Portable Air Compressor	81	55	47	41	37	35	31
Concrete Mixer (truck)	85	59	51	45	41	39	35
Jackhammer	88	62	54	48	44	42	38
Scraper	88	62	54	48	44	42	38
Dozer	87	61	53	47	43	41	37
Paver	89	63	55	49	45	43	39
Generator	76	50	42	36	32	30	26
Pile Driver	101	75	67	61	57	55	51
Rock Drill	98	72	64	58	54	52	48
Pump	76	50	42	36	32	30	26
Pneumatic Tools	85	59	51	45	41	39	35
Backhoe	85	59	51	45	41	39	35

Source: May, DS.N., Editor, 1978. *Handbook of Noise Assessments*, Page 215. Van Nostrand Reinhold Company, New York. Computations of typical noise at 8,000 feet by Landrum & Brown, 2005 using the following equation, which is based on a standard fall-off rate of noise (approximately six dBA per doubling of distance): $N_r = N_{r1} + 20*\log(r/r_1)$; where N_{r1} is the known noise level at a given distance (r_1), and N_r is the unknown noise level at the known distance r.

Section 4.2.1, *Existing Land Use*, of this EIS describes land use in the vicinity of DVO, including the nearest residential areas and other noise-sensitive areas. The nearest noise-sensitive areas are residential areas located approximately 7,500 feet south of the Airport.

[10] Van Nostrand Reinhold Company, *Handbook of Noise Assessments*, D. N. Editor, New York, May 1978.

As shown in Table 5.18-1, the two loudest pieces of construction equipment that might be used for construction of the runway extension are the piledriver and the rock drill. However at a distance of 2,500 feet from a construction site, only a pile driver would generate a noise level in excess of 65 dBA. At a distance of 5,000 from the construction activity, a pile driver would produce only 61 dBA. Pile drivers and rock drills, the noisiest construction equipment, are unlikely to be used extensively for construction of the runway extension at DVO because the Reyes clay soil at the Airport is not rocky. Instead, it is formed from sediments deposited by Petaluma River and surrounding topography. Construction noise impacts are also unlikely due to the masking effects of noise from other sources such as Highway 101, the adjacent railroad, and the Airport. As a result, construction noise associated with the construction of Alternative B would not be significant.

Hazardous Materials and Solid Waste: A relatively small amount of solid waste would be generated from construction under Alternative B. The majority of waste material would result from the removal of any material to accommodate the proposed new airfield pavement. No structures would need to be demolished or removed from the site. The assessment of potential impacts related to hazardous waste and solid waste concluded that no significant impacts would occur as a result of this alternative. Additional information on known or potential hazardous waste located in and around the construction sites is included in Section 5.17, *Hazardous Materials, Pollution Prevention, and Solid Waste*.

All construction waste would be disposed of in accordance with all applicable state and Federal regulations at appropriate permitted facilities. Clean construction debris (concrete, asphalt, etc.) would be used as fill at the Airport or hauled off-site, as needed, in accordance with present BMPs and all applicable laws.

Per FAA Order 1050.1E, Change 1, in the event of a release of hazardous waste or a hazardous substance (including petroleum products), the National Response Center would be contacted (1-800-424-8802) and provided details of the incident and measures taken to reduce the effects of the release.[11] In the event that hazardous substances or waste are identified within the construction site, construction activity in that location would stop and consultation with the appropriate state agency or USEPA would be initiated by Marin County. Construction under Alternative B would generate only a limited amount of solid waste. Also, any hazardous materials would be handled in accordance with applicable regulations. Therefore, any construction impacts associated with solid waste or hazardous materials would not be significant.

Fish, Wildlife, and Plants: Construction under this alternative would cause the remove of annual grassland and wetland habitat. As discussed in Chapter Five, *Environmental Consequences*, Section 5.9 *Fish, Wildlife, and Plants*, a biological resources assessment was completed to evaluate the potential for existence of Federal and State of California protected plant or animal species, and their respective habitats.

[11] FAA Order 1050.1E Change 1 Environmental Impacts: Policies and Procedures. 10.2 FAA Responsibilities 10.2d.(4). March 20 2006

Based on a records search of the California Natural Diversity Database (CNDDB), the U.S. Fish and Wildlife Service (USFWS) list, site surveys, and formal consultation with the USFWS, the USFWS has determined that the brackish marsh areas that surround the Airport should be considered marginal habitat for the Federally-endangered salt marsh harvest mouse (*Reithrodontomys raviventris*) and for the Federally-endangered California clapper rail (*Rallus longirostris obsoletus*). The USFWS has also determined that there is low potential for the California red-legged frog (*Rana aurora draytonii*) to be present onsite during the winter months. The FAA has concurred with this determination (See Appendix I, *Biological Resources*).

Through formal Endangered Species Act (ESA) Section 7 consultation with the USFWS, suitable mitigation options and restoration/compensation ratios were determined along with habitat compensation ratios. The habitat compensation ratios are presented in Section 5.9, *Fish, Wildlife and Plants* and possible locations of the habitat compensation sites are discussed concurrently with wetland mitigation sites in Section 5.10, *Wetlands and Streams*. No fish species or sensitive plant species occur on the Airport. Implementation of Alternative B would have a significant impact on marginal habitat for the SHMH and CCR. Section 5.9 identifies measures to avoid and minimize impacts to endangered species and other animals and plants during construction. These avoidance and minimization measures combined with the habitat compensation measures described in Sections 5.9 and 5.10 would keep construction impacts at a not significant level.

Surface Transportation: The construction of this proposed alternative would result in increased construction-related traffic in the vicinity of the Airport. Temporary construction impacts could include increased traffic congestion caused by truck traffic and additional construction worker vehicles along area roadways. A construction management plan would be prepared based on the haul plan of the selected contractor, specifying hours of operation, haul routes, and other controls regarding minimizing traffic during peak traffic hours. Because most of the construction activity would occur on existing Airport-owned property with access along a highway frontage road and, with convenient access to Highway 101, it is anticipated that construction vehicles would not disrupt residential neighborhoods or local businesses. If it becomes necessary for large numbers of construction vehicles to travel through local streets, standard traffic engineering techniques would be used to maintain traffic during construction. Section 5.3, *Socioeconomic Impacts, Environmental Justice and Children's Environmental Health and Safety Risks, Section 5.3.1.3 Disruptions of Local Traffic Patterns*, assessed the potential for impacts on local roadways related to construction vehicles and found that the additional vehicles associated with the construction activity would not result in a significant impact.

***Socioeconomic Impacts*:** Socioeconomic impacts include the direct and indirect consequences of construction projects. Direct impacts associated with Alternative B could include the employment and payroll of construction workers and other personnel associated with the project, as well as related capital expenditures for

materials and equipment. Indirect impacts are those impacts that support project construction, such as increased employment, payroll, and expenditures of local building supply companies.

Construction can also induce socioeconomic impacts resulting in increased activity in the service sectors of the local economy such as gas stations, restaurants, and supermarkets. The higher levels of employment and greater amounts of disposable income spent by construction related workers in the local economy would generate more employment and activity in these service sectors. Socioeconomic impacts of construction are generally short-term and temporary in nature, as is the case for most other construction impacts. Section 5.3, *Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks* assessed the potential for adverse socioeconomic impacts related to this alternative and found that no significant impacts would occur and in fact there may be temporary increases in economic activity as a result of the project.

Airport Operations During Construction: Construction related operational impacts are not expected to result in significant long-term changes in runway usage or taxi patterns. A detailed Construction Safety and Phasing Plan would be developed to allow the construction activities to proceed without causing substantial airfield delays and congestion. As a result, no significant change in Airport operations is expected during construction.

Construction Resources: Materials used to construct the proposed alternative represent an irretrievable and irreversible commitment of resources. It is anticipated that the construction would require common paving materials such as gravel, concrete, asphalt, etc. Section 5.15, *Energy Supply, Natural Resources, and Sustainable Design* estimated the type and amount of construction materials required for Alternative B and concluded that the materials are generally available locally and are not expected to be needed in such a magnitude as to adversely affect long-term supplies locally or in the surrounding areas. As a result, no significant impact to construction resources is anticipated.

Alternative D:
<u>Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet</u>

This alternative includes the proposed 860-foot extension of Runway 13 and the 240-foot extension of Runway 31, for a total runway extension of 1,100 feet. This is the same total runway extension as described for Alternative B. Alternative D includes the construction of extensions to the parallel taxiways adjacent to the runway extensions to the full length of the extended runway. All potential impacts from construction would be the same for this alternative as described for Alternative B except for the total area of disturbance and the impact to water quality.

Air Quality: Requirements for the evaluation of construction emissions and measures applicable for the control of fugitive emissions is the same as described for Alternative B. With implementation of those measures construction would not cause a significant impact.

Water Quality: Alternative D would disturb approximately 30.05 acres of area for the extension of the runway of which 26.67 acres is plant and wildlife habitat, 2.31 acres is open water ditch/channel, and 1.07 acres is paved area. This area of disturbance allows for the runway and taxiway extension, an RSA extending beyond both runway ends, expansion of the levee and drainage ditch, and an area adjacent to both runway ends for staging of construction equipment. Because the project would disturb more than one acre of land, Marin County would be required to obtain coverage under the Construction General Permit Order 2009-0009-DWQ (effective July 1, 2010). The permit would require the development and implementation of a SWPPP that specifies erosion and sediment control BMPs to reduce or eliminate construction-related impacts on receiving water quality. Refer to Section 5.6, *Water Quality*, for additional details.

Under this alternative the levee and drainage ditches extending beyond the northwest end of existing Runway 13 would be modified to allow for construction of the extended runway and taxiway. Measures to protect water quality during construction of the extension are outlined in FAA Advisory Circular, *Standards for Specifying Construction of Airports*.[12] Marin County would direct the contractor to provide immediate permanent or temporary control measures to minimize contamination of adjacent streams or other watercourses, lake, ponds, or other areas of water impoundment. BMPs described in the circular would be incorporated into the proposed project construction planning as needed. The assessment of potential impacts related to water quality concluded that no significant impacts would occur as a result of this alternative.

Soil Erosion: Potential impacts to soil erosion under this alternative would be the same as discussed under Alternative B.

Noise: Potential noise impacts under this alternative would be the same as discussed under Alternative B.

Hazardous Materials and Solid Waste: Potential impacts from hazardous materials and solid waste would be the same as described under Alternative B.

Fish, Wildlife, and Plants: Potential impacts to Fish, Wildlife, and Plants around the Airport would be the same as described under Alternative B.

Surface Transportation: Potential impacts to surface transportation would be the same as described under Alternative B.

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[12] FAA Advisory Circular *Standards for Specifying Construction of Airports* (AC 150/5370-10D) Item P-156, *Temporary Air and Water pollution, Soil Erosion, and Siltation Control,* September 20, 2008.

***Socioeconomic Impacts*:** Potential impacts to socioeconomic conditions around the Airport would be the same as described under Alternative B.

Airport Operations During Construction: Operation of the Airport during construction of this alternative would be the same as described for Alternative B.

Construction Resources: The type of construction activities and materials used to construct this alternative would be the same as discussed under Alternative B.

5.18.4 FUTURE CONDITIONS: 2023

There are no construction activities associated with Alternatives A, B, or D in 2023. Therefore, no impacts due to construction activities would occur in 2023.

5.2 COMPATIBLE LAND USE

This section provides an evaluation of the compatibility of land uses in the vicinity of the Gnoss Field Airport (DVO or Airport) for the Sponsor's Proposed Project and its alternatives. The impacts of each alternative on surrounding land uses and the consistency of the alternatives with the comprehensive plans of the surrounding communities are assessed in accordance with Federal Aviation Administration (FAA) Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions.* The existing land use patterns within the General Study Area (GSA) are described in Chapter Four, *Affected Environment*. **Exhibit 5.2-1, *Generalized Land Use***, graphically depicts the general land use pattern within the GSA.

5.2.1 REGULATORY SETTING

The FAA has identified guidelines relating the compatibility of land use types to airport sound levels measured using the Day-Night Average Sound Level (DNL) described in Appendix E, *Noise Methodology*. These guidelines are defined in Title 14 Code of Federal Regulations (CFR) Part 150 *Airport Noise Compatibility Planning* (Table 1 of Appendix A, *Agency Scoping and Coordination*), *Land Use Compatibility with Yearly Day-Night Average Sound Levels*. These guidelines, shown in **Table 5.2-1**, delineate the compatibility parameters for residential, public (schools, churches, nursing homes, hospitals), commercial, manufacturing and production, and recreational land uses.

The State of California has adopted similar land use compatibility guidelines to airport sound levels; however, these guidelines use the Community Noise Equivalent Level (CNEL) described in Appendix E. While DNL is the primary metric the FAA uses to determine noise impacts, the FAA recognizes CNEL as an alternative metric to assess noise effects in the State of California.[1] Therefore, the CNEL metric is substituted for DNL in Table 5.2-1.

5.2.2 FUTURE CONDITIONS: 2018

The following section discusses the land use impacts of the Sponsor's Proposed Project and its alternatives in 2018.

Alternative A:
<u>No-Action</u>

Alternative A (No Action), includes no change to the present airfield layout at DVO. No changes to land uses at DVO would occur as a result of Alternative A in 2018. As shown in Exhibit 5.1-1, *2018 Alternative A (No Action) Community Noise Equivalent Level* in Section 5.1, *Noise*, no residential or noise-sensitive land uses would be exposed to noise levels of 65 CNEL or higher under the

[1] FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, dated March 20, 2006*;* Appendix A, Paragraph 14a.

2018 Alternative A. As a result, Alternative A would be consistent with future plans for the land and would not cause any land use incompatibilities or inconsistencies with local land use plans.

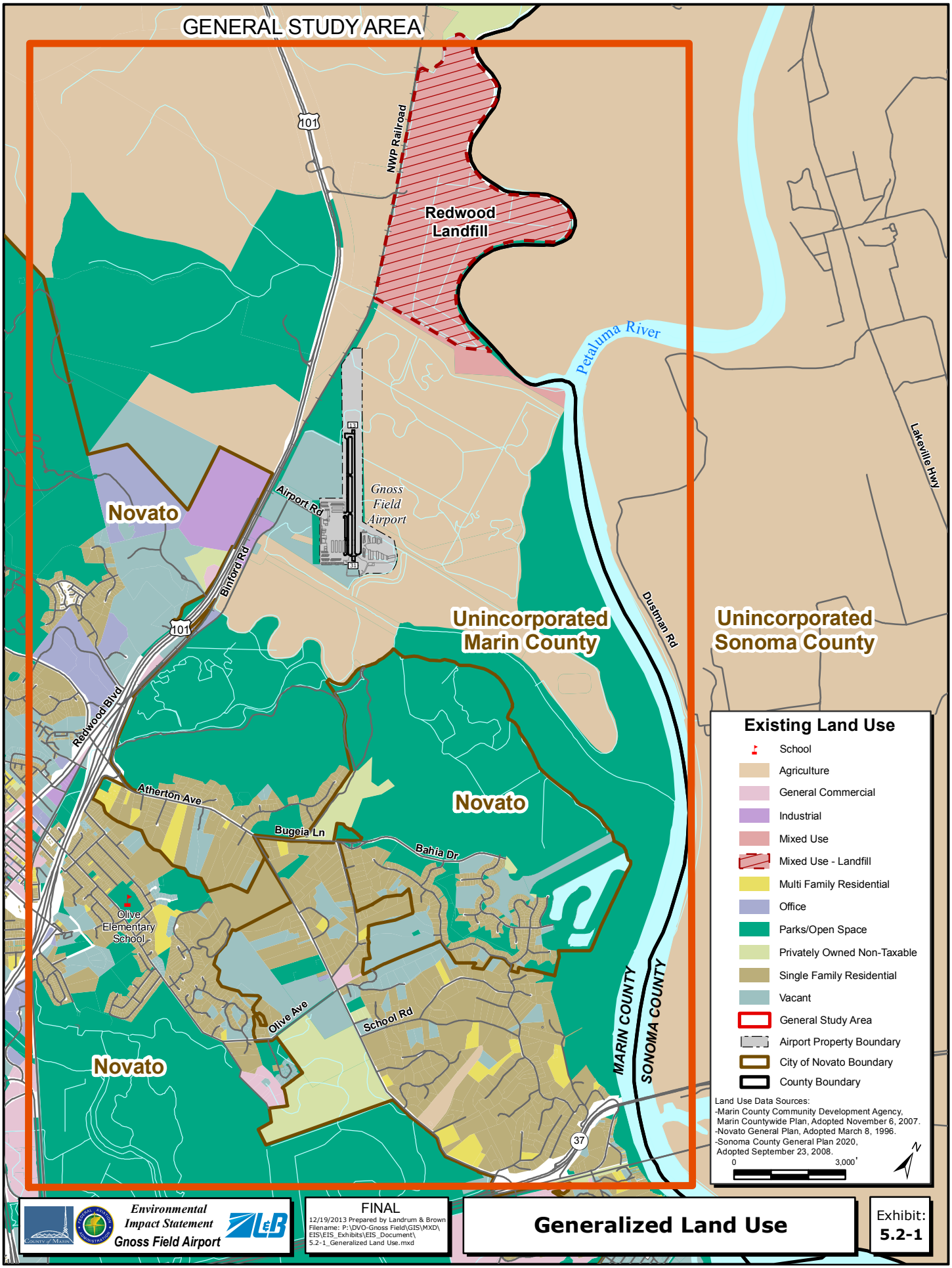
Alternative B:
Extend Runway 13/31 to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

This section provides a summary of the potential land use impacts as a result of Alternative B (Sponsor's Proposed Project) for the year 2018.

Noise Impacts: As shown in Exhibit 5.1-2, *Noise Contour Comparison: 2018 Alternative B vs. 2018 Alternative A*, no residential or noise-sensitive land uses would be exposed to noise levels of 65 CNEL or higher under the 2018 Alternative B noise contour.

Consistency with Local Land Use Plan: Marin County has provided a Land Use Assurance Letter (Appendix O), to the FAA stating that the County will restrict land uses in the vicinity of DVO to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft. No changes in land use are expected to occur as a result of Alternative B and no residential or noise-sensitive land uses would be exposed to noise levels of 65 CNEL or higher under the 2018 Alternative B. Alternative B would require a lot-line adjustment to acquire 0.1 acre of land to the south of Runway 31 for the extended Runway Safety Area (RSA). This land is currently vacant and due to an existing easement that Marin County holds on the property, the height of any structures can be restricted so that it would not become a hazard to navigation.[2] For the area being discussed, the maximum vertical height would be less than two feet, making it impossible to construct buildings at that location. An existing easement on the northern part of Airport property provides the California Department of Fish and Game access to the properties east of the Airport.[3] Under this Alternative, the easement would be relocated and access to the properties east of the Airport would continue. As a result, implementation of Alternative B would not be inconsistent with future plans for the land and would not cause any land use incompatibilities or inconsistencies with local land use plans.

[2] Avigation Easement between Rancho Del Pantano, Inc. and Marin County, April 10, 1967.
[3] Purchase Agreement between Mount Burdell Enterprises and Ranch Burdell Partners and Marin County, December 16, 1997.



Environmental Impact Statement
Gnoss Field Airport

FINAL
12/19/2013 Prepared by Landrum & Brown
Filename: P:\DVO-Gnoss Field\GIS\MXD\EIS\EIS_Exhibits\EIS_Document\5.2-1_Generalized Land Use.mxd

Generalized Land Use

Exhibit: **5.2-1**

Alternative D:
Extend Runway 13/31 to the Northwest by 860 Feet and to the Southeast by 240 Feet

This section provides a summary of the potential land use impacts due to Alternative D for the year 2018.

Noise Impacts: As shown in Exhibit 5.1-3, *Noise Contour Comparison: 2018 Alternative D vs. 2018 Alternative A*, no residential or noise-sensitive land uses would be exposed to noise levels of 65 CNEL or higher under the 2018 Alternative D noise contour.

Consistency with Local Land Use Plan: Marin County has provided a Land Use Assurance Letter (Appendix O), to the FAA stating that the County will restrict land uses in the vicinity of DVO to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft. No changes in land use are expected to occur as a result of Alternative D and no residential or noise-sensitive land uses would be exposed to noise levels of 65 CNEL or higher under the 2018 Alternative D. Alternative D would require acquisition of 3.7 acres of land to the south of Runway 31 for the extended RSA. This land is currently vacant and due to an existing easement that Marin County holds on the property, the height of any structures can be restricted so that it would not become a hazard to navigation.[4] For the area being discussed, the maximum vertical height would be less than ten feet, making it virtually impossible to construct buildings with any useful purpose at that location. An existing easement on the northern part of Airport property provides the California Department of Fish and Game access to the properties east of the Airport.[5] Under this Alternative, the easement would be relocated and access to the properties east of the Airport would continue. As a result, implementation of Alternative D would not be inconsistent with future plans for the land and would not cause any land use incompatibilities or inconsistencies with local land use plans.

[4] Avigation Easement between Rancho Del Pantano, Inc. and Marin County, April 10, 1967.
[5] Purchase Agreement between Mount Burdell Enterprises and Ranch Burdell Partners and Marin County, December 16, 1997.

Table 5.2-1
LAND USE COMPATIBILITY GUIDELINES – 14 CFR PART 150
Gnoss Field Airport

	COMMUNITY NOISE EQUIVALENT LEVEL (CNEL) IN DECIBELS*					
LAND USE	**BELOW 65**	**65-70**	**70-75**	**75-80**	**80-85**	**OVER 85**
RESIDENTIAL						
Residential, other than mobile homes & transient lodgings	Y	N[1]	N[1]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[1]	N[1]	N[1]	N	N
PUBLIC USE						
Schools, hospitals, nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	N[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail – building materials, hardware, and farm equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail trade, general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock farming and breeding	Y	Y[6]	Y[7]	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y	Y[5]	N[5]	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Table 5.2-1, *Continued*
LAND USE COMPATIBILITY GUIDELINES - FAR PART 150
Gnoss Field Airport

***** Note: The FAA uses the DNL metric for determining noise impacts to the above listed land use types; however, the FAA also recognizes use of the Community Noise Equivalent Level (CNEL) which is required to be used to identify noise impacts in the State of California.

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table A-1

Y (Yes) Land use and related structures compatible without restrictions.
N (No) Land use and related structures are not compatible and should be prohibited.
NLR Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure
25, 30, 35 Land use and related structures generally compatible; measures to achieve a NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes for Table A-1

1. Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as five, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
3. Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
4. Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
5. Land use compatible provided special sound reinforcement systems are installed.
6. Residential buildings require a NLR of 25 dB.
7. Residential buildings require a NLR of 30 dB.
8. Residential buildings not permitted.

Source: FAR Part 150 Airport Noise Compatibility Planning, Appendix A, Table 1.

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5.3 SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

This section assesses the potential socioeconomic impacts, environmental justice impacts, and children's environmental health and safety risks that would occur as a result of implementing the Sponsor's Proposed Project or its alternatives.

5.3.1 SOCIOECONOMIC IMPACTS

Socioeconomic impacts are assessed to determine the effect that the proposed airport development would have on the social and economic fabric of the surrounding communities. The types of socioeconomic impacts that typically arise from airport development are:

- Extensive relocation of residents without the availability of sufficient replacement housing;
- Extensive relocation of community businesses that would create severe economic hardship for the affected communities;
- Disruptions of local traffic patterns that would substantially reduce the levels of service of the roads serving Gnoss Field Airport (DVO or Airport) and its surrounding communities; and
- A substantial loss in community tax base.

5.3.1.1 Future Conditions: 2018

The following section analyzes the impacts that the Sponsor's Proposed Project and its alternatives would have with respect to the above factors.

Alternative A:
<u>No Action</u>

Relocation of Residences: Alternative A would not result in the acquisition or the conversion of residential properties to Airport property. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of residences.

Relocation of Businesses: Alternative A would not result in impacts to businesses located on or off-Airport. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of businesses.

Disruptions of Local Traffic Patterns: Alternative A would not result in modifications to off-Airport roadways or increase surface traffic. Therefore, no impacts to socioeconomic resources would occur as a result of disruptions of local traffic patterns.

Substantial Loss in Community Tax Base: Alternative A would not result in a substantial loss in community tax base. Therefore, no impacts to socioeconomic resources would occur as a result.

Implementation of Alternative A would not have a significant impact on socioeconomic resources.

Alternative B:
Extend Runway 13/31 to the Northwest by 1,100 feet (Sponsor's Proposed Project)

Relocation of Residences: The construction and implementation of the Sponsor's Proposed Project would not result in the acquisition or the conversion of residential properties to Airport property. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of residences.

Relocation of Businesses: The construction and implementation of the Sponsor's Proposed Project would not result in impacts to businesses located on or off-Airport property. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of businesses.

Disruptions of Local Traffic Patterns: The construction and implementation of the Sponsor's Proposed Project does not include proposed modifications to off-Airport roadways. The Sponsor's Proposed Project would not result in an increase in surface traffic other than a temporary increase during construction. Based on the estimates prepared for construction, it is anticipated that the Sponsor's Proposed Project would add up to 33 vehicles (mainly trucks) a day to the local roadways, with the average over the 18-month construction period being approximately 20 vehicles a day. Depending on the origin and destination of the vehicles, roadways likely to be used would include Atherton Road, Highway 101 north and south, Airport Road, and Binford Road. Being the primary access point to the Airport, Airport Road and Binford Road would receive all of these vehicles, while the other roadways would receive some portion. Given the relatively low levels of traffic on Airport Road and Binford Road, it is concluded that they are sufficient enough to handle this temporary increase during construction. The other roadways in the area are physically capable of handling the additional vehicles and the number of vehicles would be relatively small compared to the existing level of traffic on these roads. Therefore, there would be no significant disruption of local traffic patterns as a result of implementing the Sponsor's Proposed Project.

Substantial Loss in Community Tax Base: As noted in the preceding sections, the implementation of the Sponsor's Proposed Project would not result in the relocation of any residences or local businesses. However, the Sponsor's Proposed Project would require the acquisition of property.

The Sponsor's Proposed Project would require acquisition of 0.1 acre of land to the southeast of the runway for the extension of the runway safety area to the south. This property is part of a 37-acre parcel that is located immediately off the southern end of the runway. The parcel is owned by JHW Family Limited Partners[1], but due to an existing easement that Marin County holds on the property, the height of any structures can be restricted so that it would not become a hazard to navigation.[2] For the area being discussed, the maximum vertical height would be less than two feet, making it impossible to construct buildings. For tax purposes, the value of the 37 acre parcel is estimated to be $483,253 and the portion of the parcel to be acquired is estimated to be valued at $915. The loss in tax revenue would be approximately $10.43 annually. This loss in tax revenue would not be considered substantial. Therefore the Sponsor's Proposed Project would not significantly affect the local tax base for Marin County. In addition, Marin County intends to keep the Airport open for business during construction of the proposed runway extension. As a result, no loss of revenue for the airport-related businesses is anticipated.

Implementation of Alternative B would not have a significant impact on socioeconomic resources.

Alternative D:
Extend Runway 13/31 to the Southeast by 240 feet and to the Northwest by 860 feet

Relocation of Residences: The construction and implementation of Alternative D would not result in the acquisition or the conversion of residential properties to Airport property. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of residences.

Relocation of Businesses: The construction and implementation of Alternative D would not result in impacts to businesses located on or off-Airport. Therefore, no impacts to socioeconomic resources would occur as a result of relocation of businesses.

Disruptions of Local Traffic Patterns: The construction and implementation of Alternative D does not include proposed modifications to off-Airport roadways. Alternative D would not result in an increase in surface traffic other than a temporary increase during construction. Based on the estimates prepared for construction, it is anticipated that Alternative D would add up to 33 vehicles (mainly trucks) a day to the local roadways, with the average over the 18-month construction period being approximately 20 vehicles a day. Depending on the origin and destination of the vehicles, roadways likely to be used would include Atherton Road, Highway 101 north and south, Airport Road, and Binford Road. Being the primary access point to the Airport, Airport Road and Binford Road would receive all of these vehicles, while the other roadways would receive some portion. Given the relatively low levels of traffic on Airport Road and Binford Road, it is concluded that they are sufficient enough to handle this temporary increase during

[1] Marin County Assessor-Recorder - Property Inquiry Details, accessed online at http://www.co.marin.ca.us/depts/ar/COMPASS/index.asp on October 8, 2013.
[2] Avigation Easement between Rancho Del Pantano, Inc. and Marin County, April 10, 1967.

construction. The other roadways in the area are physically capable of handling the additional vehicles and the number of vehicles would be relatively small compared to the existing level of traffic on these roads. Therefore, there would be no significant disruption of local traffic patterns as a result of implementing Alternative D.

Substantial Loss in Community Tax Base: As noted in the preceding sections, the implementation of Alternative D would not result in the relocation of any residences or local businesses. However, Alternative D would require the acquisition of property.

Alternative D would require the acquisition of 3.7 acres of land to the southeast of the runway for the extension of the runway and runway safety area to the south. This property is part of a 37 acre parcel that is located immediately off the southern end of the runway. The parcel is owned by JHW Family Limited Partners, but due to an existing easement that Marin County holds on the property, the height of any structures can be restricted so that it would not become a hazard to navigation.[3] For the area being discussed, the maximum vertical height would be less than ten feet, making it virtually impossible to construct buildings with any useful purpose. For tax purposes, the value of the 37 acre parcel is estimated to be $483,253 and the portion of the parcel to be acquired is estimated to be valued at $48,325. The loss in tax revenue would be approximately $551.10 annually. This loss in tax revenue would not be considered substantial. Therefore Alternative D would not significantly affect the local tax base for Marin County.

Implementation of Alternative D would not have a significant impact on socioeconomic resources.

5.3.2 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations,* requires all Federal agencies to address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The Executive Order also directs Federal agencies to incorporate environmental justice as part of their overall mission by conducting their programs and activities in a manner that provides minority and low-income populations an opportunity to participate in agency programs and activities.

[3] Avigation Easement between Rancho Del Pantano, Inc. and Marin County, April 10, 1967.

The U.S. Department of Transportation Order 5610.2(a) provides definitions for minority and low income populations:

a. Low-Income means a person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

b. Minority means a person who is:

   (1) Black: a person having origins in any of the black racial groups of Africa;

   (2) Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;

   (3) Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent;

   (4) American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition; or

   (5) Native Hawaiian and Other Pacific Islander: people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

c. Low-Income Population means any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed DOT program, policy or activity.

d. Minority Population means any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed DOT program, policy or activity.

The Executive Order relates to requirements in Title VI of the *Civil Rights Act of 1964* (Title VI), the *National Environmental Policy Act* (NEPA), the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* (Title 49 CFR Part 24), and other applicable statutes and regulations. Title VI provides that no person will, on the grounds of race, color, religion, sex, national origin, marital status, disability, or family composition, be excluded from participation in, be denied the benefits of, or be otherwise subject to discrimination under any program of the Federal, state, or local government. Title VIII of the *1968 Civil Rights Act* guarantees each person equal opportunity in housing.

FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures,* provides guidance for the preparation of environmental justice analysis in support of an Environmental Impact Statement (EIS). Section 16.2a (1) of Appendix A of the Order states that EISs should discuss the significant impact that a project would

cause, then identify affected populations. If a significant impact would affect low income or minority populations at a disproportionately higher level than it would other population segments, an environmental justice issue is likely.

FAA Order 1050.1E, Change 1, Section 16.1a of Appendix A, states that environmental justice is examined during evaluation of other impact categories such as noise, air quality, water, hazardous materials, and cultural resources. In order to determine if there is a potential for significant impacts to low income or minority populations, a review of all impact categories was conducted. There are no significant impacts to any of the impact categories that cannot be mitigated. Therefore, with implementation of the compensatory mitigation measures identified in this EIS it is concluded that neither the Sponsor's Proposed Project nor its alternatives would disproportionately impact any low income or minority populations.

5.3.3 CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* requires all Federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Based on a review of available data conducted as part of this EIS, implementation of the Sponsor's Proposed Project or its alternatives would not result in an elevated risk related to health or safety concerns for children. Typically, the primary children's health concern is asthma and related lung disorders. In order to determine whether the Proposed Project or its alternatives would increase the likelihood of children contracting these health problems, the analysis conducted in Section 5.5, *Air Quality*, was examined. According to the analysis in Section 5.5, none of the alternatives would create air quality conditions that would worsen breathing conditions for children. Based on the analyses detailed in Section 5.6, *Water Quality*, none of the alternatives would result in the release of harmful agents into surface or groundwater resources above levels permitted by the State of California and Federal regulations.

Based on the analyses conducted in this EIS, neither the Sponsor's Proposed Project nor its alternatives would result in the release of, or exposure to, significant levels of harmful agents in the water, air, or soil that would affect children's health or safety.

5.4 SECONDARY (INDUCED) IMPACTS

Major development proposals often involve the potential for induced or secondary impacts on surrounding communities. Examples of these impacts include: shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by airport development. Induced impacts are not normally significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts.

5.4.1 INDUCED AIRPORT ACTIVITY

Airport development projects may have the potential to induce additional operations or to change the fleet mix at an airport. This section assesses the potential for both of these types of changes at DVO. In this evaluation, it is important to note that the purpose of the proposed Runway 13/31 extension at DVO is to meet FAA dimensional standards, based on the airport design criteria related to the operational and physical characteristics of the Critical Aircraft that currently operates at the subject facility. However, the runway extension will not change the capacity of DVO because the "throughput rate" or capacity of the airport, i.e., the maximum number of aircraft operations that can take place in an hour, will not change from existing conditions as a result of extending the runway. This is because only one aircraft at a time can use the runway, regardless of the runway's length.

5.4.1.1 Existing Conditions

The aircraft operating at DVO are small general aviation aircraft. The runway width and runway to taxiway separation distance at DVO are consistent with FAA B-I (small) airport design standards. The runway length is insufficient for the critical aircraft as described in more detail in Chapter Two, *Purpose and Need* and Appendix D, *Runway Length Analysis*. The Runway Safety Area (RSA) does not meet all ARC B-1 FAA design standards.

5.4.1.2 Future Conditions: 2018

Implementation of Alternative A (No Action) will have no effect on the number of operations at DVO. Likewise, a 1,100-foot extension of the runway (Alternatives B and D) is unlikely to induce any increase in airport operations. The contribution of aviation infrastructure, such as runways, taxiways, apron area, and hangars, generally contribute, at most, only incidental growth in operations at an airport, except at large commercial service airports with capacity (through-put) constraints such as those in the New York City metropolitan area. National and regional economic cycles have much more of an effect on aircraft operations than aviation infrastructure, which is why economic indicators are used in estimating future aviation demand.

Annually, the FAA produces a national aerospace forecast report that forecasts aviation activity for a 20-year period.[1] These forecasts have found the demand for aviation is driven by economic activity. That is, aviation activity typically responds to economic demand rather than creates economic demand. The forecast for a specific airport, such as the DVO Aviation Activity Forecast included in Appendix C of this EIS, is influenced by the same economic factors as the national aerospace forecast.

With regard to fleet mix, as a public use airport DVO is available to all aircraft that can be accommodated by its facilities. Although the Airport is classified as a B-I airport, (i.e., designed for use by aircraft with a wingspan of less than 49 feet and approach speeds of 91 to 120 knots), aircraft larger than the critical aircraft currently operate at the airport and are expected to continue to do so in the future. Furthermore, these larger aircraft will likely continue to operate at DVO with or without implementation of Alternative B or Alternative D. Larger aircraft using DVO typically have limitations on their operating capabilities at DVO such as being limited below their full payload of passengers, cargo, or fuel, especially during takeoff, similar to the limitations on the critical aircraft for DVO, the Cessna 525 on the existing runway.

It is possible that certain pilots who use one size of aircraft at DVO now, could choose to use larger aircraft in the future, if Alternative B or Alternative D is implemented. However, it is more likely that the aircraft fleet mix at DVO accurately reflects the local economic demand for aviation activity, including aviation user choices regarding their preferred size of aircraft. This is because those aviation users who prefer using DVO but require larger aircraft, can already access DVO under current conditions by reducing their payload or fuel.

This EIS addresses accommodating the most demanding aircraft that makes substantial use of an airport (i.e., the critical aircraft) in hot weather and other adverse weather conditions, but not accommodating other larger aircraft with similar limitations. This is because the FAA only considers developing additional aviation facilities justified to accommodate aircraft that make substantial use of an airport. This guidance is included in FAA Order 5090.3C *Field Formulation of the National Plan of Integrated Airport Systems.* As described in more detail in the remainder of this section, implementation of Alternative A (No Action), Alternative B (Sponsor's Proposed Project), or Alternative D, would not result in significant secondary (induced) impacts.

Alternative A:
<u>No Action</u>

Alternative A (No Action) includes no development. Therefore, Alternative A would not result in induced airport activity.

[1] FAA Aerospace Forecasts at www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

Implementation of Alternative B in 2018 is not anticipated to result in a change in the aircraft fleet mix at DVO for the reasons described earlier in this section. In order to evaluate the potential environmental impacts associated with the possibility that owners or pilots might choose to use larger aircraft at DVO in the event Alternative B is implemented, an analysis of air quality and noise impacts utilizing the 2023 forecast was prepared. The 2023 forecast included a higher level of demand and changes in fleet mix as compared to 2018. As disclosed in Section 5.1 *Noise* and Section 5.5 *Air* Quality, future growth in aviation activity would not result in significant impacts under 2023 operating levels. Therefore, even if construction of the runway extension resulted in increased aviation activity and changes in fleet that exceeded the level forecasted for DVO in 2018, it would not result in a significant impact associated with induced airport activity.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

Like Alternative B, Alternative D would extend the runway length to 4,400 feet. For the same reasons described for Alternative B above, implementation of Alternative D would not result in a significant impact associated with induced airport activity.

5.4.2 PATTERNS OF POPULATION AND GROWTH

5.4.2.1 Existing Conditions

Marin County encompasses approximately 820 square miles. Based on the 2008 estimates by the American Community Survey Marin County had a total estimated population of over 246,500 in 2007.[2] The San Francisco Bay Area, which includes nine counties including Marin, is currently experiencing a growth in population. Between 1990 and 2008, the population of the San Francisco Bay Area grew by 17 percent compared to a growth rate of 23.5 percent statewide.[3] The population of Marin County did not grow at the same rate as the rest of the San Francisco Bay Area with an increase at a rate of 8.1 percent. Marin County is projected to grow by an additional 9.8 percent between 2008 and 2030. While the number of residents increased in Marin County, employment decreased seven percent between 2000 and 2007. The jurisdictions within the General Study Area (GSA) are expected to experience population growth at 23 percent and employment growth at nearly 29 percent during the same timeframe. **Table 5.4-1** and **Table 5.4-2** show these estimates for each jurisdiction within the GSA.

[2] U.S. Census Bureau, 2008 American Community Survey, Annual Population Estimates, 2008.
[3] U.S. Census Bureau, 1990 and 2000 Population Counts.

Table 5.4-1
POPULATION ESTIMATES, 2000 TO 2030
Gnoss Field Airport

PLACE	POPULATION			PERCENT GROWTH, 2000-2030
	2000	2008	2030 (projected)	
Marin County	247,289	248,794	273,151	9.8%
Sonoma County	458,614	466,741	606,346	29.9%
General Study Area Total	**705,903**	**715,535**	**879,497**	**22.9%**

Sources: U.S. Census Bureau, on-line at www.census.gov
State of California, Department of Finance, *Population Projections for California and Its Counties 2000-2050,* Sacramento, California, July 2007. Marin Countywide Plan Update, November 2007.

Table 5.4-2
EMPLOYMENT ESTIMATES, 2000 TO 2030
Gnoss Field Airport

PLACE	EMPLOYMENT			PERCENT GROWTH, 2000-2030
	2000	2008	2030 (projected)	
Marin County	107,760	108,590	128,490	19.2%
Sonoma County	186,190	191,690	249,640	34.1%
General Study Area Total	**293,950**	**300,280**	**378,130**	**28.6%**

Source: California Department of Transportation (CALTRANS), *California County Economic Forecasts: 2008-2030*, August 2008, accessed at http://www.caltrans.ca.gov/hq/tpp/offices/ote/socio-economic.html

5.4.2.2 Future Conditions: 2018

Alternative A:
<u>No Action</u>

Alternative A (No Action) includes no development. Therefore, Alternative A would not result in significant shifts in patterns of population movement or growth inside or outside of the GSA.

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

The extension of Runway 13/31 1,100 feet to the northwest would require the acquisition of 0.1 acre of land in agricultural use, but would not require the acquisition of residential properties. Therefore, Alternative B (Sponsor's Proposed Project) would not result in significant shifts in patterns of population movement or growth inside or outside of the GSA.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

The extension of Runway 13/31 860 feet to the northwest and 240 feet to the southeast would require the acquisition of 3.72 acre of land in agricultural use, but would not require the acquisition of residential properties. Therefore, Alternative D would not result in significant shifts in patterns of population movement or growth inside or outside of the GSA.

5.4.3 PUBLIC SERVICE DEMANDS

5.4.3.1 Existing Conditions

Fire protection services are provided by the Novato Fire Department. Station 2 is the only fire department station located within the GSA and is located approximately five miles to the southeast of the Airport. The station staff includes a one to three person Type I Paramedic Engine, an ALS Paramedic Ambulance, and a Rescue Boat. Additional support can be supplied by any of the other four stations within the Novato Fire Department. The Novato Police Department staffs 59 officers and is located approximately three miles to the south of the Airport in the center of Novato. There are no hospitals within the GSA. The closest hospital to DVO is the Novato Community Hospital located approximately three miles to the south of the Airport.

5.4.3.2 Future Conditions: 2018

Alternative A:
No Action

Alternative A includes no development. Therefore, Alternative A would not result in significant impacts to public service demands.

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

The extension of Runway 13/31 1,100 feet to the northwest would have no impact on emergency vehicles attempting to access the Airport or surrounding areas or hospitals in the area. Representatives of the Novato Fire Protection District attended the Agency Scoping Meeting held in August 2008 and submitted a written comment letter recommending further study of current and future access to the areas surrounding the runway for emergency response vehicles in accordance with all the pertinent Federal Aviation Administration (FAA) and National Fire Protection Association (NFPA) guidelines (see Appendix A, *Agency Scoping and Coordination*) under this alternative. From a physical impact and access perspective, under Alternative B, emergency vehicle access to both ends of the runway and the taxiway would be improved over Existing Conditions (2008) due to the lengthening and widening of the RSA. Access beyond the runway to areas surrounding the Airport would not change from Existing Conditions (2008). Construction on the south end of the runway could impact an existing 8-inch diameter water line that currently provides water for fire protection to hydrants on the east side of the runway. Alternative B would require relocation and possible upsizing of the water line prior to construction so that no interruption in fire protection services occurs. Therefore, Alternative B would not result in significant impacts to public service demands.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

The extension of Runway 13/31 860 feet to the northwest and 240 feet to the southeast would have no impact on emergency vehicles attempting to access the Airport or surrounding areas or hospitals in the area. Similar to Alternative B, under Alternative D, emergency vehicle access to both ends of the runway and the taxiway would be improved over Existing Conditions (2008) due to the lengthening and widening of the RSA. Access beyond the runway to areas surrounding the Airport would not change from Existing Conditions (2008). Construction on the south end of the runway could impact an existing 8-inch diameter water line that currently provides water for fire protection to hydrants on the east side of the runway. Alternative B would require relocation and possible upsizing of the water line prior to construction so that no interruption in fire protection services occurs. Therefore, Alternative D would not result in significant impacts to public service demands.

5.4.4 BUSINESS AND ECONOMIC ACTIVITY

5.4.4.1 Existing Conditions

The City of Novato's labor force was 26,000 as of May 2009.[4] Major employers include the Fireman's Fund Insurance Company, the Buck Institute for Age Research, small biotech firms, such as Biosearch Technologies and BioMarin Pharmaceutical, and several small technology companies, including 2K Marin, Radiant Logic, Imagemovers Digital, and Sonic Solutions.

The workforce in Marin County has decreased from 137,700 in 2000 to 128,400 in 2007.[5] This reflects a seven percent decrease in the total number of Marin County resident workers. The Service Providing sector comprises the largest share of workforce in the area. The largest growth has been in the Professional, Scientific and Technical Services sector with a 14.0 percent increase between 2003 and 2007. The most significant decrease has been in the number of people employed in the Durable Goods sector with a 40.0 percent decrease between 2003 and 2007.[6]

5.4.4.2 Future Conditions: 2018

Alternative A:
<u>No Action</u>

Alternative A includes no new construction or changes in operating procedures. Therefore, this alternative would not result in significant impacts to business and economic activity.

Alternative B:
<u>Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)</u>

The extension of Runway 13/31 1,100 feet to the northwest would result in a temporary increase in business and economic activity due to construction of the runway extension and parallel taxiway extension, RSA, and levee and drainage ditch realignment. The compensatory habitat mitigation and wetland mitigation described in Sections 5.9 and 5.10 that is needed to implement Alternative B would create additional temporary economic activity during the development and approval of the necessary mitigation area. This increase in economic activity would end after the construction was complete. In addition, Marin County intends to keep the Airport open for business during construction of the proposed runway extension. As a result, no loss of revenue for the airport-related businesses is anticipated.

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4 Labor Force and Unemployment Rate for Cities and Census Designated Places, *California Employment Development Department,* online at www.labormarketinfo.edd.ca.gov

5 Labor Force and Unemployment Rate for Cities and Census Designated Places, *California Employment Development Department,* online at www.labormarketinfo.edd.ca.gov

6 *California Employment Development Department,* online at www.labormarketinfo.edd.ca.gov.

Alternative B would have the effect of allowing some existing aircraft that use the Airport that are currently weight restricted by the runway length to depart fully loaded. The project is not intended or expected to cause an unforecasted growth in aircraft operations at DVO. There are other airport facilities throughout the Bay Area region and since the availability of air service is not frequently cited as a constraint to the development of new housing or commercial areas, the extension of the runway would not be considered an action that would remove a significant constraint to regional development. Alternative B would not involve additional expansion or extension of infrastructure facilities or roadways that could induce unplanned growth adjacent to DVO. Thus, Alternative B is not anticipated to induce additional growth in the region.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

The extension of Runway 13/31 860 feet to the northwest and 240 feet to the southeast would result in a temporary increase in business and economic activity due to construction of the runway extension and parallel taxiway extension, RSA, and levee and drainage ditch realignment. The compensatory habitat mitigation and wetland mitigation described in Sections 5.9 and 5.10 that is needed to implement Alternative B would create additional temporary economic activity during the development and approval of the necessary mitigation area. This increase in economic activity would end after the construction was complete. Alternative D would have the effect of allowing some existing aircraft that use the Airport that are currently weight restricted by the runway length to depart fully loaded. The project is not intended or expected to cause an unforecasted growth in aircraft operations at DVO. There are other airport facilities throughout the Bay Area region and since the availability of air service is not frequently cited as a constraint to the development of new housing or commercial areas, the extension of the runway would not be considered an action that would remove a significant constraint to regional development. Alternative D would not involve additional expansion or extension of infrastructure facilities or roadways that could induce unplanned growth adjacent to DVO. Thus, Alternative D is not anticipated to induce additional growth in the region.

5.5 AIR QUALITY

This section presents an assessment of the potential for significant adverse air quality impacts resulting from construction and implementation of Marin County's Proposed Project and its alternatives. The potential air quality impacts were assessed based on an emission inventory prepared for each of the alternatives considered in this Environmental Impact Statement (EIS). The assessment was prepared according to guidelines established under Federal Aviation Administration (FAA) Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures,* and FAA *Air Quality Procedures for Civilian Airports & Air Force Bases*.[1]

5.5.1 REGULATORY SETTING

An airport air quality assessment requires consideration under both the Clean Air Act, including the 1990 Amendments (CAA), and the National Environmental Policy Act (NEPA). These two unique legislative acts require distinct analyses and may be separately applicable to an airport project. The CAA provides for the establishment of standards and programs to evaluate, achieve, and maintain acceptable air quality in the U.S. Under the CAA, the U.S. Environmental Protection Agency (USEPA) established a set of standards, or criteria, for six[2] pollutants determined to be potentially harmful to human health and welfare.[3] A description of the criteria pollutants and the standards for the criteria pollutants intended to protect public health, known as the National Ambient Air Quality Standards (NAAQS), are provided in Appendix F, *Air Quality*. Areas of the country where air pollution levels consistently exceed these standards may be designated nonattainment by the USEPA. A discussion of the California Environmental Quality Act (CEQA) and the California air quality standards are also provided in Appendix F.

According to FAA guidelines[4] that establish procedures to meet NEPA requirements, an air quality assessment prepared pursuant to NEPA regulations should include an analysis by evaluating the impact of the Proposed Action on the NAAQS. To conduct this impact analysis the air emissions associated with the No Action Alternative are compared to the air emissions from the Proposed Action and other alternatives evaluated in detail in the EIS. The net emissions derived from the comparison of the No Action Alternative to the Proposed Action and other alternatives evaluated in detail indicates the impact to air quality of the Proposed Action and other alternatives evaluated in detail.

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1 FAA, *Order 1050.1E Environmental Impacts: Policies and Procedures*, March 20, 2006, FAA; and *Air Quality Procedures for Civilian Airports & Air Force Bases*, April 1997, and the Addendum dated September 2004.

2 The Clean Air Act required EPA to set National Ambient Air Quality Standards for six pollutants. The EPA still considers there to be six not seven criteria pollutants. Particulate Matter is still considered one pollutant even though PM_{10} and $PM_{2.5}$ are analyzed. See EPA website. http://www.epa.gov/air/urbanair/

3 Code of Federal Regulations, Title 40, Part 50 (Title 40 CFR Part 50) *National Primary and Secondary Ambient Air Quality Standards (*NAAQS), July 2011.

4 FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Appendix A, Section 2 *Air Quality*, March 20, 2006.

The General Conformity regulations under the CAA establishes minimum values, referred to as the *de minimis* thresholds, for the criteria and precursor pollutants[5] that would have potential for significant air quality impacts. The Federal *de minimis* thresholds established under the CAA are provided in Appendix F.

When a Federal action would not cause annual net emissions that equal or exceed the relevant *de minimis* thresholds for the pollutants of concern, the action would not exceed the threshold for detailed consideration under the General Conformity Rule and further analysis to prepare a General Conformity Determination would not be required. Further, when an action with *de minimis* annual net emissions would not cause an exceedance of the NAAQS, a dispersion analysis to show compliance to the NAAQS would not be required.[6] Under these circumstances, no further analysis under the CAA or NEPA would be required.

The results of the emissions inventory prepared for each alternative were compared to the emissions for Alternative A (No Action) of the same year to disclose the potential increase in emissions caused by each alternative. The comparison of the emission inventories, which included an inventory of construction emissions, was used for the evaluation of General Conformity as required under the CAA. The FAA is actively planning and working with industry and the EPA to identify an unleaded replacement for leaded aviation fuel (Avgas) for piston-engine propeller aircraft by 2018 (Turbo-prop propeller aircraft and jet aircraft fuel contains no lead).[7] Lead emissions for future years would be less than calculated in this EIS if the amount of lead in Avgas is reduced or eliminated.

A regionally significant Federal action under the CAA is one where the total direct and indirect emissions (net emissions) represent greater than ten percent of the total emissions of any pollutant in the nonattainment or maintenance area, as provided in the State Implementation Plan (SIP) emissions budget. The EPA has recently removed the requirement for the regionally significant test in the most recent change to the General Conformity Regulations effective on July 6, 2010.[8] Therefore, the regionally significant test does not apply to the alternatives under consideration at DVO.

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5 Precursor pollutants are pollutants that are involved in the chemical reactions that form the resultant pollutant. Ozone precursor pollutants are NO_x, VOC, and SO_2, whereas $PM_{2.5}$ precursor pollutants include NO_x, VOC, SO_x, and ammonia (NH_3).

6 FAA, *Air Quality Procedures for Civilian Airports and Air Force Bases*, April 1997; and Addendum, September 2004. Quoted from Section 2.1.5, *National Ambient Air Quality Standards* (*NAAQS) Assessment*, "If the action is in a nonattainment or maintenance area and exempt or presumed to conform under conformity requirements, it is assumed that a NAAQS assessment is not required for an airport or air base action since it is unlikely the action's pollutant concentrations would exceed the NAAQS."

7 FAA Memorandum From Ralph Thomson, Manager, Airport Planning and Environmental Division, APP-400, Subject: Interim Guidance on Mitigating Public Risks Associated with Lead Emissions from Avgas, June 19, 2013.

8 USEPA, 6560-50-P [EPA-HQ-OAR-2006-0669; FRL-9131-7] RIN 2060-AH93 Revisions to the General Conformity regulations. 40 CFR Parts 51 and 93 pgs 52 and 53.

All input data, assumptions, and methodologies used to develop this air quality assessment are provided in Appendix F. The Air Quality Technical Report provides an overview of the requirements under NEPA and the CAA, and documents FAA's coordination with Federal, state, and local air quality agencies. The existing air quality conditions at DVO are described in Chapter Four, *Affected Environment*.

5.5.2 FUTURE CONDITIONS: 2018

Alternative A:
No Action

Airfield Configuration: Alternative A is the No Action alternative for 2018. Airport physical conditions such as the airfield configuration are assumed to be unchanged and therefore consistent with Existing Conditions (2008).

Aircraft Activity Levels and Fleet Mix Characteristics: With or without the development of a runway alternative, air traffic is projected to increase each year and by 2018 the number of annual aircraft operations is expected to be 100,500, which is higher than Existing Conditions (2008) by 15,000 operations.

Mobile Sources: Future mobile sources were projected assuming the increase in the number of vehicles at the Airport would be directly related to projected increases in aircraft annual operations.

Stationary Sources: Energy consumption for stationary sources for the 2018 Alternative A analysis year was projected using the growth in aircraft operations.

Emissions Inventory: The emission inventory for this alternative provided in **Table 5.5-1** shows the greatest overall emission contribution comes from aircraft operations. Emissions of Lead (Pb), Course particulate matter (PM_{10}) and Fine particulate matter ($PM_{2.5}$) are also produced primarily by aircraft engines.

Table 5.5-1
ALTERNATIVE A (2018) EMISSIONS INVENTORY
Gnoss Field Airport

EMISSION SOURCES	ANNUAL EMISSIONS (tons per year)						
	CO	**VOC**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Pb**
Aircraft	173.36	12.57	1.22	0.49	11.21	11.21	0.13
GSE	0.52	0.08	0.19	0.01	0.01	0.01	NA
GAV in Parking Facilities	0.25	0.03	0.02	0.00	0.00	0.00	NA
GAV on Roadways	0.21	0.01	0.02	0.00	0.00	0.00	NA
Stationary Sources	0.52	17.13	1.22	0.00	0.05	0.05	NA
TOTAL	**174.87**	**29.82**	**2.67**	**0.50**	**11.27**	**11.27**	**0.13**

CO: Carbon Monoxide
VOC: Volatile Organic Compounds
NOx: Nitrogen Oxides
SOx: Sulfur Oxides
PM10: Course particulate matter
PM2.5: Fine particulate matter
Pb: Lead
GSE: Ground Support Equipment, which includes the Airport's two fuel trucks and mowing tractor
GAV: Ground Access Vehicles
Total emissions may not sum exactly due to rounding.
Source: EDMS ver. 5.1 L&B Analysis, 2009

Alternative B:
<u>Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)</u>

Airfield Configuration: 2018 Alternative B includes a 1,100 foot extension of Runway 13/31 to the northwest.

Aircraft Activity Levels and Fleet Mix Characteristics: With or without the implementation of this alternative the number of annual aircraft operations for 2018 would be the same as discussed for 2018 Alternative A. However, aircraft air emissions would increase slightly as compared to the 2018 Alternative A because the extension of the runway would cause an increase in aircraft taxiing time to get to the ends of the longer runway. The distance from the central aircraft parking area to the runway ends under Alternative B would also be slightly longer as compared to Alternative D. Therefore Alternative B would have slightly increased air emissions associated with this increased aircraft taxi time as compared to Alternative D.

In addition to the increase in taxi time, in this alternative the critical aircraft would be able to take off with 100 percent of its Maximum Take Off Weight (MTOW) as compared to a reduced MTOW with the critical aircraft in the 2018 Alternative A. The ability to take off with 100 percent of MTOW as compared to a reduced MTOW would result in a slight increase in annual aircraft emissions. This is because when an aircraft is heavier it takes slightly longer to takeoff and climb-out as compared to a lighter aircraft thus burning slightly more fuel and producing slightly greater air

emissions. However, this increase is partially offsite because under Alternative B, the critical aircraft and a small number of other aircraft would no longer be required to make stops at alternate airports to refuel to reach their final destination. Eliminating an extra aircraft takeoff and landing while en route to a final destination would slightly reduce air emissions associated with this alternative. However, given the variability of this activity in terms of which aircraft and airports, and to present the greatest potential air emissions, the potential reduction in air emissions at DVO or other area airports associated with implementation of this alternative was not quantified in this analysis.

Mobile Sources: Alternative B would not increase the number of ground access vehicles using DVO beyond the 2018 Alternative A condition, because there would be no new buildings, hangars, or additional annual aircraft operations.

Stationary Sources: No new buildings or hangars are proposed for 2018 Alternative B, therefore emissions from stationary sources would be the same as 2018 Alternative A.

Emissions Inventory: The emission inventory for 2018 Alternative B provided in **Table 5.5-2**, shows the greatest overall emission contribution comes from aircraft operations. Emissions of Pb, PM_{10} and $PM_{2.5}$ are also produced primarily by aircraft engines. See Table 5.5-8 at the end of this section for a comparison of the increase in emissions of each alternative against Alternative A for each year.

Table 5.5-2
ALTERNATIVE B (2018) EMISSIONS INVENTORY
Gnoss Field Airport

EMISSION SOURCES	**ANNUAL EMISSIONS** (tons per year)						
	CO	**VOC**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Pb**
Aircraft	179.54	14.40	1.32	0.53	11.24	11.24	0.13
GSE	0.52	0.08	0.19	0.01	0.01	0.01	NA
GAV in Parking Facilities	0.25	0.03	0.02	0.00	0.00	0.00	NA
GAV on Roadways	0.21	0.01	0.02	0.00	0.00	0.00	NA
Stationary Sources	0.52	17.14	1.22	0.00	0.05	0.05	NA
TOTAL	**181.05**	**31.66**	**2.77**	**0.54**	**11.30**	**11.30**	**0.13**

CO: Carbon Monoxide
VOC: Volatile Organic Compounds
NOx: Nitrogen Oxides
SOx: Sulfur Oxides
PM10: Course particulate matter
PM2.5: Fine particulate matter
Pb: Lead
GSE: Ground Support Equipment, which includes the Airport's two fuel trucks and mowing tractor
GAV: Ground Access Vehicles
Total emissions may not sum exactly due to rounding.
NA = Not applicable/Not available
Source: EDMS ver. 5.1, L&B Analysis, 2009.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

Airfield Configuration: 2018 Alternative D includes an extension of Runway 13/31 to the southeast by 240 feet and to the northwest by 860 feet.

Aircraft Activity Levels and Fleet Mix Characteristics: With or without the implementation of this alternative the number of annual aircraft operations for 2018 would be the same as discussed for 2018 Alternative A. However, aircraft air emissions would increase slightly as compared to the 2018 Alternative A because the extension of the runway would cause an increase in aircraft taxiing time to get to the ends of the longer runway. However, the distance from the central aircraft parking area to the runway ends under Alternative D would be slightly shorter as compared to Alternative B. Therefore Alternative D would have slightly lower air emissions associated with this increased aircraft taxi time as compared to Alternative B.

In addition to the increase in taxi time, in this alternative the critical aircraft would be able to take off with 100 percent of its Maximum Take Off Weight (MTOW) as compared to a reduced MTOW with the critical aircraft in the 2018 Alternative A. The ability to take off with 100 percent of MTOW as compared to a reduced MTOW would result in a slight increase in annual aircraft emissions. This is because when an aircraft is heavier it takes slightly longer to takeoff and climb-out as compared to a lighter aircraft thus burning slightly more fuel and producing slightly greater air emissions. However, this increase is partially offsite because under Alternative D, the critical aircraft and a small number of other aircraft would no longer be required to make stops at alternate airports to refuel to reach their final destination. Eliminating an extra aircraft takeoff and landing while en route to a final destination would slightly reduce air emissions associated with this alternative. However, given the variability of this activity in terms of which aircraft and airports, and to present the greatest potential air emissions, the potential reduction in air emissions at DVO or other area airports associated with implementation of this alternative was not quantified in this analysis.

Mobile Sources: Alternative D would not increase the number of ground access vehicles using DVO beyond the 2018 Alternative A condition or Alternative B, because there would be no new buildings, hangars, or additional annual aircraft operations.

Stationary Sources: No new buildings or hangars are proposed for 2018 Alternative D, therefore emissions from stationary sources would be the same as 2018 Alternative A.

Emissions Inventory: The emission inventory for 2018 Alternative D provided in **Table 5.5-3** shows the greatest overall emission contribution comes from aircraft operations. Emissions of Pb, PM_{10} and $PM_{2.5}$ are also produced primarily by aircraft engines. See Table 5.5-8 at the end of this section for a comparison of the increase in emissions of each alternative against Alternative A for each year.

Table 5.5-3
ALTERNATIVE D (2018) EMISSIONS INVENTORY
Gnoss Field Airport

EMISSION SOURCES	ANNUAL EMISSIONS (tons per year)						
	CO	**VOC**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Pb**
Aircraft	179.28	14.32	1.31	0.53	11.24	11.24	0.13
GSE	0.52	0.08	0.19	0.01	0.01	0.01	NA
GAV in Parking Facilities	0.25	0.03	0.02	0.00	0.00	0.00	NA
GAV on Roadways	0.21	0.01	0.02	0.00	0.00	0.00	NA
Stationary Sources	0.52	17.14	1.22	0.00	0.05	0.05	NA
TOTAL	**180.79**	**31.58**	**2.77**	**0.54**	**11.30**	**11.30**	**0.13**

CO: Carbon Monoxide
VOC: Volatile Organic Compounds
NOx: Nitrogen Oxides
SOx: Sulfur Oxides
PM10: Course particulate matter
PM2.5: Fine particulate matter
Pb: Lead
GSE: Ground Support Equipment, which includes the Airport's two fuel trucks and mowing tractor
GAV: Ground Access Vehicles
Total emissions may not sum exactly due to rounding.
NA = Not applicable/Not available
Source: EDMS ver. 5.1, L&B Analysis, 2009.

5.5.3 CONSTRUCTION

Although a final construction schedule has not been determined, construction is assumed to be complete before 2018. During the years prior to 2018, a two year construction program is proposed. A total inventory of construction emissions was prepared to reflect the use of construction equipment and vehicles. The type and number of construction vehicles and equipment required is based on other similar airport construction projects that have been previously reviewed and approved in NEPA documentation. Modeling assumptions and details of construction tasks are provided in Appendix F.

The inventory of construction emissions is summarized in **Table 5.5-4**. While Alternative B proposes to extend the northwest segment of the runway (runway end 13), Alternative D extends both runway ends. However, both Alternative B and Alternative D would have the same overall extension of 1,100 feet

and would be expected to involve similar construction equipment, methods, quantities, and materials. Therefore construction emissions of Alternative B would be the same as for Alternative D on an annual basis.

Table 5.5-4
CONSTRUCTION EMISSIONS INVENTORY
Gnoss Field Airport

CONSTRUCTION YEARS	ANNUAL CONSTRUCTION EMISSIONS (tons per year)					
	CO	**VOC**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Year 1	2.64	NA	4.69	0.00	0.22	0.20
Year 2	0.83	NA	1.23	0.00	0.07	0.07

CO: Carbon Monoxide
VOC: Volatile Organic Compounds
NOx: Nitrogen Oxides
SOx: Sulfur Oxides
PM10: Course particulate matter
PM2.5: Fine particulate matter
NA = Not applicable/Not available
Note: PM10 and PM2.5 values are for construction exhaust emissions only.
Source: URBEMIS ver. 9.2.4, L&B Analysis, 2009.

Airport construction activities would result in a short-term increase in emissions of criteria air pollutants. Air pollution during the construction period would be a consequence of direct emissions from construction equipment. The evaluation of construction emissions showed the annual net emissions would be below the *de minimis* thresholds established under the CAA conformity rules. Construction would not cause a significant adverse air quality impact. In addition, these emissions would be temporary and would be mitigated to the extent possible by Marin County through the construction contractor as they comply with the guidelines in AC 150/5370-10E, *Standards for Specifying Construction of Airports*. Additional mitigation measures to reduce the amount of fugitive dust from construction are provided in Appendix F.

5.5.4 FUTURE CONDITIONS: 2023

For air quality impacts, a second timeframe was analyzed that represents five years beyond the opening of the project. The following provides an overview of the potential air quality impacts from operation of the Airport in 2023 under each alternative condition.

Alternative A:
<u>No Action</u>

Airfield Configuration: Alternative A is the No Action alternative for 2023. Airport physical conditions are assumed to be consistent with Existing Conditions (2008).

Aircraft Activity Levels and Fleet Mix Characteristics: With or without the development of a runway alternative, air traffic is projected to increase each year and by 2023 the number of annual aircraft operations is expected to be 112,200, which is higher than 2018 conditions by 11,700 operations.

Mobile Sources: Future mobile sources were projected assuming the increase in the number of vehicles at the Airport would be directly related to projected increases in aircraft annual operations.

Stationary Sources: Energy consumption for stationary sources for the 2023 Alternative A analysis year was projected using the growth in aircraft operations.

Emissions Inventory: The emission inventory for this alternative provided in **Table 5.5-5** shows the greatest overall emission contribution comes from aircraft operations.

Table 5.5-5
ALTERNATIVE A (2023) EMISSIONS INVENTORY
Gnoss Field Airport

EMISSION SOURCES	ANNUAL EMISSIONS (tons per year)						
	CO	**VOC**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Pb**
Aircraft	193.57	14.04	1.36	0.54	12.52	12.52	0.14
GSE	0.56	0.07	0.11	0.01	0.01	0.01	NA
GAV in Parking Facilities	0.27	0.02	0.01	0.00	0.00	0.00	NA
GAV on Roadways	0.23	0.01	0.01	0.00	0.00	0.00	NA
Stationary Sources	0.52	17.18	1.22	0.00	0.05	0.05	NA
TOTAL	**195.14**	**31.33**	**2.72**	**0.56**	**12.58**	**12.58**	**0.14**

Total emissions may not sum exactly due to rounding.
Source: EDMS ver. 5.1 L&B Analysis, 2010

Alternative B:
<u>Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)</u>

Airfield Configuration: 2023 Alternative B would include no additional development, so the airfield layout would be the same as 2018 Alternative B.

Aircraft Activity Levels and Fleet Mix Characteristics: With or without the implementation of this alternative the number of annual aircraft operations for 2023 would be the same as discussed for 2023 Alternative A. However, emissions due to aircraft would change as compared to the 2023 Alternative A because the extension of the runway would cause a change in taxi time. This alternative would result in an increase in average aircraft taxi time as compared to the 2023 Alternative A. Longer taxi times increase annual aircraft emissions. It is expected that Alternative B would have an increased taxi time and therefore increased annual

emissions over Alternative D because the extension of Alternative B increases the distance from the central aircraft parking area to the runway ends as compared to Alternative D.

In addition to the increase in taxi time, the critical aircraft in this alternative would be able to take off with 100 percent of its MTOW as compared to a reduced MTOW with the aircraft in the 2023 Alternative A. The ability to take off with 100 percent of MTOW as compared to a reduced MTOW would result in a slight increase in annual aircraft emissions. This is because when an aircraft is heavier it takes slightly longer to takeoff and climbout as compared to a lighter aircraft thus burning slightly more fuel and producing slightly greater air emissions. It is anticipated that under Alternative B, the critical aircraft and a small number of other aircraft would no longer be required to make stops at alternate airports to refuel to reach their final destination and thus reduce emissions. However, given the variability of this activity in terms of which aircraft and airports, and to present an estimate of the greatest potential emissions, the potential reduction in air emissions at DVO or other area airports was not quantified in this analysis.

Mobile Sources: Alternative B would not increase the number of ground access vehicles using DVO beyond the 2023 Alternative A condition, because there would be no new buildings, hangars, or additional annual aircraft operations.

Stationary Sources: No new buildings or hangars are proposed for 2023 Alternative B, therefore emissions from stationary sources would be the same as 2023 Alternative A.

Emissions Inventory: The emission inventory for 2023 Alternative B provided in **Table 5.5-6**, shows the greatest overall emission contribution comes from aircraft operations. See Table 5.5-8 at the end of this section for a comparison of the increase in emissions of each alternative against Alternative A for each year.

Table 5.5-6
ALTERNATIVE B (2023) EMISSIONS INVENTORY
Gnoss Field Airport

EMISSION SOURCES	**ANNUAL EMISSIONS** (tons per year)						
	CO	**VOC**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Pb**
Aircraft	200.46	16.08	1.47	0.59	12.55	12.55	0.15
GSE	0.56	0.07	0.11	0.01	0.01	0.01	NA
GAV in Parking Facilities	0.27	0.02	0.01	0.00	0.00	0.00	NA
GAV on Roadways	0.23	0.01	0.01	0.00	0.00	0.00	NA
Stationary Sources	0.52	17.18	1.22	0.00	0.05	0.05	NA
TOTAL	**202.03**	**33.37**	**2.83**	**0.61**	**12.61**	**12.61**	**0.15**

Total emissions may not sum exactly due to rounding.
NA = Not applicable/Not available
Source: EDMS ver. 5.1, L&B Analysis, 2010.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

Airfield Configuration: 2023 Alternative D would include no additional development, so the airfield layout would be the same as 2018 Alternative D.

Aircraft Activity Levels and Fleet Mix Characteristics: With or without the implementation of this alternative the number of annual aircraft operations for 2023 would be the same as discussed for 2023 Alternative A. However, emissions due to aircraft would change as compared to the 2023 Alternative A because the extension of the runway would cause a change in taxi time. This alternative would result in an increase in average aircraft taxi time as compared to the 2023 Alternative A. Longer taxi times increase annual aircraft emissions. It is expected that Alternative D would have a decreased taxi time compared to Alternative B. Alternative B increases the distance from the central aircraft parking area to the runway ends as compared to Alternative D. Therefore Alternative D would have decreased annual emissions compared to Alternative B.

In addition to the increase in taxi time, the critical aircraft in this alternative would be able to take off with 100 percent of its MTOW as compared to a reduced MTOW with the aircraft in the 2023 Alternative A. The ability to take off with 100 percent of MTOW as compared to a reduced MTOW would result in a slight increase in annual aircraft emissions. This is because when an aircraft is heavier it takes slightly longer to takeoff and climbout as compared to a lighter aircraft thus burning slightly more fuel and producing slightly greater air emissions. It is anticipated that under Alternative D, the critical aircraft and a small number of other aircraft would no longer be required to make stops at alternate airports to refuel to reach their final destination and thus reduce emissions. However, given the variability of this activity in terms of which aircraft and airports, and to present a worst case scenario for estimated emissions, the potential reduction in air emissions at DVO or other area airports was not quantified in this analysis.

Mobile Sources: Alternative D would not increase the number of ground access vehicles using DVO beyond the 2023 Alternative A condition or Alternative B, because there would be no new buildings, hangars, or additional annual aircraft operations.

Stationary Sources: No new buildings or hangars are proposed for 2023 Alternative D, therefore emissions from stationary sources would be the same as 2023 Alternative A.

Emissions Inventory: The emission inventory for 2023 Alternative D provided in **Table 5.5-7**, shows the greatest overall emission contribution comes from aircraft operations. See Table 5.5-8 at the end of this section for a comparison of the increase in emissions of each alternative against the No Action condition for each year.

Table 5.5-7
ALTERNATIVE D (2023) EMISSIONS INVENTORY
Gnoss Field Airport

EMISSION SOURCES	ANNUAL EMISSIONS (tons per year)						
	CO	**VOC**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Pb**
Aircraft	200.17	16.00	1.47	0.59	12.55	12.55	0.15
GSE	0.56	0.07	0.11	0.01	0.01	0.01	NA
GAV in Parking Facilities	0.27	0.02	0.01	0.00	0.00	0.00	NA
GAV on Roadways	0.23	0.01	0.01	0.00	0.00	0.00	NA
Stationary Sources	0.52	17.18	1.22	0.00	0.05	0.05	NA
TOTAL	**201.75**	**33.29**	**2.83**	**0.60**	**12.61**	**12.61**	**0.15**

Total emissions may not sum exactly due to rounding.
NA = Not applicable/Not available
Source: EDMS ver. 5.1, L&B Analysis, 2010.

5.5.5 DETERMINATIONS

5.5.5.1 NEPA Analysis for Air Quality

For a Federal NEPA determination, an air quality analysis is needed to determine the proposed action's potential impact on air quality. The inventories were then compared to Alternative A emissions of the same year to discern the net emissions (the difference between the total emissions from each of the development alternatives and Alternative A). **Table 5.5-8**, summarizes the net difference in emissions and compares that to the CAA conformity threshold for each pollutant. If an alternative's net emissions exceed the conformity threshold then a significant impact would occur. Conversely, if an alternative's net emissions do not exceed the conformity threshold then a significant impact would not occur. Section 176(c) of the CAA, as amended in 1990, requires that Federal actions conform to the appropriate Federal or State air quality plans (FIP's or SIP's) in order to attain the CAA's air quality goals. Marin County is located within the Bay Area Air Quality Management (BAAQMD) District of California. The BAAQMD is responsible for assuring the NAAQS are attained. Therefore, BAAQMD thresholds have been included in the analysis.

Alternative B and Alternative D were compared to Alternative A of the same year. Annual net emissions of CO for Alternative B and D for 2018, are well below the threshold of 100 tons per year. Annual net emissions of CO for Alternative B and D for 2023, are also well below the threshold of 100 tons per year. Annual net emissions of $PM_{2.5}$ for Alternative B and D for 2018, as compared to Alternative A are well below the Federal threshold of 100 tons per year and the California threshold of 10 tons per year. Annual net emissions of VOC and NO_X for Alternative B and D are also well below the de minimis thresholds established under the CAA.

Table 5.5-8
ANNUAL NET EMISSIONS OF CRITERIA AND PRECURSOR AIR POLLUTANTS AND CONFORMITY THRESHOLD (BUILD ALTERNATIVES COMPARED TO NO ACTION OF THE SAME YEAR)
Gnoss Field Airport

ALTERNATIVES	IMPACT OF CRITERIA AND PRECURSOR POLLUTANT EMISSIONS (in tons per year)						
	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$	Pb
CLEAN AIR ACT Conformity Threshold	**100**	**100**	**100**	**100**	**NA**	**100**	**NA**
BAAQMD Threshold	**NA**	**NA**	**10**	**NA**	**15**	**10**	**NA**
Construction Year 1							
Alternative B	2.64	NA	4.69	0.00	0.22	0.20	NA
Alternative D	2.64	NA	4.69	0.00	0.22	0.20	NA
Construction Year 2							
Alternative B	0.83	NA	1.23	0.00	0.07	0.07	NA
Alternative D	0.83	NA	1.23	0.00	0.07	0.07	NA
2018							
Alternative B	6.18	1.83	0.10	0.04	0.03	0.03	0.00
Alternative D	5.92	1.76	0.10	0.04	0.03	0.03	0.00
2023							
Alternative B	6.89	2.05	0.11	0.05	0.03	0.03	0.01
Alternative D	6.61	1.96	0.11	0.04	0.03	0.03	0.01

CO: Carbon Monoxide
VOC: Volatile Organic Compounds
NOx: Nitrogen Oxides
SOx: Sulfur Oxides
PM10: Course particulate matter
PM2.5: Fine particulate matter
Pb: Lead
NA = Not applicable/Not available
Total emissions may not sum exactly due to rounding.
Source: EDMS ver. 5.1, L&B, 2009.

The evaluation showed that the net emissions for each project alternative in 2018 and 2023 and from construction activities would be below the CAA thresholds, would not exceed any NEPA significance criteria, and the impact of Alternative B or Alternative D on air quality is not significant.

5.5.5.2 State Implementation Plan (SIP) Compliance

According to the CAA, each state must provide the USEPA with a SIP. The SIP must include a strategy for air quality improvement in local areas for each criteria pollutant that exceeds the NAAQS. The SIP must also include a plan to maintain acceptable air quality in areas that do not exceed the NAAQS.

The California SIP is made up of a series of plans for each of the major air basins in the state. The Final Bay Area 2010 Clean Air Plan[9] was adopted on September 15, 2010.

The air quality evaluation showed that annual net emissions caused by operation and construction of the alternatives, would not equal or exceed the relevant *de minimis* thresholds for the pollutants of concern. Therefore the alternatives would be assumed to comply with the Final Bay Area 2010 Clean Air Plan/SIP because the alternatives would not cause or contribute to new violations of any NAAQS; increase the frequency or severity of existing violations of any NAAQS; or, delay the timely attainment of any NAAQS or any required interim emission reductions or milestones. A more detailed discussion of the Final Bay Area 2010 Clean Air Plan is provided in Appendix F.

5.5.5.3 General Conformity Evaluation

The evaluation of General Conformity showed that annual net emissions caused by operation and construction of Alternative B or Alternative D, would not equal or exceed the relevant *de minimis* thresholds for the pollutants of concern. Therefore implementation of either Alternative B or Alternative would not have a significant impact on air quality. A CAA General Conformity Determination is not necessary for Alternative B or Alternative D.

Further, because the emissions caused by Alternative B and the other alternatives are *de minimis*, in accordance with FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures,* and FAA *Air Quality Procedures for Civilian Airports & Air Force Bases* the project is determined not to cause an exceedance of the NAAQS[10], and there is no requirement to conduct dispersion analysis to compare project-related emissions to the NAAQS. Consequently, Alternative B and Alternative D comply with CAA Section 176(c) (1). No further analysis or reporting is required under the provisions of the CAA or NEPA.

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[9] Bay Area Air Quality Management District. Final Bay Area Clean Air Plan. September 15, 2010.

[10] FAA, *Air Quality Procedures for Civilian Airports and Air Force Bases*, April 1997; and Addendum, September 2004 quoted from Section 2.1.5, NAAQS Assessment, "If the action is in a nonattainment or maintenance area and exempt or presumed to conform under conformity requirements, it is assumed that a NAAQS assessment is not required for an airport or air base action since it is unlikely the action's pollutant concentrations would exceed the NAAQS."

5.5.5.4 Assessment of Climate Change

Although there are no Federal standards for aviation-related GHG emissions, it is well-established that GHG emissions can affect climate.[11] The Council on Environmental Quality (CEQ) has indicated that climate should be considered in NEPA analyses. As noted by CEQ, however, "it is not currently useful for the NEPA analysis to attempt to link specific climatological changes, or the environmental impacts thereof, to the particular project or emissions, as such direct linkage is difficult to isolate and to understand".[12] The following provides an estimate of GHG emissions for the various alternatives. These estimates are provided for information only as no Federal NEPA standard for the significance of GHG emissions from individual projects on the environment has been established. Emissions from Alternative B are approximately 3 metric tons higher than from Alternative D in both year 2018 and year 2023.

Alternative A (No Action)

Under Alternative A, there would be no increase in project specific GHG emissions.

Alternative B (Sponsor's Proposed Project)

For 2018 conditions, the Sponsor's Proposed Project would increase GHG emissions by 242.13 metric tons over the No Action alternative of the same year, an increase of approximately nine percent. This increase would comprise less than 3.55×10^{-8} percent of U.S. based GHG emissions and less than 4.94×10^{-9} percent of global GHG emissions.[13] For 2023 conditions, the Sponsor's Proposed Project would increase GHG emissions by 269.33 metric tons over the No Action alternative of the same year, an increase of approximately nine percent. This increase would comprise less than 3.95×10^{-8} percent of U.S. based GHG emissions and less than 5.50×10^{-9} percent of global GHG emissions.

Alternative D

For 2018 conditions, Alternative D would increase GHG emissions by 239.18 metric tons over the No Action alternative of the same year, an increase of approximately nine percent. This increase would comprise less than 3.51×10^{-8} percent of U.S. based GHG emissions and less than 4.88×10^{-9} percent of global GHG emissions. For 2023 conditions, Alternative D would increase GHG emissions by 266.08 metric tons over the No Action alternative of the same year, an increase of approximately nine percent. This increase would comprise less than 3.90×10^{-8} percent of U.S. based GHG emissions and less than 5.43×10^{-9} percent of global GHG emissions.

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[11] See *Massachusetts* v. *E.P.A.,* 549 U.S. 497, 508-10, 521-23 (2007).

[12] CEQ, *Draft NEPA Guidance on Consideration* of *the Effects* of *Climate Change and Greenhouse Gas Emissions,* (2010). http://ceq.hss.doe.gov/nepa/regs/Consideration_ of Effects_ of GHG_Draft_NEP A_Guidance_FINAL _02182010.pdf

[13] U.S. based GHG emission estimated at 6,821.8 million metric tons CO_2 equivalent in Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010, (April 2012). The IPCC estimates global GHGs in 2004 at 49 Gigatonnes.

Summary

Based on the findings presented, no further consideration of GHGs is necessary.[14] There is no substantive difference in GHG emissions between alternatives B and D. See Appendix F for additional details regarding the GHG evaluation.

[14] FAA Order 1050.1E, Change 1, Guidance Memo#3. To: FAA Lines of Business and Managers with NEPA Responsibilities. From: Julie Marks, FAA AEE-400, Prepared by Thomas Cuddy, FAA AEE-400. Subject: Considering Greenhouse Gases and Climate Under the National Environmental Policy Act (NEPA): Interim Guidance. January 12, 2012.

5.6 WATER QUALITY

This section evaluates the existing hydrology, site drainage, and water quality at Gnoss Field Airport (DVO or Airport) and the potential impacts as a result of the Sponsor's Proposed Project and its alternatives. Details concerning the methodology and data sources are included in Appendix G, *Water Quality*.

5.6.1 REGULATORY SETTING

5.6.1.1 Federal Regulations

FEDERAL CLEAN WATER ACT

The 1972 Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), establishes the basic structure for the U.S. Environmental Protection Agency (USEPA) to regulate discharges of pollutants into waters of the U.S. The CWA's primary intent is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.

Section 401 of the CWA (33 USC § 1341) requires any Federal license or permit applicant to obtain a water quality certification if any proposed project activity may result in a discharge of pollutants into waters of the U.S. This certification assures that the discharge would comply with the applicable effluent limitations and water quality standards. Section 301 of the CWA (33 USC § 1311) prohibits discharges to waters of the U.S. except with a permit. As a condition of the permit, application of the best practicable control technology currently available is required.

<u>National Pollutant Discharge Elimination System (NPDES)</u>

The CWA was amended in 1987 with the addition of Section 402(p), which established a framework for regulating stormwater discharges under the National Pollutant Discharge Elimination System (NPDES). The NPDES permit system was established in the CWA to regulate point source pollution such as municipal and industrial discharges to surface waters of the United States. In California, the USEPA has given the state the authority to administer the NPDES program, which is implemented by the State Water Resources Control Board (SWRCB).

SAFE WATER DRINKING ACT

If the potential exists for contamination of an aquifer designated by the USEPA as a sole or principal drinking water resource within the project area, the Federal Aviation Administration (FAA) is required to consult with the USEPA regional office, Tribal, state, or local officials as required by Section 1424(e) of the Safe Drinking Water Act, as amended.

FISH AND WILDLIFE COORDINATION ACT OF 1980

If a proposed action would impound, divert, drain, control, or otherwise modify the waters of any stream or other body of water, the Fish and Wildlife Coordination Act is applicable, unless the project is for the impoundment of water covering an area of less than ten acres. The Fish and Wildlife Coordination Act requires the FAA to consult with the U.S. Fish and Wildlife Service and the applicable state agency to identify means to prevent loss or damage to wildlife resources resulting from a proposed action. Separate from, but related to this Act is the Magnuson-Stevens Fishery Conservation and Management Act, which governs U.S. marine fisheries management. The act mandates the identification of Essential Fish Habitat for managed species, as well as measures to conserve and enhance the habitat necessary for fish to carry out their life cycles. More information regarding potential impacts to essential fish habitat is located in Section 5.9, *Fish, Wildlife, and Plants*.

FAA ORDER 1050.1E, CHANGE 1, *ENVIRONMENTAL IMPACTS: POLICIES AND PROCEDURES*

FAA Order 1050.1E, Change 1, Appendix A, Section 17, Water Quality, states that the Federal Water Pollution Control Act, as amended (commonly referred to as the Clean Water Act), provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. The Fish and Wildlife Coordination Act also applies if a proposed Federal action would impound an area greater than ten acres, or divert, drain, control, or otherwise modify the waters of any stream or other body of water. The USEPA must be conferred with if there is the potential for contamination of an aquifer designated as a sole or principal drinking water resource for the area, as required by section 1424(e) of the Safe Drinking Water Act, as amended.

To determine significant impacts, FAA Order 1050.1E, Change 1, states that water quality regulations and issuance of permits will normally identify any deficiencies in the proposal with regard to water quality. It goes on to state that if consultation or analysis shows that there is the potential for exceeding water quality standards, identifies water quality problems that cannot be avoided or mitigated, or indicates difficulties in obtaining permits, then it may be concluded that the project would result in a significant impact.

5.6.1.2 State Regulations

PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Water Quality Control Act establishes the SWRCB and the Regional Water Quality Control Board (RWQCB) as the principal state agencies having primary responsibility for coordinating and controlling water quality in California. The Porter-Cologne Act establishes the responsibility of the RWQCBs for adopting, implementing, and enforcing water quality control plans (Basin Plans), which set forth the state's water quality standards (i.e., beneficial uses of surface

waters and groundwater) and the objectives or criteria necessary to protect those beneficial uses. NPDES permits for projects must be consistent with the Basin Plan for the region.

STATE WATER RESOURCES CONTROL BOARD AND REGIONAL WATER QUALITY CONTROL BOARDS

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the U.S. Where multiple beneficial uses exist, water quality standards must protect the most sensitive use.

The SWRCB and the nine RWQCBs are responsible for ensuring implementation and compliance with the provision of the Federal CWA and California's Porter-Cologne Water Quality Control Act. The project area is situated within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB).

Regional boards have the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within their jurisdiction and through multiple enforcement mechanisms. Regional water quality objectives for all water bodies in the Petaluma River watershed (including Black John Slough and its tributaries) are specified in the Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin, prepared by the San Francisco Bay RWQCB in compliance with the Federal CWA and the Porter-Cologne Water Quality Control Act. Section III of the Basin Plan contains both narrative and numeric water quality objectives that are intended to protect these beneficial uses. **Table 5.6-1** summarizes the beneficial uses pertinent to the proposed project site.

Table 5.6-1
BENEFICIAL USES PERTINENT TO THE PROPOSED PROJECT
Gnoss Field Airport

COUNTY WATER BODY	AQUATIC LIFE USES						WILDLIFE USES	RECREATIONAL USES		
	COLD	EST	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
Petaluma River	E	E	E	E	E	E	E	E	E	E
San Antonio Creek	E		P		P	E	E	P	P	

Key:

1 E: Existing Beneficial Uses
2 P: Potential Beneficial Uses
3 COLD: Cold Freshwater Habitat
4 EST: Estuarine Habitat
5 MIGR: Fish Migration
6 RARE: Preservation of Rare and Endangered
7 Species
8 SPWN: Fish Spawning
9 WARM: Warm Freshwater Habitat
10 WILD: Wildlife Habitat
11 REC-1: Water Contact Recreation
12 REC-2: Noncontact Water Recreation
13 NAV: Navigation

CALIFORNIA WATER CODE

Section 13260 of the California Water Code requires that any person discharging waste or proposing to discharge waste, other than to a community sewer system, that could affect the quality of the waters of the state, shall file a Report of Waste Discharge (ROWD) with the appropriate regional board. Section 13260 of the California Water Code requires a ROWD for persons discharging or proposing to discharge waste that could affect the quality of the waters of the state. The Regional Board reviews the applicant's ROWD and may establish Waste Discharge Requirements (WDRs) for the proposed action. WDRs may include effluent limitations, as well as monitoring and reporting requirements.

5.6.2 EXISTING CONDITIONS

5.6.2.1 Regional Hydrology

The proposed project site is located within the San Francisco Bay Hydrologic Region (HR), as defined by the California Department of Water Resources. Within this HR, the Airport is located in the 146 square mile Petaluma River watershed (Hydrologic Unit Code #18050002). The Petaluma River is the major drainage within this watershed and empties into San Pablo Bay.

5.6.2.2 Local Hydrology

The existing hydrologic boundaries of the DVO area are the southeastern slope of Burdell Mountain to the west of the Airport, the northernmost extent of the Airport levee to the north, the levee along Black John Slough to the south, and the easternmost levee between the Airport and the adjacent agricultural field. The following discusses surface waters and groundwater within the area.

SURFACE WATERS

Surface water drainage flows at the Airport can be delineated into the following four basic categories:

1) Run-on/perimeter flows
2) Runway/taxiway flows
3) Asphalt apron flows
4) Offsite flows

Run-On/ Perimeter Flows

Water from the adjacent hillside, which includes open space, the Olompali State Park, and fully developed land, flows towards DVO through culverts under Highway 101. These waters are currently routed around the Airport and are combined with Airport runoff on the east side of Airport property, which is then pumped over the levee into the Petaluma River (see **Exhibit 5.6-1, *Local Drainage*** and **Exhibit 5.6-2, *Site Drainage)***.

Runway and Taxiway Flows

The existing asphalt runway and taxiway were each designed with a center crown whereby rainfall would flow to the shoulders of the runway and the taxiway. Rainfall that flows to the shoulders continues flowing into the vegetated perimeter channel. Stormwater runoff between the taxiway and runway flows together in the center drainage inlets and then flow east through culverts under the runway into the perimeter drainage channel (see Exhibit 5.6-2, *Site Drainage*).

Asphalt Apron Flows

Precipitation that falls onto the asphalt hangar and operational aprons on the west side of the Airport flows east into the drainage ditch parallel to the taxiway, which then flows north into the vegetated perimeter channel or waters flow directly north into the perimeter channel. Rainfall on the southwestern most portion of the proposed project site flows south into the southern vegetated area, then east to join the north flowing vegetated perimeter channel on the eastern most property boundary. Rainfall that reaches the eastern asphalt hangar apron flows northeasterly in the northern portion, easterly from the wash area in the central portion of the eastern apron, and southeasterly in the southern portion. The north and south portions flow into the vegetated perimeter channels immediately adjacent to their locations.

Flows in the central portion of the eastern asphalt apron drain into a subsurface stormwater filtration conveyance system. The flows that enter the wash drain flow through a sediment filter and then through an oil and grease separator before the flows are released into an evaporation basin on the eastern portion of Airport boundary. If it should occur during an extreme storm condition that runoff volumes exceed the capacity of the evaporation basin, the flows would enter the vegetated perimeter channel prior to offsite discharge.

Offsite Flows

Offsite flow is the fourth category of surface water at the Airport. Due to the existing levee system, these flows would not enter the runway and taxiway environment unless the unlikely event of a levee breach was to occur during an extreme storm condition. These flows originate from Burdell Mountain and Olompali State Park to the north. Rainfall from these areas is directed along Highway 101 to culverts, and with highway runoff, exit on the east side of the Highway and continue east through culverts under the railroad tracks and into the

tributaries and sloughs adjacent to the Petaluma River. Off-site surface water flows are pumped into the Petaluma River to the northeast of the Airport (see Exhibit 5.6-1, *Local Drainage*).

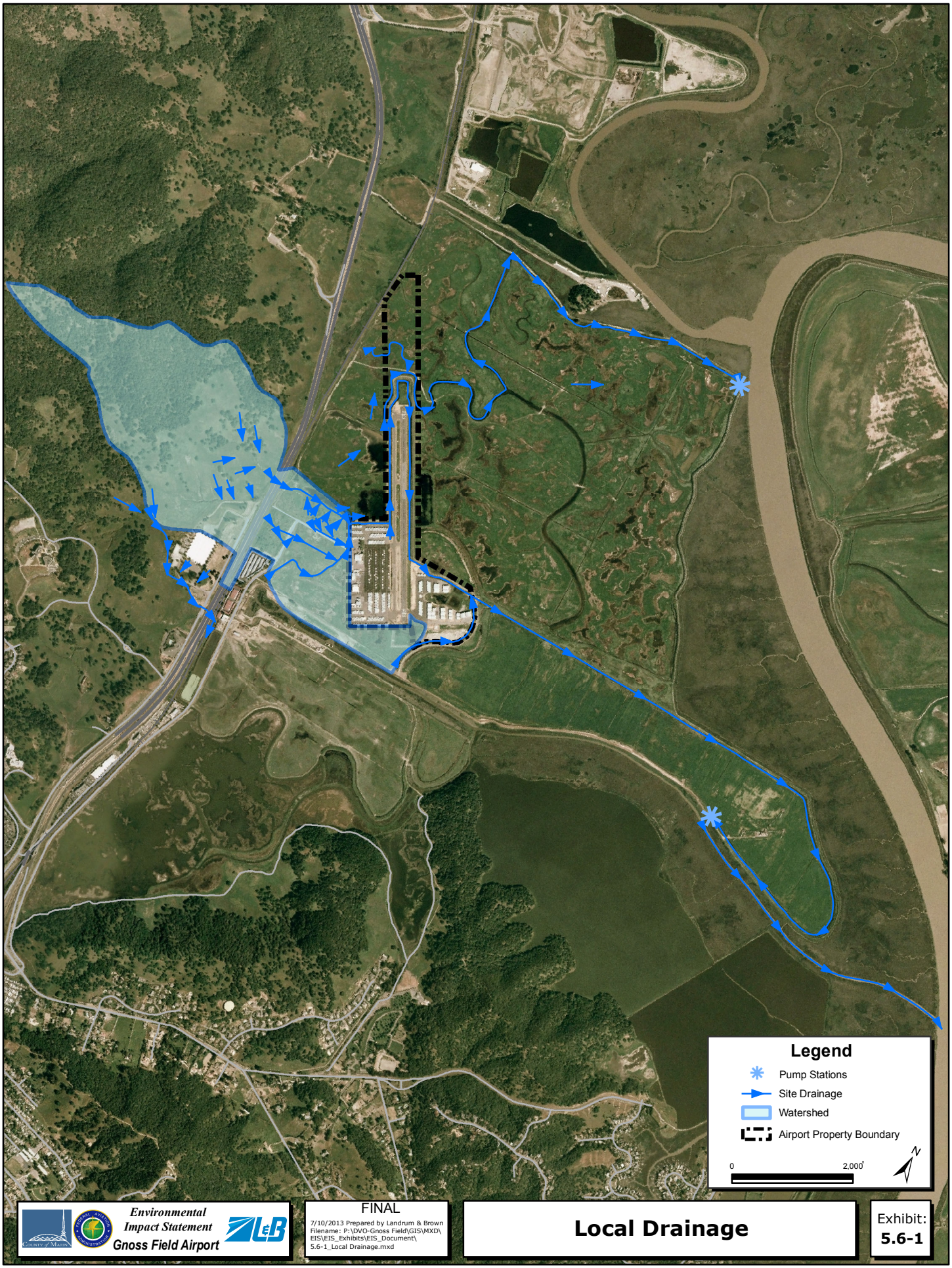
GROUND WATER

The Airport is located within the northern San Francisco Bay region within the North Coast Ranges geomorphic province of California. Ground water occurs principally in alluvial deposits of Pleistocene to Holocene age that unconformably overlay non-water bearing rocks of the Franciscan assemblage. The alluvial deposits are composed of unconsolidated clay, silt, and sand with discontinuous lenses of gravel. The total thickness of the alluvial deposits ranges from 60 feet near the City of Novato to more than 200 feet near San Pablo Bay. Wells in sand and gravel layers 25 feet to 50 feet deep generally yield an average of 50 gallons per minute.

Natural recharge occurs principally as infiltration from streambeds that exit in the upland areas within the drainage basin and from direct percolation of precipitation that falls on the basin floor. Groundwater is typically of the calcium bicarbonate type. Groundwater in the tidal areas of the alluvium is of the sodium chloride type and the total mineral content is greater than in areas farther from the bay.

In 1991, three Underground Storage Tanks (USTs) (one jet fuel and two aviation gasoline USTs), each with a capacity of 10,000 gallons, were removed from Airport property, east of the manager's office. During removal, it was determined that the USTs and product lines were pitted and had holes in them. In 1999, during excavation work to replace a section of the storm drain sewer line, groundwater with a sheen and solvent-like and petroleum odors were encountered. Sixty-three tons of soil and 9,600 gallons of groundwater were subsequently removed from the excavation and transported off-site to proper disposal facilities. Soil samples of the excavated soil were also completed. It was recently determined by the SFBRWQCB that this subsurface contamination poses a potential threat to human health and water quality and needs to be addressed. Marin County was issued a Requirement for Technical Report in June 2009. Marin County submitted a Technical Report in September 2009 and is currently coordinating with the RWQCB to address this situation.

The area in question is located immediately east of the Airport manager's office and would not be disturbed by the Sponsor's Proposed Project or its alternatives. As this site is not located in the vicinity of any of the project alternatives, it is not anticipated that contaminated groundwater would be found during construction. Any groundwater quality issues or contamination that is associated with this site would be remediated with or without implementation of the Sponsor's Proposed Project. Therefore, this information will be included in the discussion of cumulative impacts (see Appendix L, *Hazardous Materials*, for a copy of the correspondence regarding this issue). See Section 5.17, *Hazard Materials, Pollution Prevention, and Solid Waste*, of this chapter for additional information.



Environmental Impact Statement
Gnoss Field Airport

FINAL

7/10/2013 Prepared by Landrum & Brown
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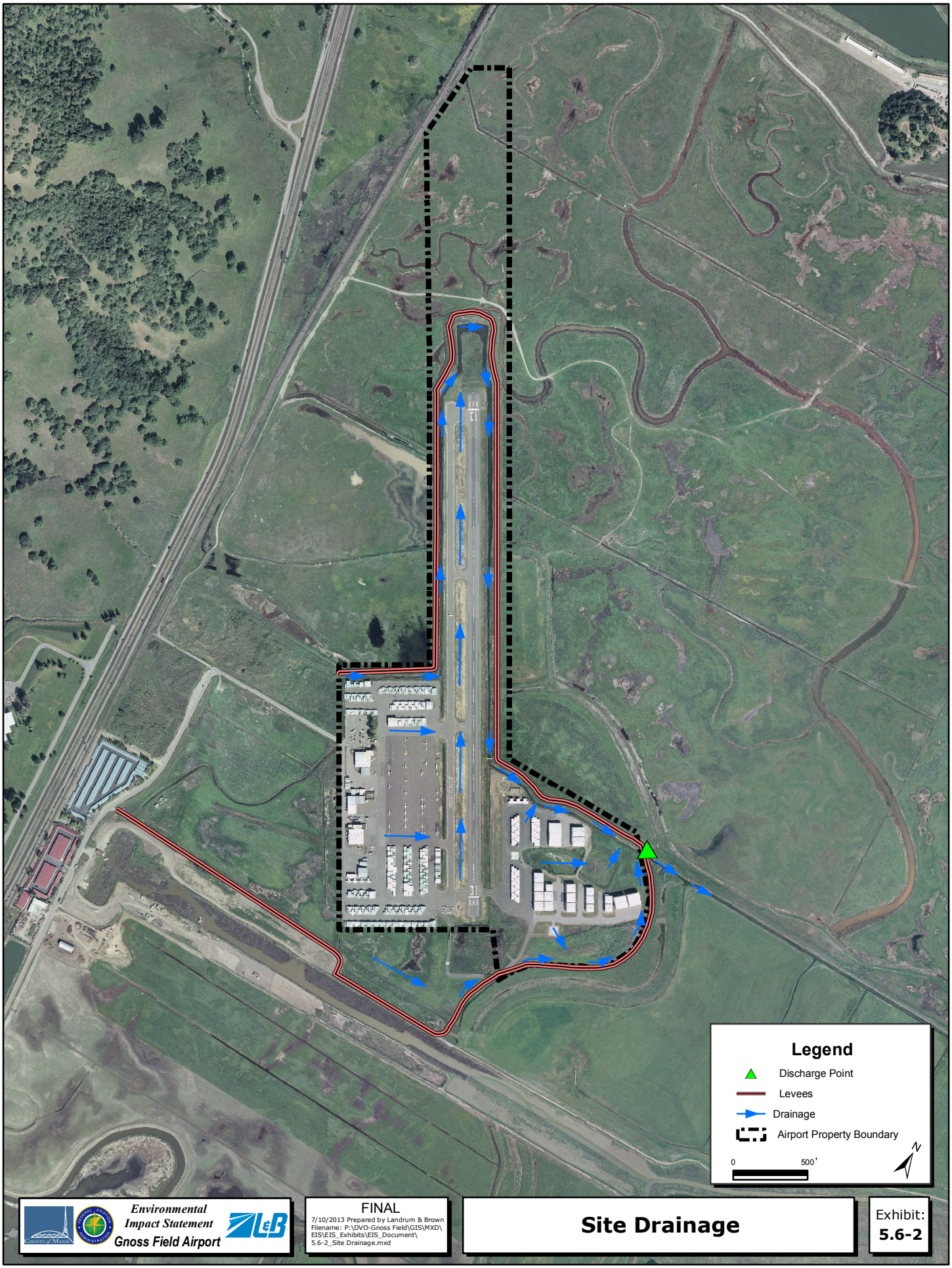
Local Drainage

Exhibit: 5.6-1



Environmental Impact Statement
Gnoss Field Airport

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Site Drainage

Exhibit: **5.6-2**

5.6.2.3 Existing Permits

Gnoss Field Airport operates under the current Industrial Permit for Air Transportation Industrial Activities, SIC code 4581, under Waste Discharge Identification Number 221I000647. Under the NPDES permit system, the SWRCB adopted the current Industrial Stormwater General Permit (General Industrial Permit) in 1997. The General Industrial Permit regulates discharges associated with ten broad categories of industrial activities, each of which are identified in the Federal regulations by a Standard Industrial Classification (SIC).

Pollutant thresholds are not defined by the Airport's current General Industrial Permit. General conditions of NPDES Permits require stormwater discharges to meet all applicable provisions of Sections 301 and 402 of the CWA. These provisions of the General Industrial Permit require the implementation of management measures (Best Management Practices or BMPs) that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to prevent and reduce pollutants and any more stringent controls necessary to meet water quality standards. However, the SWRCB has determined that it is not feasible at this time to establish numeric effluent limitations, nor have thresholds been established by this permit for individual pollutants.

Nonpoint pollution sources are defined as those that originate over a wide area, rather than from a definable location or point source. Nonpoint sources of pollution are generally exempt from Federal NPDES permit program requirements with the exception of stormwater discharges. Stormwater discharges during and after project construction can transport pollutants from impervious surfaces such as roads and parking lots into creeks and streams. NPDES municipal Phase II regulations require jurisdictions to initiate actions to prevent long term non-point pollution through appropriate design. Marin County operates under a General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems and has developed a Stormwater Management Plan (EOA 2005). The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the "maximum extent practicable" through the use of BMPs.

In accordance with NPDES regulations, to minimize the potential effects of construction runoff on receiving water quality, the SWRCB requires that any construction activity affecting one acre or more must obtain coverage under the General Construction Activity Stormwater Permit (Construction General Permit, 99-08-DWQ). Additionally, permit applicants are required to develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies erosion and sediment control BMPs to reduce or eliminate construction-related impacts on receiving water quality. Permit applicants are also required to perform regular inspections of all BMPs.

5.6.2.4 Existing Best Management Practices (BMPs)

Daily use of the current BMPs employed at DVO reduces concentrations of pollutants of concern below regulatory criteria and minimize or eliminate stormwater quality impacts to Black John Slough and the Petaluma River. BMPs in effect currently at DVO include:

- Existing Airport levee system and vegetated drainage ditch.
- Designated aircraft wash area on the southeastern asphalt apron that drains all wash waters into a subsurface stormwater filtration system. This system is comprised of a sediment filter and an oil separator and then an evaporation basin. Wash waters normally do not enter the perimeter drainage.
- Established Spill Prevention, Control, and Countermeasure (SPCC) plans:
  - Spill response items include oil booms, absorbent pads, absorbent materials, brooms, shovels, and waste containers.
  - Perimeter drainage channel can be closed with sluice gates at the twin culverts on the east side of the Airport in case of required spill response activities and subsequent water quality protection.
- Airport activities such as herbicide application along runway and taxiway aprons, and along perimeter drainage channels use chemicals that have the potential to pollute stormwaters. In order to reduce or eliminate the potential for contact with stormwaters, spraying activities are scheduled for non-rain days with low to non-existent winds. Herbicides are only applied in accordance with herbicide labeling directions and EPA label requirements. In addition, chemical spray solutions are mixed away from storm drainages.
- The Airport tests the outflow of runoff monthly and reports the results annually to the Regional Water Quality Control Board.

Construction BMPs include:

- Use of temporary mulching, seeding or other stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; and
- Installation of traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw wattles or silt fencing to minimize the amount of uncontrolled runoff that could enter storm drain inlets or surface water.

Implementation of these BMPs ensures that projects are managed carefully through proper implementation, monitoring, and maintenance of daily and construction activities.

5.6.2.5 Existing Pollutant Loads

Airport activities have the potential to generate pollutants that could enter the stormwater drainage system and subsequently affect surface water quality in Black John Slough and the Petaluma River. These activities and the potential pollutant types are described in **Table 5.6-2**.

Table 5.6-2
AIRPORT OPERATIONS WITH THE POTENTIAL TO AFFECT STORMWATER POLLUTANT LOADS
Gnoss Field Airport

CURRENT AIRPORT OPERATIONS	POTENTIAL STORMWATER POLLUTANTS
Aircraft, vehicle and equipment maintenance/cleaning	Cleaning solutions, petroleum hydrocarbons, rubber particles, solvents, oils and grease, paint, and metals
Airport construction activities	Sediment, oil, grease, petroleum hydrocarbons, pH, and pesticides
Aircraft, vehicle and equipment fueling	petroleum hydrocarbons, rubber particles, oil and grease
Aircraft runway maintenance	petroleum hydrocarbons, rubber particles, oil and grease, and paint
Chemical storage and wastewater pretreatment	Cleaning solutions, herbicides, petroleum hydrocarbons, oil, rubber particles, and solvents
Fire/Department Public Safety training activities	Firefighting foam; petroleum hydrocarbons, rubber particles, and oil and grease
Fuel storage and transfer	Petroleum hydrocarbons, oil and grease
Loading/unloading operations	Rubber particles
Grounds and Building maintenance	Petroleum hydrocarbons, herbicides, fertilizers, paint, and sediment
Roadway Maintenance	Herbicides and fertilizers
Outdoor equipment, material and waste storage	Petroleum hydrocarbons, oils, grease, solvents, herbicides, fertilizers, and trash
Non-allowable non-stormwater discharges/Spill response	Petroleum hydrocarbons, oils, hydraulic fluids, grease, cleaning solutions, Aircraft firefighting foam, herbicides, and paint
Stormwater channel maintenance and rehabilitation	Sediment and herbicides
Non-Point Source Pollution	Sediment

Source: Foothill Associates, 2009.

In order to determine the potential for water quality impacts of the Sponsor's Proposed Project and its alternatives, the limitations on acceptable pollutant levels in the DVO area were obtained from the following sources:

- The San Francisco Bay Basin Water Quality Control Plan (Basin Plan);
- The conditions required by the SWRCB for the Airport's General Industrial Permit mandated by the NPDES (Water Quality Order No. 97-03-DWQ NPDES General Permit No. CAS000001);
- The American Association of Airport Executives (AAAE) and the Airport Research and Development Foundation (ARDF) Monitoring Group Stormwater Monitoring Requirements; and
- The California Environmental Protection Agency (CEPA) 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments for San Francisco Bay.

The Basin Plan identifies the following state-established pollutants of concern, many of which are generally found in stormwater runoff and airport runoff (see Appendix G for detailed descriptions of each pollutant):

- pH
- Specific conductance
- Oil and Grease
  - Total Petroleum Hydrocarbons (TPH)
    - Diesel
    - Gasoline
    - Motor Oil
- Total Organic Carbon (TOC)
- Biological Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Sediment
  - Total Suspended Solids (TSS)
  - Turbidity
- Nutrients
  - Total Nitrogen (TN)
  - Total Kjeldahl Nitrogen (TKN)
  - Total Phosphorous (TP)
- Metals
  - Copper (Cu)
  - Lead (Pb)
  - Nickel (Ni)
  - Zinc (Zn)
- Pathogens
  - Total Coliform
  - Fecal Coliform
- Pesticides
  - Diazinon
  - Glyphosate

Although the Basin Plan identifies the pollutants listed above for airports, thresholds have not been established for all the pollutants listed above. In addition, as previously stated, pollutant thresholds are not defined by the Airport's current General Industrial Permit. Furthermore, the SWRCB has determined that it is not feasible at this time to establish numeric effluent limitations, nor have thresholds been established by this permit for individual pollutants.

After reviewing all available sources listing potential pollutants of concern, including the Industrial General Permit pollutant parameters, the Group Stormwater Monitoring Plan (GMP), the current water quality sampling data, and all of the Airport operational activities that potentially contribute these pollutants, a subset of nine pollutants were identified for the Airport that could be expected in stormwater runoff and that had useable data for analysis. These nine pollutants include: Total Copper (Cu); Total Lead (Pb); Total Zinc (Zn); Biological Oxygen Demand (BOD); Oil & Grease; Chemical Oxygen demand (COD), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN), and Total Phosphorous (P). **Table 5.6-3** provides the average annual pollutant load for each of the nine pollutants.

Table 5.6-3
EXISTING AVERAGE ANNUAL POLLUTANT LOAD (LBS/YEAR)
Gnoss Field Airport

POLLUTANT	EXISTING CONDITIONS (2008)
Total Copper (Cu)	4
Total Lead (Pb)	17
Total Zinc (Zn)	7
Biological Oxygen Demand (BOD)	2,800
Total Suspended Solids (TSS)	13,078
Total Phosphorous (P)	147
Total Kjeldahl Nitrogen (TKN)	808
Oil and Grease	1,021
Chemical Oxygen demand (COD)	32,705

Source: Foothill Associates *Water Quality Technical Report, Gnoss Field Airport, Marin County, California*, November 2009. See Appendix G.

5.6.3 FUTURE CONDITIONS: 2018

This section presents the potential impacts from the Sponsor's Proposed Project and its alternatives to the existing water quality at DVO and the surrounding area. As previously noted, there are no overall numeric thresholds for pollutants, therefore the discussion of significance will focus on the ability to obtain permits.

Alternative A:
<u>No Action</u>

The estimated water quality pollutant loads discharged to receiving waterbodies under Alternative A would not change from those described for the Existing Conditions (2008) because there would be no new construction or development. The Airport currently operates within the limits of its General Industrial Permit and the limits of the Basin Plan, which includes use of BMPs, including the Airport levee system, vegetated drainage ditch, oil and grease separator, evaporation basin, spill prevention procedures, and spill clean-up procedures.

Increased aircraft operations at DVO are anticipated by 2018 with or without the implementation of the Sponsor's Proposed Project or its alternatives. Activity is expected to grow from 85,500 operations in 2008 to 100,500 in 2018. This increase in activity would result in increased industrial uses within the facility through aircraft washing and maintenance activities. However, as DVO will continue to operate under its SWPPP and continue to implement BMPs to minimize the potential for pollutants to be discharged to the waterbodies adjacent to the Airport, implementation of Alternative A would not result in a significant impact on water quality.

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

Under Alternative B, there would be an increase in impervious surfaces from the 1,100-foot runway extension, which would result in an increase in stormwater runoff. However, modifications to the Airport levee and ditch system would result in an additional 4,400 feet of drainage ditch being created. The increase in length of the uniform linear ditch system would also increase the overall volume capacity of the ditch system, which would more than compensate for the additional runoff created by the increased impervious surface.[1]

As mentioned under Alternative A, operations at DVO are anticipated to increase by 2018 with or without a runway extension. This increase, like in Alternative A, would result in increased industrial uses within the Airport facility through aircraft washing and maintenance activities. Although these pollutants levels would increase, it is expected that compliance with the Industrial General Permit through participation in the Group Monitoring Plan would ensure that the Airport would continue to meet or exceed water quality regulatory standards. In addition, adherence to or modification of existing SWPPP and future sampling and visual observations if warranted would be employed to eliminate or minimize water quality impacts to a level that is acceptable under the Industrial General Permit and the Group Monitoring Plan.

Short-term impacts to water quality may potentially occur during the construction phase of the proposed project. Grading and construction activities typically increase the potential for sediment related pollutants (e.g., TSS, nutrients, metals) to enter waterbodies. Short-term impacts would be minimized through vigilant adherence to construction schedule, the project SWPPP, and BMPs. Construction of Alternative B would require the facility to obtain coverage under the NPDES General

[1] Section 5.9, *Fish, Wildlife, and Plants* and Section 5.10, *Wetlands* report a reduction in the net acres of ditch/channel for both Alternative B and Alternative D. It is important to note that the discussion of ditch/channel in those sections refers to land cover/habitat in acres versus volume capacity of the ditch/channel system. The existing ditch/channel system is irregularly shaped in some areas, resulting in wide but shallow water collection points. From a land cover/habitat perspective both alternatives would result in less acres of ditch/channel. However, the proposed ditch/channel system under Alternative B and D would be more uniform in both depth and width, as well as 2,178 feet longer than the existing system. Therefore, the overall volume capacity would be increased significantly from existing conditions.

Construction Permit for construction activities. As of July 1, 2010, coverage under the newly adopted General Construction Permit must be obtained electronically via the SWRCB.

Implementation of Alternative B would require the fill of jurisdictional waters of the U.S. pursuant to Section 404 of the CWA. Any fill of waters of the U.S. would require authorization from the U.S. Army Corps of Engineers through a Section 404 permit. Pursuant to Section 401 of the CWA, any applicant for a Federal permit or license is also required to obtain and provide to the U.S. Army Corps of Engineers (USACOE) a 401 Water Quality Certification from the state. Therefore, development of Alternative B would require 401 Water Quality Certification through the State Water Resources Control Board. Pollutant loading changes to stormwater runoff would contribute to minor impacts to Black John Slough and the Petaluma River. However, as previously described, implementation of the measures outlined in the SWPPP, in accordance with the NPDES Construction General Permit, and Industrial General Permit coupled with the implementation, monitoring and maintenance of site-specific BMPs, is expected to reduce the potential for impacts to water quality and maintain water quality objectives.

Development of Alternative B would require Marin County to submit a Change of Information (COI) (found on the General Industrial Permit Notice of Intent) to the State Water Resources Control Board. The COI would update the facility information to include a revised site map with drainages, the facility acreages, the new site imperviousness percentage, and any changes that may relate to facility operations (i.e., SIC code changes). If at any time the Airport is found to not be in compliance with the SWPPP or the Industrial General Permit conditions, the facility inspector is required to document noncompliance specifics and modifications to the facility SWPPP and BMPs may be required. Similarly, if warranted by sampling data analyses, the SWRCB may require modifications to the SWPPP and BMPs.

Based on the current BMPs, SWPPP, and permits that are in place, it is not anticipated that Alternative B would exceed water quality standards, create water quality problems that cannot be avoided or mitigated, or result in difficulties in obtaining permits. Therefore, no significant impacts are anticipated with implementation of Alternative B.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

Under Alternative D, there would be an increase in impervious surfaces from the 1,100-foot runway extension, which would result in an increase in stormwater runoff. However, modifications to the Airport levee and ditch system would result in an additional 3,670 feet of drainage ditch being created. This increase in the ditch system would more than compensate for the additional runoff created by the increased impervious surface.

As described previously in Alternative A, the forecasted increase in operations would result in an increase in industrial uses within the Airport facility through aircraft washing and maintenance. However, these increases would not change the discharges to a point where they would not be able to be addressed through the BMPs, SWPP, and permits.

Based on the current BMPs, SWPPP, and permits that are in place, it is not anticipated that Alternative D would exceed water quality standards, create water quality problems that cannot be avoided or mitigated, or result in difficulties in obtaining permits. Therefore, no significant impacts are anticipated with implementation of Alternative D.

5.6.4 PERMITTING AND MITIGATION

Daily use of the current BMPs employed at DVO reduces concentrations of pollutants of concern below regulatory criteria, and minimizes or eliminates stormwater quality impacts to Black John Slough and the Petaluma River. Similar construction BMPs would be utilized to address potential pollutant impacts as a result of construction activities associated with Alternative B or Alternative D. BMPs employed would include levee extensions around the entire project and a slow flowing vegetated internal drainage system that would facilitate pollutant uptake and settlement prior to reaching the Airport discharge point. Additionally, Airport operations utilize multiple spill prevention and clean up procedures that protect against potential pollutant impacts.

Under the NPDES permit system, the SWRCB adopted the current Industrial Stormwater General Permit in 1997. The General Industrial Permit regulates discharges associated with ten broad categories of industrial activities, one being Transportation Facilities. The General Industrial Permit requires the implementation of management measures that would achieve the performance standard of best available technology economically achievable and best conventional pollutant control technology. The Sponsor's Proposed Project at DVO would be covered by the current Industrial Permit for Air Transportation Industrial Activities. The Waste Discharge Identification Number is 221I000647.

In accordance with NPDES regulations, to minimize the potential effects of construction runoff on receiving water quality, the SWRCB requires that any construction activity affecting one acre or more must obtain coverage under the General Construction Activity Stormwater Permit (Construction General Permit, 99-08-DWQ). Effective July 1, 2010 all those seeking a permit are required to obtain coverage under the new Construction General Permit Order 2009-0009-DWQ adopted on September 2, 2009. Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

Additionally, permit applicants are required to develop and implement a SWPPP that specifies erosion and sediment control BMPs to reduce or eliminate construction-related impacts on receiving water quality. Permit applicants are also required to perform regular inspections of all BMPs. Examples of construction BMPs identified in SWPPPs include: using temporary mulching, seeding or other stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan, installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw wattles or silt fencing to minimize the amount of uncontrolled runoff that could enter storm drain inlets or surface water.

In order to construct Alternative B or Alternative D, Marin County would need to obtain a CWA, Section 404, permit from the USACOE authorizing the necessary fill of waters and wetlands within CWA jurisdiction, and obtain a CWA, Section 401, State Water Quality certification for the CWA 404 permit from the SFBRWQCB. A NPDES permit under CWA Section 402 would be required for point-source discharges into waters within CWA jurisdiction, and a Rivers and Harbors Act (RHA), Section 10, permit would be required from the Army Corps of Engineers if the construction altered or obstructed waters regulated under the RHA. CWA and RHA permitting and mitigation requirements are discussed in more detail in Section 5.10.5.

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5.7 DEPARTMENT OF TRANSPORTATION SECTION 4(f) RESOURCES AND LAND AND WATER CONSERVATION ACT, SECTION 6(f) RESOURCES [1]

This section evaluates the potential impacts of the Sponsor's Proposed Project and its alternatives on the Section 4(f) resources including public parks, recreation areas, open space areas, wildlife areas and historic resources described in Section 4.6, *Department of Transportation Section 4(f) Resources and Land and Water Conservation Act, Section 6(f) Resources,* of this EIS. No lands subject to Section 6(f) of the Land and Water Conservation Act would be converted to non-recreational use under any alternative, and therefore Section 6(f) lands are not discussed further in this EIS.

5.7.1 REGULATORY SETTING

The Federal statute that governs impacts in this category is commonly known as the Department of Transportation (DOT) Act of 1966, as amended, Section 4(f) provisions. Section 4(f) of the DOT Act, which is codified and renumbered as Section 303(c) of 49 USC, provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance as determined by the officials having the jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land and such program, and the project includes all possible planning to minimize harm resulting from the use.

The FAA has made the determination that the Sponsor's Proposed Project and its alternatives would not significantly impact any Section 4(f) resources as described in more detail in the remainder of this section. As described in Section 5.8, the FAA has also completed consultations with California State Historic Preservation Officer in accordance with the National Historic Preservation Act, Section 106, that found the Sponsor's Proposed Project would have no effect on historic resources on or eligible for the National Register of Historic Places.

5.7.2 APPLICABILITY OF SECTION 4(f)

The Sponsor's Proposed Project and its alternatives and the No Action Alternative would not require the constructive use, physical taking, or conversion of land of any historic site, park, or recreation area within the GSA. **Table 5.7-1**, identifies the parks and recreational areas located within the GSA and provides a summary of the facilities and uses at each location. **Exhibit 5-7.1, *Section 4(f) Resources***, depicts the location of all of the Section 4(f) resources to be assessed for impacts.

[1] Section 4(f) of the Department of Transportation Act of 1966 is currently codified as 49 USC § 303(c). Consistent with FAA Order 1050.1E, Appendix A, paragraph 6.1a, Section 303(c) will be referred to as Section 4(f).

Table 5.7-1
SECTION 4(f) RESOURCES IN THE GENERAL STUDY AREA
Gnoss Field Airport

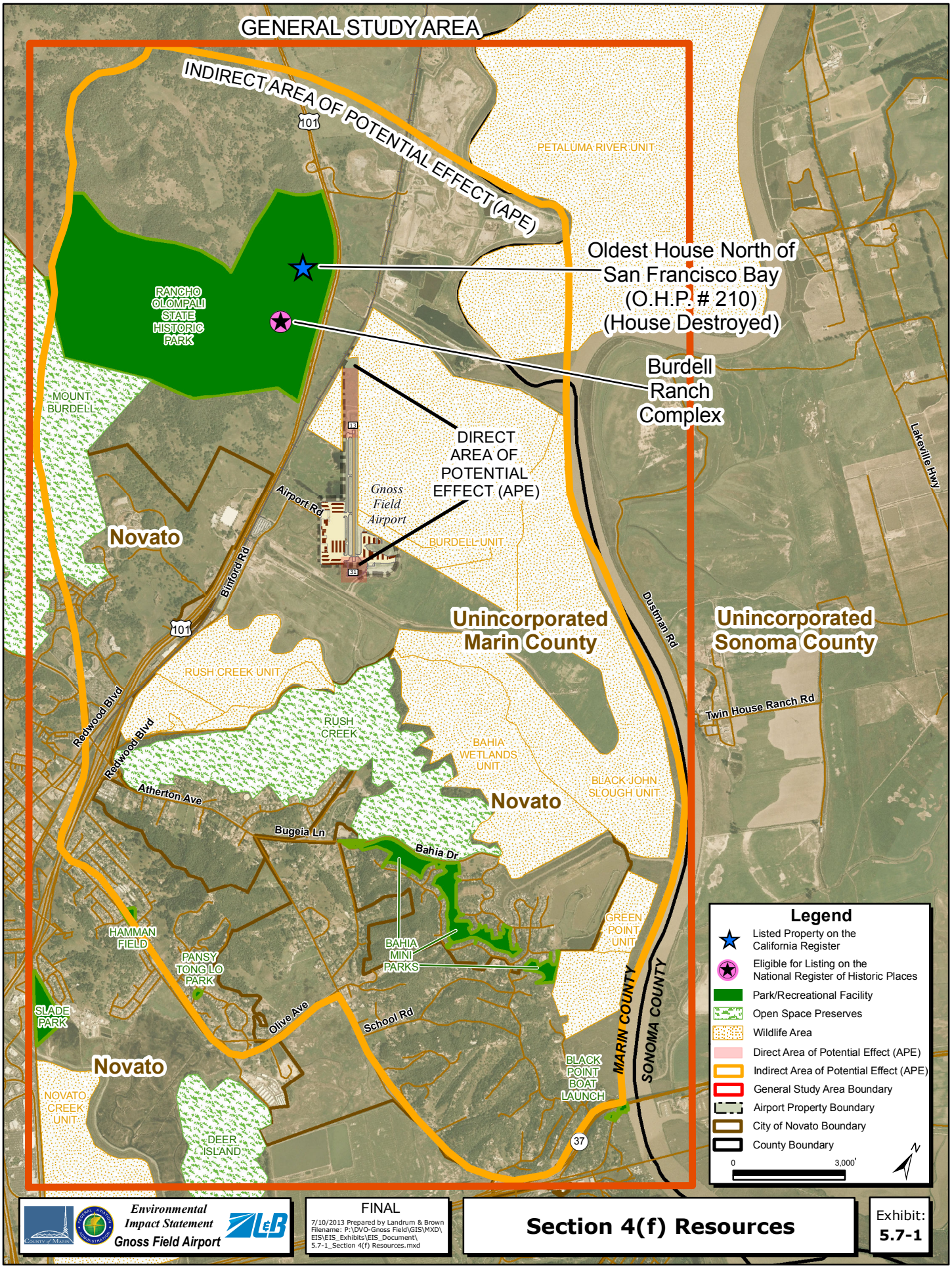
NAME	OPERATOR	FACILITIES/USE
Bahia Mini Parks	City of Novato	Residential use; picnic areas and playground equipment
Black Point Boat Launch	Marin County	Public boat launch onto the Petaluma River
Burdell Unit of the California Department of Fish and Game Petaluma Marsh Wildlife Area	California Department of Fish and Game	Open Space Preserve
Deer Island	Marin County	Open Space Preserve
Hamman Field	City of Novato	Public baseball field
Mount Burdell	Marin County	Open Space Preserve
Pansy Tong Lo Park	City of Novato	Residential use; playground equipment
Rancho Olompali State Historic Park	State of California	Hiking and horseback riding trails; picnic areas
Rush Creek	City of Novato	Open Space Preserve
Slade Park	City of Novato	Residential use; picnic areas and playground equipment

Source: Landrum & Brown, 2009.

5.7.3 EXISTING CONDITIONS

FAA land use compatibility guidelines (see Table 5.2-1) considers most parks and recreation areas compatible with noise levels at or below the 70 decibel Community Noise Equivalent Level (CNEL). Only those parks and recreation areas that have regular performances such as music or theater performances, or where a naturally quiet environment regularly exists, are considered non-compatible with noise levels between 65 and 70 CNEL. Parks and recreation areas exposed to noise levels below 65 CNEL are considered to be compatible unless there is some extenuating circumstance related to its use, such as a national park.

None of the parks and recreation areas listed above contains uses that would require a threshold below 70 CNEL for land use compatibility. One historic property, the Olompali Burdell Ranch Complex, which is NRHP eligible, is located within the GSA. While the original use of the ranch complex was residential, it is no longer being used for residential purposes and is part of the Olompali State Historic Park. The uses of Olompali State Historic Park range from horseback riding, to hiking, and picnicking. These uses are compatible with noise levels up to 70 CNEL.



Environmental Impact Statement
Gnoss Field Airport

FINAL

7/10/2013 Prepared by Landrum & Brown
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Section 4(f) Resources

Exhibit: **5.7-1**

One of the ten parks and recreation areas identified in the GSA (Burdell Unit of Petaluma Marsh Wildlife Area) is exposed to noise levels above 70 CNEL from the Airport under Existing Conditions (2008). Under existing conditions the 70 CNEL contour includes approximately 9.6 acres of the site, which represents roughly 1.49 percent of the entire area designated as the Burdell Unit. This area is located immediately adjacent to the Airport.

5.7.4 FUTURE CONDITIONS: 2018

Alternative A:
No Action

Under 2018 Alternative A, no Section 4(f) resources would be directly used because there would be no construction activities. A portion of the a Section 4(f) resource identified in the GSA, the Burdell Unit of the California Department of Fish and Game (CDFG) Petaluma Marsh Wildlife Area is exposed to noise levels above 70 CNEL from the Airport under Existing Conditions (2008). Under Alternative A, the 70 CNEL contour, which includes approximately 11.8 acres of the site and approximately 1.83 percent of the entire area designated as the Burdell Unit, would remain in its current location. This area is located immediately adjacent to the Airport and the projected noise levels would not substantially impair the current use of the property. No other Section 4(f) properties would be exposed to noise levels above 65 CNEL as a result of implementing Alternative A. The 65 CNEL is below the 70 CNEL noise level considered compatible for the Section 4(f) resources present in the GSA. See Exhibit 5.1-1 for a map depicting the CNEL noise contour for 2018 Alternative A. As no physical changes to the Airport would occur, implementation of Alternative A would not result in a direct or constructive use of Section 4(f) resources.

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

Currently, an unpaved road outside the Airport perimeter fence enters Airport property north of the existing runway and levee system and runs in a west to east direction before exiting Airport property on the east side of the Airport. This road is located behind a locked gate and provides the CDFG motor vehicle access to the Burdell Unit of the CDFG Petaluma Marsh Wildlife area. Under 2018 Alternative B (Sponsor's Proposed Project), construction of the runway extension would sever that unpaved road across Airport property. To provide an alternative access for the CDFG under this alternative, as the unpaved road nears Airport property on the west side of the Airport, it would rise to the top of the levee and turn north. The unpaved road would then follow the levee north of the runway before turning south to reconnect at its current location on the east side of the Airport. Both of these connection sites would require construction and grading to reconnect the access road. Under Alternative B approximately 0.23 acre would be disturbed in order to reconnect the road to the existing road.

These relatively small areas of disturbance are immediately adjacent to Airport property. Marin County would work with the CDFG to grade and re-vegetate the disturbed areas to bring them as close to the original conditions as possible. Due to the relatively small size of disturbance and the commitment to work with the CDFG to return the sites back to their natural conditions, no significant impact would occur and no substantial impairment of the Burdell Unit would occur. No other Section 4(f) resources would be directly impacted because there would be no construction activities that would affect those resources.

A portion of the Burdell Unit of Petaluma Marsh Wildlife Area is exposed to noise levels above 70 CNEL from the Airport under Existing Conditions (2008). Under Alternative B, the 70 CNEL contour would include approximately 15.7 acres of the site, which represents roughly 2.44 percent of the entire area designated as the Burdell Unit. This is approximately 3.9 acres more than under Alternative A. This area is located immediately adjacent to the Airport and the increased area exposed to 70 CNEL noise levels would not substantially impair the use the property or result in a constructive use of the property.

No other Section 4(f) properties would be exposed to noise levels above 65 CNEL as a result of implementing Alternative B. The 65 CNEL is below the 70 CNEL noise level considered compatible for the Section 4(f) resources present in the GSA. See Exhibit 5.1-2 for a map depicting the CNEL noise contour for 2018 Alternative B.

Implementation of Alternative B would not result in the physical taking, constructive use, or conversion of any Section 4(f) resource to other purposes, impair the use of any Section 4(f) property, or subject any Section 4(f) property to incompatible noise levels. Therefore, implementation of Alternative B would not result in a significant impact on Section 4(f) resources.

Alternative D:
<u>Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet</u>

Currently, an unpaved road outside the Airport perimeter fence enters Airport property north of the existing runway and levee system and runs in a west to east direction before exiting Airport property on the east side of the Airport. This road is located behind a locked gate and provides the CDFG motor vehicle access to the Burdell Unit of the CDFG Petaluma Marsh Wildlife area. Under 2018 Alternative D (Sponsor's Proposed Project), construction of the runway extension would sever that unpaved road across Airport property. To provide an alternative access for the CDFG under this alternative, as the unpaved road nears Airport property on the west side of the Airport, it would rise to the top of the levee and turn north. The unpaved road would then follow the levee north of the runway before turning south to reconnect at its current location on the east side of the Airport. Both of these connection sites would require construction and grading to reconnect the access road. Under Alternative D approximately 0.23 acre would be disturbed in order to reconnect the road to the existing road.

These relatively small areas of disturbance are immediately adjacent to Airport property and are currently being used to provide motor vehicle access for the CDFG to the Burdell Unit. Marin County would work with the CDFG to grade and re-vegetate the disturbed areas to bring them as close to the original conditions as possible. Due to the relatively small size of disturbance and the commitment to work with the CDFG to return the sites back to their natural conditions, and no substantial impairment of the Burdell Unit would occur. No other Section 4(f) resources would be directly impacted because there would be no construction activities that would affect those resources.

The Burdelll Unit is exposed to noise levels above 70 CNEL from the Airport under Existing Conditions (2008). Under Alternative D, the 70 CNEL contour includes approximately 14.0 acres of the site, which represents roughly 2.17 percent of the entire area designated as the Burdell Unit. This is approximately 2.2 acres more than under Alternative A. This area is located immediately adjacent to the Airport and the increased area exposed to 70 CNEL noise levels would not substantially impair the use of the property or result in a constructive use of the property.

No other Section 4(f) properties would be exposed to noise levels above 65 CNEL as a result of implementing Alternative B. The 65 CNEL is below the 70 CNEL noise level considered compatible for the Section 4(f) resources present in the GSA. See Exhibit 5.1-3 for a map depicting the CNEL noise contour for 2018 Alternative D.

Implementation of Alternative D would not result in the physical taking, constructive use, or conversion of any Section 4(f) resource to other purposes, impair the use of any Section 4(f) property, or subject any Section 4(f) property to incompatible noise levels. Therefore, implementation of Alternative D would not result in a significant impact on Section 4(f) resources.

5.7.5 OTHER POTENTIAL IMPACTS

Due to the location of the public parks and recreational facilities in relationship to the project area, there would be no other impacts to these facilities related to water resources, wetlands, floodplains, or light emissions.

5.7.6 CONCLUSION

Alternative B (Sponsor's Proposed Project) and the project alternatives would not result in the direct taking of any 4(f) or 6(f) resources. Also, since none of the alternatives would substantially increase the existing noise levels at the applicable 4(f) resources, there is no substantial impairment, constructive use, or taking of the Section 4(f) resources. No Section 4(f) resources would be significantly impacted, substantially impaired, or directly or indirectly taken by the Sponsor's Proposed Project or its alternatives.

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5.8 HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

The following section discusses the potential impacts of Sponsor's Proposed Project and its alternatives on historic, architectural, archaeological, and cultural resources within the Area of Potential Effects (APEs).

5.8.1 REGULATORY SETTING

The National Historic Preservation Act of 1966 (NHPA) (16 USC § 470(f)) requires Federal agencies to take into account the effects of their undertakings on historic properties that are listed in or determined eligible for inclusion in the National Register of Historic Places (NRHP), and requires Federal agencies to consult with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officers, and other parties to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. The Advisory Council on Historic Preservation is afforded a reasonable opportunity to comment on such undertakings. The requirements of Section 106 are implemented under Title 36 Code of Federal Regulations (CFR) Part 800, *Protection of Historic Properties*.

Surveys of historic, architectural, archaeological, and cultural resources were prepared for this project (see Appendix H, *Cultural Resources*) in order to gather information to assist in the identification of NRHP-listed, determined NRHP-eligible, potentially NRHP-eligible, and National Historic Landmarks potentially affected by the Sponsor's Proposed Project or its alternatives at Gnoss Field Airport (DVO or Airport).

In accordance with the NHPA, Section 106, direct and indirect impacts from Federal actions on historic, architectural, archaeological, and other cultural resources must be considered before a federal action is taken. Per the NHPA, the Federal Aviation Administration (FAA) has consulted with the California SHPO and local tribal representatives (see correspondence in Appendix H). To date, the Federated Indians of Graton Rancheria are the only tribe to provide comments on the project and participate in government-to-government meetings. A literature search and field investigation was conducted to identify historic, architectural, archaeological, or cultural resources within the APE, including resources and plants identified as culturally significant by the Federated Indians of Graton Rancheria.

5.8.2 AREA OF POTENTIAL EFFECT (APE)

The geographic area of potential impact to historic and archaeological resources is referred to as the APE, as established pursuant to the NHPA.

While developing the APE, the FAA considered both direct and indirect impacts to historic properties. Direct impacts would include direct and physical disturbance of historic properties. For this undertaking, direct impacts could occur within the area of ground disturbance. Indirect impacts would include impacts to historic properties

associated with noise, visual impacts, or changes in setting. As a result of this effort the FAA defined two APEs - a Direct APE, where direct effects of the proposed project might occur, and an Indirect APE, where the indirect effects of the proposed project might occur. The boundary of the Indirect APE was determined after tribal consultation with the Federated Indians of Graton Rancheria.

The Direct APE is comprised of two areas, totaling just over 39 acres (the northern portion totals 28.24 acres and the southern portion totals 11.04 acres), which represents the area of potential direct impacts to historic properties as a result of the Sponsor's Proposed Project and the other reasonable alternatives. The anticipated depth of disturbance within the 39 acre area is three feet.[1] The Indirect APE is an irregularly-shaped area, totaling approximately 8,669 acres, which represents the area of potential indirect impacts, such as noise, to historic properties as a result of the Sponsor's Proposed Project and the other reasonable alternatives. The Direct APE is contained within the Detailed Study Area and the Indirect APE is contained within the General Study Area (GSA) as shown in **Exhibit 5.8-1, *Areas of Potential Effect***. The California SHPO concurred with the APEs.[2]

5.8.3 EXISTING CONDITIONS

Direct APE: The State of California Native American Heritage Commission (NAHC) was contacted as part of the development process of this Environmental Impact Statement (EIS), with a request for a query of the Sacred Lands File and a list of Native American contacts (see Appendix H). The NAHC indicated that a records search of the Sacred Lands File revealed that no Native American Cultural Resources have been recorded within the Direct or Indirect APEs. Additional research on the California Office of Historic Preservation database of historic resources found no previously recorded historic, architectural, or archaeological sites within the Direct APE that are listed or eligible for listing on the California NRHP.[3]

In addition to the records searches, field surveys of the Direct APEs associated with the project were conducted in May 2008 and September 2009. No cultural materials were found during these surface surveys. Through each survey, there were no observed surficial prehistoric, ethnohistoric, or historic cultural resources. To determine if subsurface cultural materials were present, a limited number of shovel test probes (STPs) were excavated at various locations within the survey area. No subsurface cultural materials were observed within any of the STP locations (see Appendix H).

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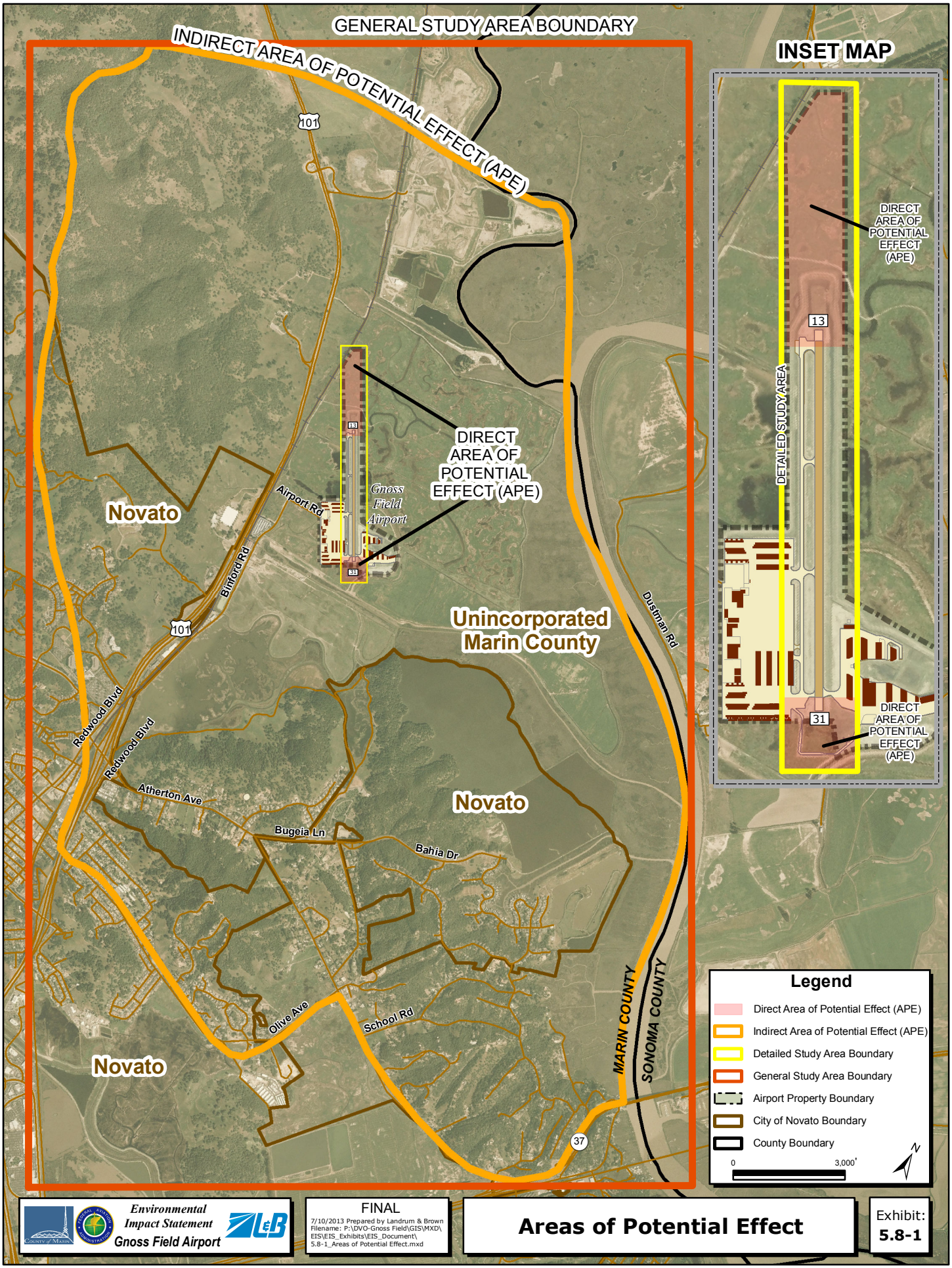
1 Email from Federal Aviation Administration, Doug Pomeroy to California Office of Historic Preservation, July 25, 2011.

2 Letter from California Office of Historic Preservation to Federal Aviation Administration, July 20, 2010 (see Appendix H for copy of letter).

3 California Office of Historic Preservation, On-line at: http://ohp.parks.ca.gov/ Retrieved October 20, 2011.



Environmental Impact Statement
Gnoss Field Airport

FINAL
7/10/2013 Prepared by Landrum & Brown
Filename: P:\DVO-Gnoss Field\GIS\MXD\EIS\EIS_Exhibits\EIS_Document\5.8-1_Areas of Potential Effect.mxd

Areas of Potential Effect

Exhibit: **5.8-1**

Indirect APE: The Indirect APE is shown in Exhibit 5.8-1. The California SHPO concurred with the Indirect APE on July 20, 2010 (see Appendix H *Cultural Resources*). The Olompali Burdell Ranch Complex, located in the Indirect APE, is eligible for listing on the NRHP. The site of The Oldest House North of San Francisco Bay, California Register of Historic Resources, California State Historic Landmark, Marin County, #210, is within the Indirect APE, but is not eligible for NRHP listing because the house was previously destroyed by fire[4] (See Exhibit 4-12, *Historic Resources within the Area of Potential Effect).*

Neither of these sites is exposed to noise levels at or above 65 Community Noise Equivalent Level (CNEL) under Existing Conditions (2008). See Exhibit 4-5, *Existing Conditions (2008) Community Noise Equivalent Level*, for a map showing the areas within the existing 65 CNEL noise contour.

The results of National Historic Preservation Act, Section 106, consultation with the California State Historic Preservation Officer are provided in Section 5.8.7.

5.8.4 FUTURE CONDITIONS: 2018

Alternative A:
No Action

Under 2018 Alternative A (No Action), no historic properties would be directly impacted because there would be no construction activities. None of the historic properties within the Indirect APE would be exposed to noise levels at or above 65 CNEL with implementation of Alternative A. Therefore, the FAA finds implementation of the Alternative A would have no effect on any historic property on or eligible for listing for the NRHP and would not result in a significant impact on any historic properties. See Exhibit 5.1-1 for a map depicting the 65 CNEL noise contour for 2018 Alternative A.

Alternative B:
Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)

There are no historic properties located within the Direct APEs. Therefore, the construction activity associated with Alternative B (Sponsor's Proposed Project) would not impact any historic properties. None of the historic properties within the Indirect APE would be exposed to noise levels at or above 65 CNEL. As a result, no historic property would be considered impacted by noise associated with Alternative B. Therefore the FAA finds the proposed undertaking, implementation of Alternative B, would not affect any historic properties listed or eligible for listing on the NRHP, and would not result in a significant impact on any historic properties. See Exhibit 5.1-2 for a map depicting the 65 CNEL noise contour for 2018 Alternative B. See Section 5.8.7 and Appendix H, *Cultural Resources*, for the results of the FAA's consultations under Section 106 of the NHRP.

[4] California State Historical Landmarks in Marin County, Retrieved October 15, 2011, on-line at: http://ceres.ca.gov/geo_area/counties/Marin/landmarks.html

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

There are no historic properties located within the Direct APEs. Therefore, the construction activity associated with Alternative D would not impact any historic property. None of the historic properties within the Indirect APE would be exposed to noise levels at or above 65 CNEL. As a result, none of these historic properties would be considered impacted by noise associated with Alternative D. Therefore, the FAA finds implementation of Alternative D would not affect any historic properties listed or eligible for listing on the NRHP, and would not result in a significant impact on any historic properties. See Exhibit 5.1-3 for a map depicting the 65 CNEL noise contour for 2018 Alternative D.

5.8.5 OTHER POTENTIAL IMPACTS

As described in other sections of this EIS, there would be no other environmental impacts that would affect the historic properties identified in the Indirect APE (which is contained within the GSA) for Alternatives A, B, or D. Due to the location of historic properties in relationship to the project area, there would be no other impacts to these properties related to water resources, wetlands, floodplains, or light emissions.

5.8.6 INADVERTENT DISCOVERIES OF HISTORIC PROPERTIES

Although no historic properties are known to occur in the Direct APE, the cultural resources report (Appendix H) identified that archaeological or other historic sites could potentially be discovered during construction of the proposed runway extension. As part of the environmental requirements for this project, the FAA would require Marin County have an archaeological site monitor present during the initial site excavation of the proposed runway extension. Marin County would be required to stop work and evaluate any archaeological or other historic site discovered during the excavation or subsequent construction of the proposed project.

In the event that additional archaeological artifacts are encountered during project construction, work in the area shall halt until a qualified archaeologist evaluates the nature and significance of the find. If the remains are deemed significant, the project, if necessary, shall be modified to allow the artifacts or features to remain in place, or the archaeological consultant shall undertake the recovery of the deposit or feature. The archaeologist shall prepare a summary outlining the methods followed and summarizing the results of the mitigation program. The report shall outline the methods followed, list and describe the resources recovered, map their exact locations and depths, and include other pertinent information. The Marin County shall submit the report to the Northwest Information Center and the California SHPO. If the suspected remains prove to be non-significant or non-cultural in origin, work would recommence immediately.

In the event that human skeletal remains are discovered at the site during construction, work shall be discontinued in the area of the discovery and the County Coroner shall be contacted. If skeletal remains are found to be prehistoric Native American remains, the Coroner shall call the NAHC within 24 hours. The NAHC would identify the person(s) it believes to be the "Most Likely Descendant" of the deceased Native American. The Most Likely Descendant would be responsible for recommending the disposition and treatment of the remains. The Most Likely Descendant may make recommendations to the landowner or the person responsible for the excavation/grading work for means of treating or disposing of the human remains and any associated grave goods as provided in California Public Resources Code Section 5097.98.

5.8.7 RESULTS OF NATIONAL HISTORIC PRESERVATION ACT, SECTION 106, CONSULTATION.

On June 23, 2011, the FAA submitted its determination of eligibility of historic properties for the NRHP within the Direct and Indirect APEs and its Findings of No Effect on any historic properties within the Direct and Indirect APEs for Alternative B to the California SHPO. The FAA's determination was that there were no historic properties on or eligible for the NRHP within the Direct APE. The FAA also found Alternative B would have no effect on the historic properties within the Indirect APE because none of those properties would be exposed to noise levels at or above 65 CNEL, or exposed to any other indirect impacts. As the California SHPO did not object to the FAA's finding within 30 days of receipt of an adequately documented finding, in accordance with 36 CFR § 800.4(d)(1)(i), the FAA's consultation responsibilities under Section 106 of the NHPA are complete. The FAA also confirmed with the California SHPO office by telephone call of September 26, 2011 that the NHPA Section 106 consultation process was complete (FAA letter of October 6, 2011 in Appendix H, *Cultural Resources*).

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5.9 FISH, WILDLIFE, AND PLANTS

This section discusses the presence of any species located on Gnoss Field Airport (DVO or Airport) listed as threatened or endangered pursuant to the *Endangered Species Act of 1973* (ESA), and describes the habitat necessary to support these species. "Threatened" means that surviving populations of the species are so small that the species could become extinct without protection, while "endangered" means that the entire species is in danger of extinction. In addition, other species that hold a special status either through other Federal laws or through State of California protection are assessed for potential impacts.

5.9.1 REGULATORY SETTING

5.9.1.1 Federal Laws and Policies

ENDANGERED SPECIES ACT OF 1973

The U.S. Congress passed the ESA in 1973 to protect those species that are endangered or threatened with extinction (Federally listed species). ESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

ESA prohibits the unauthorized "take" of endangered or threatened wildlife species. "Take" is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct (ESA Section 3 [(3)(19)]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (Title 50 Code of Federal Regulations (CFR) §17.3). Harassment is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR §17.3). Actions that result in an unauthorized take can result in civil or criminal penalties.

The Federal Aviation Administration (FAA) completed ESA, Section 7, interagency consultations with the U.S. Fish and Wildlife Service (USFWS) regarding endangered and threatened species that could be affected by the Proposed Project, and the results of these consultations are described in this section.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

In 1996, acknowledging the importance of fish habitat to the productivity and sustainability of marine fisheries, Congress added new habitat conservation provisions to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Federal law that governs U.S. marine fisheries management. The act mandates the identification of Essential Fish Habitat (EFH) for managed species, as well as measures to conserve and enhance the habitat necessary for fish to carry out their life cycles. Section 303(a)(7) of the

Magnuson-Stevens Act requires Regional Fishery Management Councils to be formed for purposes of describing and identifying EFH for each Federally managed species.

MIGRATORY BIRD TREATY ACT

The Federal Migratory Bird Treaty Act (MBTA), first enacted in 1916, prohibits any person, unless permitted by regulations, to: "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention for the protection of migratory birds...or any part, nest, or egg of any such bird." (16 USC 703).

The list of migratory birds includes nearly all bird species native to the U.S. The statute was extended in 1974 to include parts of birds, as well as eggs and nests. Thus, it is illegal under MBTA to directly kill, or destroy a migratory bird, or the active nest of a migratory bird without a permit. Activities that result in removal or destruction of an active nest (a nest with eggs or young being attended by one or more adults) would violate the MBTA. Removal of unoccupied nests, or bird mortality resulting indirectly from disturbance activities, is not considered a violation of the MBTA. The Migratory Bird Treaty Reform Act (MBTRA) of 2004 further defined species protected under the act and excluded all non-native species.

5.9.1.2 State of California Laws and Policies

CALIFORNIA ENDANGERED SPECIES ACT

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA is similar to ESA but pertains to state-listed endangered and threatened species. CESA requires state agencies to consult with the California Department of Fish and Game (CDFG)[1] when preparing environmental documents. The purpose is to ensure that the lead agency's actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of habitat essential to the continued existence of those species if there are reasonable and prudent alternatives available (Fish and Game Code §2080). CESA directs agencies to consult with CDFG on projects or actions that could affect listed species, directs CDFG to determine whether jeopardy would occur, and allows CDFG to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. CESA allows CDFG to authorize exceptions to the state's prohibition against take of a listed species if the "take" of a listed species is incidental to carrying out an otherwise lawful project that has been approved

[1] Renamed California Department of Fish and Wildlife January 1, 2013. In order to remain consistent with the Draft EIS and to reduce confusion, the Final EIS continues to use the previous name - California Department of Fish and Game.

(Fish & Game Code § 2081). The California Fish and Game Code also lists fully protected species. The California Fish and Game Code does not provide a method for the CDFG to authorize the "take" of individuals of any fully protected species.

CALIFORNIA FISH AND GAME CODE

Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Disturbance activities that result in abandonment of an active bird-of-prey nest in areas adjacent to the disturbance may also be considered a violation of the Fish and Game Code.

CALIFORNIA SPECIAL STATUS SPECIES

In addition to formal listing under ESA and CESA, species receive additional consideration by CDFG, USFWS and lead agencies during the environmental process. Species that may be considered for review are included on a list of "Species of Special Concern," developed by these resource agencies. This list tracks species in California whose numbers, reproductive success, or habitat may be in decline.

5.9.1.3 Marin County Laws and Policies

The Marin Countywide Plan provides guidance and recommendations regarding preservation and management of natural resources within the County. The City-Centered Corridor along Highway 101 and adjacent to the Bay is designated for concentrated urban development and for protection of designated environmental resources. Gnoss Field falls under this portion of the Countywide Plan.[2] Applicable executive summaries of the County guidelines to Gnoss Field are provided below. Additional detail is available in the Marin Countywide Plan including goals and objectives for preservation of specific biological resources within the County.

BAYFRONT CONSERVATION ZONE

The Bayfront Conservation Zone includes tidal marshes, seasonal marshes, lagoons, natural wetlands, and low-lying grasslands overlying historic marshlands. Three subzones exist within the Bayfront Conservation Zone: 1) the Tidelands Subzone, areas subject to tidal action; 2) the Diked Bay Marshlands and Agricultural Subzone, which includes DVO, are former marshlands which have been diked and often filled for agricultural and urban uses; and 3) the Shoreline Subzone, steep shoreline areas between roadways and Tidelands Subzones. The County has adopted a zoning overlay district in unincorporated bayfront areas, requiring environmental assessment of existing conditions within the Bayfront

[2] Marin County Community Development Agency, *Marin Countywide Plan*, , adopted November 6, 2007, Map 3-1a, Environmental Features Focusing Development within the City-Centered Corridor.

Conservation Zone prior to preparation of master plans and development plans. Policies in this Plan encourage land uses that enhance wildlife and aquatic habitat, such as agriculture, wastewater reclamation, restoration of lands to tidal status, and flood basin.

In the Diked Bay Subzone, land uses are encouraged which provide or protect wetlands and which do not require diking, filling, or dredging. Other uses may be allowed if they are consistent with zoning designations and impacts are minimized and mitigated. Uses must also conform to applicable Federal and state regulations. Restoration of bay marshlands offers significant potential for habitat value and would be encouraged whenever possible. Policies in this document preserve the dramatic viewsheds and coastal habitats in the Shoreline Subzone.

STREAM AND CREEKSIDE CONSERVATION AREAS

Policies in the Marin Countywide Plan establish buffer zones called Stream Conservation Areas (SCAs) for the protection of riparian systems, streams, and related habitats. SCAs exist along perennial and intermittent streams, as defined by solid and dashed blue lines on U.S. Geological Survey (USGS) quad maps. A SCA consists of a watercourse, surrounding banks, and a strip of land extending laterally from the top of both banks. Uses allowable in the SCA include: necessary water supply and flood control projects, improvements to fish and wildlife habitat, grazing, agriculture, maintenance of channels for erosion control, water monitoring installations, and trails. Prohibited uses include, but are not limited to: roads and utility lines (except at crossings), confinement of livestock, dumping, use of motorized vehicles, and new structures.

5.9.1.4 FAA Significance Criteria

FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures* provides guidance regarding FAA policies and procedures for achieving compliance with NEPA and regulations issued by the Council on Environmental Quality for all FAA-administered projects. The Order provides requirements the FAA must meet in respect to analyzing project-related impacts to fish, wildlife, and plant species under NEPA and determining whether project-related impacts are significant.

A significant impact to Federally-listed threatened and endangered species would occur when the USFWS or National Marine Fisheries Service determines that the proposed action would be likely to jeopardize the continued existence of the species in question, or would result in the destruction or adverse modification of Federally-designated critical habitat in the affected area. The involvement of Federally listed threatened or endangered species and the possibility of impacts as potentially serious as extinction or extirpation, or destruction or adverse modification of designated critical habitat, are factors weighing in favor of a finding of significance. However, an action need not involve a threat of extinction to Federally listed species to meet the NEPA standard of significance. Lesser impacts including impacts on non-listed species could also constitute a significant impact. In consultation with agencies and organizations having jurisdiction or special expertise concerning the protection and/or management of the affected species,

NEPA practitioners should consider factors affecting population dynamics and sustainability for the affected species such as reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), and the minimum population levels required for population maintenance.

5.9.2 EXISTING CONDITIONS

The Detailed Study Area (DSA) was evaluated for the potential for existence of Federal and State of California protected plant or animal species, and their respective habitats. This information is based upon the biological resources assessment for the DSA, which can be found in Appendix I, *Biological Resources.*[3]

5.9.2.1 Existing Habitat

Two major biological communities occur within the immediate vicinity of DVO including annual grassland and high brackish marsh. Annual grassland is the dominant upland plant community within the DSA and is characterized primarily by an assemblage of non-native grasses and forbs and typically supports breeding, foraging, and shelter habitat for several species of wildlife. High brackish marsh, a wetland community, is the major plant community within the DSA outside of the developed airfield. Lesser amounts of other wetland types are also present. High brackish marsh typically supports breeding and foraging habitat for a variety of wildlife. Each of the biological communities including associated common plant and wildlife species observed, or that are expected to occur within these communities are described in Chapter Four, *Affected Environment*. Locations of biotic communities and wildlife habitats within the DSA are shown in that chapter on Exhibit 4-14, *Vegetation and Wildlife Habitats*.

5.9.2.2 Federal Threatened and Endangered Species

A summary of the Federally threatened and endangered species that have the potential to be located in the DSA can be found in Chapter Four, *Affected Environment*. Consultation with the USFWS has resulted in identifying portions of the project site as potential habitat for the salt marsh harvest mouse (*Reithrodontomys raviventris*) and California clapper rail (*Rallus longirostris obsoletus*). The salt marsh harvest mouse (SMHM) is strongly associated with pickleweed-dominated salt and brackish water marshes of San Francisco, Suisun, and San Pablo Bay. California clapper rail (CCR) is also found in salt and brackish water marshes of San Francisco, San Pablo, and Suisun Bays, particularly in cordgrass habitats. In addition, while there is no freshwater breeding habitat for the California red-legged frog (*Rana aurora draytonii*) in the DSA, there is a low potential for it to be present onsite during the winter months as a result of dispersing from nearby areas.

[3] Foothill Associates, *Biological Resources Assessment, Marin County Airport*, 2011. See Appendix I.

By letter of March 5, 2010 the National Marine Fisheries Service concluded that the Sponsor's Proposed Project, and the alternative projects considered in detail in this EIS, do not have the potential to affect Federally-listed fish species or designated critical habitat for Federally-listed fish species under the cognizance of the Service (Appendix I).

By letter of November 16, 2011 (Appendix I) the FAA initiated ESA, Section 7 consultation with the USFWS for the Proposed Project (Alternative B) and submitted a Biological Assessment for the Proposed Project. The USFWS issued a non-jeopardy Biological Opinion for implementation of Alternative B on April 3, 2013 (Appendix I). The USFWS Biological Opinion requires implementation of the Reasonable and Prudent Measures and Terms and Conditions which are provided in Section 5.9.5.

5.9.2.3 Magnuson-Stevens Fishery Conservation and Management Act

The biological resources assessment conducted a survey and literature review to identify if any fish species are present within the DSA and concluded that none existed due to a lack of suitable habitat (see Appendix I). By letter of March 5, 2010, the National Marine Fisheries Service stated that no EFH occurred on Airport property.

The Pacific Coast Groundfish Fishery Management Plan (FMP) was approved by the U.S. Secretary of Commerce on January 4, 1982. In that plan the Petaluma River is designated as an EFH for Groundfish. The Petaluma River is located approximately 4,000 feet from the Airport and therefore outside of the DSA.

5.9.2.4 Migratory Bird Treaty Act

As discussed above, the list of migratory birds protected under the MBTA includes nearly all bird species native to the United States. Appendix I includes a list of bird species observed during field surveys of the DSA.

5.9.2.5 California Special Status Species of Concern

The biological resources assessment identified a number of California special status species within the DSA, including: salt marsh harvest mouse, California clapper rail[4], northern harrier (*Circus cyaneus);* San Pablo song sparrow (*Melospiza melodia samuelis);* western burrowing owl (*Athene cunicularia hypugaea);* white-tailed kite (*Elanus leucurus);* and other raptors (hawks, owls and vultures). In addition, there is low potential for the California red-legged frog (*Rana aurora draytonii*) to be present onsite during the winter months. Chapter Four, *Affected Environment*, discusses the presence of each species.

[4] The California clapper rail and salt marsh harvest mouse are fully protected species under Fish and Game Code Sections 3511 and 4700.

5.9.2.6 Other Plant Species of Concern

Through the tribal coordination process conducted for the proposed project, the FAA and Marin County held a meeting in December 2008 with representatives of the Federated Indians of Graton Rancheria (FIGR) (see Appendix H, *Cultural Resources*). At that meeting, FIGR representatives identified 42 native plant species that they consider to be to be sacred and culturally significant. Of the 42 plant species identified by the FIGR as sacred and culturally significant, one species, the Showy Indian Clover (*Trifolium amoenum*), is both a Federal and State of California threatened or endangered plant species. However, based on field observations and literature review specific to the special-status plant species, it was determined that the DSA does not contain suitable habitat for this species, and so this species would not be adversely affected by the implementation of any of the alternatives evaluated in detail in this EIS.[5] The remaining plant species identified by the FIGR as culturally important are not Federally-listed or State of California listed as threatened or endangered species, or as a State of California Species of Special Concern.

5.9.3 FUTURE CONDITIONS: 2018

The survey of Federal and State of California threatened and endangered species identified in Section 5.9.2, provides data against which to compare impacts between the future alternatives.

Alternative A:
<u>No Action</u>

Alternative A includes no new construction or changes in operating procedures. Therefore, implementation of Alternative A would have no impact on the environment. Alternative A would have no effect on any Federal or state threatened or endangered species, no effect on any biotic or critical habitat supporting a Federal or state endangered or threatened species, and would not result in the development, conversion, or removal of any existing habitat.

Alternative B:
<u>Extend Runway to the Northwest by 1,100 Feet (Sponsor's Proposed Project)</u>

FEDERAL THREATENED AND ENDANGERED SPECIES

The USFWS has concluded that the undeveloped areas within the project site are considered habitat for both the salt marsh harvest mouse (SMHM) and California clapper rail (CCR) (USFWS 2013). These areas consist primarily of high brackish marsh, other wetlands, annual grasslands, and open water ditch/channels. Therefore, implementation of this alternative would adversely affect the SMHM and the CCR due to the permanent removal of 6.88 acres of vegetation and 1.54 acres of open water ditch/channel, and temporary removal of 16.05 acres of vegetation

[5] Foothill Associates, *Biological Resources Assessment, Marin County Airport*, 2011. See Appendix I.

considered by the USFWS to be habitat for these species.[6] **Table 5.9-1** provides a summary of the permanent and temporary impacts for Alternative B. **Exhibit 5.9-1, *Permanent and Temporary Impact Areas – Alternative B***, depicts these impact areas. All of the permanent and temporary acreages in Table 5.9-1 and permanent and temporary impacts areas depicted in Exhibit 5-9.1 would be impacted.

Table 5.9-1
VEGETATION TYPES (PLANT AND WILDLIFE HABITAT) PLUS OPEN WATER HABITAT AND APPROXIMATE IMPACTS IN ACRES
Gnoss Field Airport

IMPACT AND HABITAT TYPE	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE D
Permanent Impact Area – High Brackish Marsh/Annual Grassland	0.00	6.88	8.24
Permanent Impact Area – Open Water Ditch/Channel	0.00	1.54[1]	1.62[2]
Temporary Impact Area	0.00	16.05	18.43
TOTAL	**0.00**	**24.47**	**28.29**

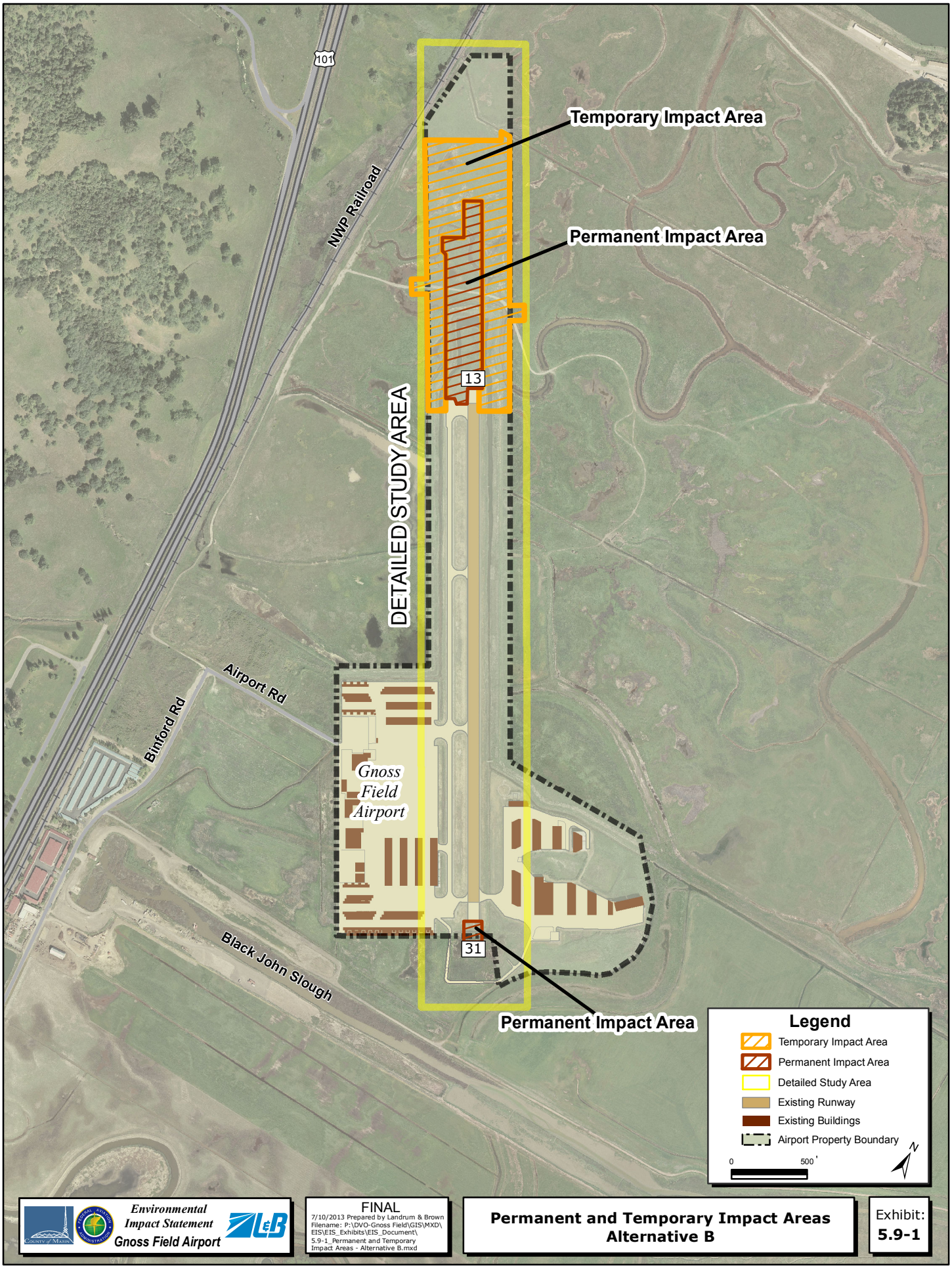
[1] 1.54 acres Open Water Ditch/Channel Impacted = 2.31 acres of Permanent Impacts to Open Water Ditch/Channel – 0.77 acres On-site Open Water Ditch/Channel restoration
[2] 1.62 acres Open Water Ditch/Channel Impacted = 2.31 acres of Permanent Impacts to Open Water Ditch/Channel – 0.69 acres On-site Open Water Ditch/Channel restoration

Source: Foothill Associates and Landrum and Brown, 2011

Based on the ESA Section 7 consultation with the USFWS, this EIS considers the upland and wetland habitat being disturbed by the project to be habitat for the SMHM, and the upland, wetland, and open water ditch/channel habitat to be habitat for the CCR, even though some of the upland annual grassland habitat is of limited value to these species. Therefore, when these habitat areas of limited value are temporarily disturbed, and then revegetated, they are still considered threatened and endangered species habitat.

However, as discussed in Section 5.10, *Wetlands* for purposes of determining wetland impacts to these same areas, the wetland losses are considered to be permanent losses. This difference in impact calculation occurs because it is assumed that the temporary impact areas would be re-vegetated in a way that would continue to provide upland habitat for endangered and threatened species, even though some of these areas that are being converted from high brackish marsh to upland annual grassland would no longer meet the definition of wetland habitat. Therefore, the discussion of wetland impacts in Section 5.10, *Wetlands*

[6] Permanent impacts consist of areas that would be converted to pavement or other non-vegetated land. Temporary impacts consist of areas where vegetation would be removed during construction but would be revegetated through seeding and natural processes after construction.



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Gnoss Field Airport

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7/10/2013 Prepared by Landrum & Brown
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Permanent and Temporary Impact Areas
Alternative B

Exhibit:
5.9-1

and the acres of wetland impacts shown in Table 5.10-1 do not match the acres of habitat impacts shown in Table 5.9-1 for endangered and threatened species. This applies to Alternatives B and D. See Section 5.10, *Wetlands* for additional discussion about the wetland impacts and potential mitigation. More detail about the permanent and temporary impacts for Alternative B is provided below.

Salt Marsh Harvest Mouse

Permanent and Temporary Habitat Impacts

Alternative B would permanently remove 6.88 acres of SMHM habitat, which would be converted to pavement and other areas maintained for Airport uses. Within this area, there are wetlands and aquatic areas containing pickleweed, as well as adjacent upland annual grassland areas. This would be an adverse effect on the SMHM and in the absence of compensatory mitigation, the permanent loss of 6.88 acres of SMHM habitat, including annual grassland and wetlands, would be a significant impact. However as described in Section 5.9.4, compensatory habitat mitigation for this significant impact would reduce it to a not significant level.

An additional 16.05 acres of SMHM habitat would be temporarily impacted (up to two years) during which construction activities (construction staging, material and equipment storage, and haul routes) would remove the vegetation. Similar to the area where permanent impacts would occur, this area contains wetlands as well as adjacent upland annual grassland areas. This would be an adverse effect on the SMHM and in the absence of compensatory mitigation, the temporary loss of 16.05 acres of SMHM habitat would be a significant impact. Within this area, it is anticipated that vegetation would be removed and wetland areas would be filled due to the construction activities. Upon completion of the construction and removal of exclusion fencing, the temporarily impacted areas would be allowed to re-vegetate and would again be suitable habitat for the SMHM. The USFWS Biological Opinion requires compensatory habitat mitigation for this temporary habitat impact. With implementation of the protective and habitat compensation measures described in Section 5.9.4 and Section 5.9.5, these temporary impacts on the SMHM as a result of implementation of Alternative B would not be significant. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

Individual SMHM may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace SMHM as they move farther from these activities to avoid disturbance. The level of harassment of individual SMHM may vary depending on the type of equipment being used; different pieces of equipment have different noise levels and, thus, cause more or less disturbance. Noise and vibrations may result in displacement of SMHM from protective cover and their territories. These disturbances are likely to disrupt normal behavior patterns of breeding, foraging, sheltering, and dispersal. Displaced SMHM may have to compete for resources with other SMHM if they move

to adjacent occupied habitat, and may be more vulnerable to predators. Disturbance to female SMHM from March to November may cause abandonment or failure of the current litter. Thus, displaced SMHM may suffer from increased predation, competition, mortality, and reduced reproductive success during the construction period.

Construction activities could attract predators of the SMHM to the area if trash and food waste are left on the ground. Also SMHM may also become more susceptible to predation due to the temporary loss of cover.

Individual SMHM could be injured or killed during the operation of heavy equipment within the salt marsh. SMHM and their young could be injured or killed if motorized equipment is used to remove the marsh vegetation. Although adult SMHM may be able to escape injury if the mice are flushed out of the vegetation prior to removal, less mobile SMHM (e.g., young SMHM before they have been weaned) would not be able to escape injury and may be killed if a nest were crushed by vegetation removal activities conducted during the SMHM's breeding season (March 1 through November 30).

The use of nighttime lighting during nighttime work could result in the disturbance of SMHM activities by disrupting activity cycles and the internal circadian system. Disruption of the circadian clock from artificial night lighting can result in changes to foraging efficiency, risk of predation, and parental care, which could have adverse effects on the SMHM. These individuals would be out of sync with their neighbors living in a natural light-dark cycle and it could affect mating success. Artificial night lighting has been shown to affect nocturnal rodents. Several species of small rodents harvested an average of 21 percent less seed in response to a single fluorescent or gasoline camping lantern. Although small mammals can respond to bright moonlight by shifting foraging activities to darker conditions, this is not an option for animals subjected to artificially increased illumination throughout the night. Unless they leave the area, they are either at greater risk of predation from foraging in the lighted area, or reduce their food consumption to avoid increase predation risk.[7]

High brackish marsh and annual grassland habitat within the area could become degraded if construction activities result in a spill of fuel or other hazardous materials or an increase in sedimentation in the marsh.

These construction impacts could result in an adverse impact on the SMHM and therefore could result in a significant impact on the SMHM. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4 and Section 5.9.5, the impacts to the SMHM would be reduced to a not significant level.

[7] Rich, C. and T. Longcore, *Ecological Consequences of Artificial Night Lighting*, 2006. Island Press, Washington, D.C.

California Clapper Rail

Permanent and Temporary Habitat Impacts

Alternative B would permanently remove 6.88 acres of marginal foraging and dispersal CCR habitat and result in a net loss of 1.54 acres of open water ditch/channel foraging habitat, which would be converted to pavement and other areas maintained for Airport uses. Within this area there are wetlands, as well as adjacent upland grassland areas. This would be an adverse effect on the CCR and in the absence of mitigation, the permanent loss of 6.88 acres of high brackish marsh/annual grassland habitat and 1.54 acres of open water ditch/channel would be a significant impact. However, as described in Section 5.9.4 and Section 5.9.5, compensatory habitat mitigation for this impact would reduce this impact to a not significant level.

An additional 16.05 acres of CCR habitat would be temporarily impacted (up to two years) during which construction activities would remove the vegetation. This would be an adverse effect on the CCR and in the absence of compensatory mitigation, the temporary loss of 16.05 acres of CCR habitat would be a significant impact. Similar to the area where permanent impacts would occur, this area contains wetlands, open water ditch/channel, as well as adjacent upland annual grassland areas. Upon completion of the construction and removal of exclusion fencing, the temporarily impacted areas would be allowed to re-vegetate and would again be suitable habitat for the CCR.

The USFWS Biological Opinion requires compensatory habitat mitigation for this temporary habitat impact. These impacts could result in a significant impact to the CCR. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4 and Section 5.9.5, these temporary impacts on the CCR as a result of implementation of Alternative B would not be significant. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

Individual CCRs may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace CCRs as they move farther from these activities to avoid disturbance. The level of harassment of individual CCRs may vary depending on the type of equipment being used; different pieces of equipment have different noise levels and, thus, cause more or less disturbance. Noise and vibrations may result in displacement of CCRs from protective cover and their territories. These disturbances are likely to disrupt normal behavior patterns. Displaced CCRs may have to compete for resources in occupied habitat, and may be more vulnerable to predators. No nesting CCRs will be disturbed by the implementation of Alternative B because the area does not contain suitable breeding habitat for the CCR.

Construction activities could attract predators of the CCRs to the area if trash and food waste are left on the ground. Also CCRs may also become more susceptible to predation due to the temporary loss of cover.

The use of nighttime lighting during nighttime work could result in the disturbance of CCR activities by disrupting activity cycles and the internal circadian system. Disruption of the circadian clock from artificial night lighting can result in changes to foraging efficiency and risk of predation, which could have adverse effects on the CCR.

High brackish marsh and annual grassland habitat within the area could become degraded if construction activities result in a spill of fuel or other hazardous materials or an increase in sedimentation in the marsh.

These construction impacts could result in an adverse impact on the CCR and therefore could result in a significant impact on the CCR. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4 and Section 5.9.5, the impacts to the CCR during construction would be reduced to a not significant level.

Table 5.9-2 provides acreage of habitat disturbed and the acreage of habitat compensation required by the USFWS Biological Opinion for impacts to SMHM and the CCR habitat resulting from implementation of Alternative B. A range of acreage for the off-site habitat compensation is shown in Table 5.9-2 because the USFWS Biological Opinion requires higher habitat compensation for temporary habitat impacts that last 1 to 2 years as compared to temporary habitat impacts that last less than 1 year. These differences in habitat compensation requirements are discussed in detail in Section 5.9.4 and Appendix I.

Table 5.9-2
ALTERNATIVE B ACRES OF SALT MARSH HARVEST MOUSE AND CALIFORNIA CLAPPER RAIL HABITAT DISTURBED AND RESTORED/COMPENSATED
Gnoss Field Airport

HABITAT TYPE	PERMANENT IMPACTS[1] (ACRES)	TEMPORARY IMPACTS[2] (ACRES)	ON-SITE RESTORATION[3] (ACRES)	OFF-SITE RESTORATION/ COMPENSATION[4] (ACRES)
High Brackish Marsh/ Annual Grassland	6.88	16.05	16.05	38.3-52.7
Open Water Ditch/ Channel[5]	2.31	0.00	0.77	4.6

1 Permanent Impacts = effects to habitat lasting for more than 2 years.
2 Temporary Impacts = includes short-term temporary effects (lasting for less than 1 year) and long-term temporary effects (lasting for more than 1 year but less than 2 years).
3 The Proposed Project will result in a net loss of 1.54 acres of open water ditch/channel habitat.
4 The total amount of off-site restoration depends on how quickly the areas of high brackish marsh/annual grassland habitat are restored on-site. See Appendix I, Table I-2 and Table I-3 for details of calculations.
5 The open water ditch/channel habitat is considered habitat for the California clapper rail, but not the salt marsh harvest mouse (USFWS Biological Opinion April 3, 2013).

California Red-Legged Frog

There are no localized occurrences of the California Red-legged frog documented west of the Petaluma River. However, it was determined by the USFWS that there is low potential for the frog to be present onsite during the winter months as a result of dispersing from adjacent localized freshwater habitat areas. If the species migrates into the site outside of the winter months (i.e., during the region's dry period), it is not anticipated to survive. Therefore, construction of Alternative B would not be likely to adversely affect the California Red-legged frog. The USFWS concurred with this determination in their Biological Opinion issued on April 3, 2013. The environmental impact of Alternative B on the California Red-legged Frog is not significant.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Since the designated EFH for Groundfish is well outside of the DSA and the area of development, Alternative B would not affect EFH. Additionally, since Alternative B would not exceed water quality standards or create water quality problems that cannot be eliminated or mitigated, there would be no physical, chemical, or biological alterations of the waters (see Section 5.6, *Water Quality*). Therefore, Alternative B would not have a significant impact on fish species and would have no effect on EFH.

MIGRATORY BIRD TREATY ACT

The MBTA prohibits the destruction of active bird nests with eggs or young birds, or the killing of adult birds without a permit. Under Alternative B, if initial clearing and grubbing of the construction area occurs during the nesting season for migratory birds (February 1 to August 31), a preconstruction survey for active bird nests would be necessary to determine if migratory bird nests were present. If active bird nests were present, initial clearing and grubbing of the site would need to be delayed until the nests were vacated or a MBTA permit authorization was obtained to remove any active nests. Once the initial clearing and grubbing of the project area has occurred, the area would no longer be suitable for migratory bird nesting activity due to the lack of vegetation. Potential impacts to burrowing owls are described in the next section.

Alternative B would remove annual grassland and wetland habitat that could serve as nesting areas for birds protected by the MBTA. The annual grassland habitat eliminated under Alternative B is a common habitat in the area. Substantial amounts of annual grassland would remain available after completion of Alternative B. Compensatory habitat mitigation for losses of annual grassland, wetland habitat, and open water ditch/channel habitat for endangered species associated with implementation of Alternative B would be completed to meet ESA, NEPA and Clean Water Act requirements as discussed in Section 5.10, *Wetlands*. Implementation of the compensatory habitat mitigation requirements to compensate for endangered species habitat losses would also compensate for the loss of migratory bird habitat. Therefore, the impact of Alternative B on migratory birds would not be significant.

CALIFORNIA SPECIAL STATUS SPECIES

California Special Status Species potentially affected by the Sponsor's Proposed Project include the Western Burrowing Owl, Northern Harrier, San Pablo Song Sparrow, American kestrel, Red-Tailed Hawk, and White-Tailed Kite.

Burrowing owls were observed during the site survey on the levees surrounding the runway. Potential impacts would be associated with loss of burrows and/or foraging habitat. However, the area surrounding the Airport and the DSA includes habitat similar to the habitat that would be removed due to Alternative B. Proven methods for relocating western burrowing owls exist that minimize long-term impacts to individuals and communities of owls. A pre-construction survey would be conducted prior to construction to verify the presence of any western burrowing owls within the area of construction. If any active owl burrows are located during the survey, a 250-foot buffer zone would be established around each burrow until the young have fledged and are able to exit the burrow. If the burrows are occupied without active nesting, passive relocation of the birds would be performed. Passive relocation is performed by installing a one-way door at the burrow entrance which encourages the owls to move from the burrow. The CDFG would be consulted prior to relocation to ensure compliance with current guidelines and methods.

Several other species of birds and raptors forage and may nest on or immediately adjacent to the DSA. A northern harrier, an American kestrel, a red-tailed hawk, a San Pablo Song sparrow, and a white-tailed kite were observed foraging within the DSA during site surveys. There are some suitable nesting sites within the airfield and in scattered locations of the DSA. Active raptor nests are protected by the California Fish and Game code Section 3503.5 and the MBTA. Therefore, if vegetation removal occurs during the typical nesting season (February 1 to August 31), these special status species could be adversely impacted. However, the area surrounding the Airport and the DSA includes habitat similar to the habitat that would be removed due to Alternative B and if vegetation removal occurs during non-nesting seasons (September 1 to January 31) then no impacts are anticipated. Under Alternative B, if initial clearing and grubbing of the construction area occurs during the nesting season for raptors (February 1 to August 31), a preconstruction survey for active bird nests would be necessary to determine if nests were present. If active bird nests were present, initial clearing and grubbing of the site would need to be delayed until the nests were vacated or a MBTA permit authorization, and any necessary California Fish and Game Code authorization were obtained to remove any active nests. Therefore, with implementation of the avoidance and minimization measures described here, the impact of Alternative B on California special status species would not be significant.

OTHER PLANT SPECIES OF CONCERN

Of the 42 native plant species identified by the FIGR as sacred and culturally significant, one species, the Showy Indian Clover (*Trifolium amoenum*), is both a Federal and State of California threatened or endangered plant species. However, based on field observations and literature review specific to the special-status plant species, it was determined that the DSA does not contain suitable habitat for this species. As the plant species of concern to the FIGR are native plant species, they would be more likely to occur in the brackish marsh, as opposed to upland annual grassland dominated by non-native species.

As shown in Table 5.9-2, Section 5.9.4 and Section 5.10 implementation of Alternative B will require habitat compensation for losses of endangered species and wetland habitat. While no habitat compensation is specifically required for native plant species that are not Federally-listed or State of California listed as threatened or endangered species, or State of California Species of Special Concern, the habitat compensation required for environmental impacts to endangered species habitat and wetland habitat will provide replacement habitat suitable for colonization by native plant species including those identified by FIGR. As a result, the environmental impact of implementation of Alternative B on plant species of cultural significance to the FIGR is not significant.

Alternative D:
Extend Runway to the Southeast by 240 Feet and to the Northwest by 860 Feet

The USFWS has concluded that the undeveloped areas within the project site are considered habitat for both the SMHM and CCR (USFWS 2013). These areas consist primarily of high brackish marsh, other wetlands, upland annual grasslands, and open water ditch/channels. This alternative would adversely affect the SMHM and the CCR due to the permanent removal of 8.24 acres of vegetation and 1.62 acres of open water ditch/channel, and temporary removal of 18.43 acres of vegetation considered by the USFWS to be habitat for these species. More detail about the permanent and temporary impacts for this alternative is provided below.

Salt Marsh Harvest Mouse

Permanent and Temporary Impacts

Alternative D would permanently remove 8.24 acres of SMHM habitat, which would be converted to pavement and other areas maintained for Airport uses. Within this area, there are wetlands and aquatic areas containing pickleweed, as well as adjacent upland annual grassland areas. This would be an adverse effect on the SMHM and in the absence of mitigation, the permanent loss of 8.24 acres of SMHM habitat, including wetlands, would be considered a significant impact. Providing endangered species habitat compensation at the same ratios as the USFWS identified as acceptable in its Biological Opinion for implementation of Alternative B would reduce this impact to a not significant level. These measures are described in more detail in Section 5.9.4 and Section 5.9.5.

An additional 18.43 acres of SMHM habitat would be temporarily impacted (up to two years) during which construction activities (construction staging, material and equipment storage, and haul routes) would remove the vegetation. Similar to the area where permanent impacts would occur, this area contains wetlands, as well as adjacent upland annual grassland areas. This would be an adverse effect on the SMHM and in the absence of compensatory mitigation, the temporary loss of 18.43 acres of SMHM habitat would be a significant impact. Within this area, it is anticipated that vegetation would be removed and wetland areas would be filled due to the construction activities. Upon completion of the construction and removal of exclusion fencing, the temporarily impacted areas would be allowed to re-vegetate and would again be suitable habitat for the SMHM.

Providing endangered species habitat compensation at the same ratios as required by the USFWS Biological Opinion for the Proposed Project (Alternative B), and implementing the same protective measures as the USFWS required for implementation of the Proposed Project, would reduce these temporary impacts to a not significant level. These habitat compensation and protective measures are described in Section 5.9.4 and Section 5.9.5. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

Individual SMHM may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace SMHM as they move farther from these activities to avoid disturbance. The level of harassment of individual SMHM may vary depending on the type of equipment being used; different pieces of equipment have different noise levels and, thus, cause more or less disturbance. Noise and vibrations may result in displacement of SMHM from protective cover and their territories. These disturbances are likely to disrupt normal behavior patterns of breeding, foraging, sheltering, and dispersal. Displaced SMHM may have to compete for resources in occupied habitat, and may be more vulnerable to predators. Disturbance to female SMHM from March to November may cause abandonment or failure of the current litter. Thus, displaced SMHM may suffer from increased predation, competition, mortality, and reduced reproductive success during the construction period.

Construction activities could attract predators of the SMHM to the area if trash and food waste are left on the ground. Also SMHM may also become more susceptible to predation due to the temporary loss of cover.

Individual SMHM could be injured or killed during the operation of heavy equipment within the salt marsh. SMHM and their young could be injured or killed of motorized equipment is used to remove the marsh vegetation. Although adult SMHM may be able to escape injury if the mice are flushed out of the vegetation prior to removal, less mobile SMHM (e.g., young SMHM before they have been weaned) would not be able to escape injury and may be killed if a nest were crushed by vegetation removal activities conducted during the SMHM's breeding season (March 1 through November 30).

The use of nighttime lighting during nighttime work could result in the disturbance of SMHM activities by disrupting activity cycles and the internal circadian system. Disruption of the circadian clock from artificial night lighting can result in changes to foraging efficiency, risk of predation, and parental care, which could have adverse effects on the SMHM. These individuals would be out of sync with their neighbors living in a natural light-dark cycle and it could affect mating success. Artificial night lighting has been shown to affect nocturnal rodents. Several species of small rodents harvested an average of 21 percent less seed in response to a single fluorescent or gasoline camping lantern. Although small mammals can respond to bright moonlight by shifting foraging activities to darker conditions, this is not an option for animals subjected to artificially increased illumination throughout the night. Unless they leave the area, they are either at greater risk of predation from foraging in the lighted area, or reduce their food consumption to avoid increase predation risk.[8]

[8] Rich, C. and T. Longcore, *Ecological Consequences of Artificial Night Lighting*, 2006. Island Press, Washington, D.C.

High brackish marsh and annual grassland habitat within the area could become degraded if construction activities result in a spill of fuel or other hazardous materials or an increase in sedimentation in the marsh.

These construction impacts could result in an adverse impact on the SMHM and therefore could result in a significant impact on the SMHM. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4, the impacts to the SMHM during construction would be reduced to a not significant level.

California Clapper Rail

Permanent and Temporary Impacts

Alternative D would permanently remove 8.24 acres of marginal foraging and dispersal CCR habitat and 1.62 acres of open water ditch/channel foraging habitat, which would be converted to pavement and other areas maintained for Airport uses. Within this area there are wetlands, as well as adjacent upland grassland areas. This would be an adverse effect on the CCR and in the absence of mitigation, the permanent loss of 8.24 acres of habitat, including wetlands, and 1.62 acres of open water ditch/channel would be considered a significant impact.

Providing endangered species habitat compensation at the same ratios as required by the USFWS Biological Opinion for the Proposed Project (Alternative B), and implementing the same protective measures as the USFWS required for implementation of the Proposed Project, would reduce these temporary impacts to a not significant level. These habitat compensation and protective measures are described in Section 5.9.4 and Section 5.9.5. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

An additional 18.43 acres of CCR habitat would be temporarily impacted (up to two years) during which construction activities would remove the vegetation. Similar to the area where permanent impacts would occur, this area contains wetlands, open water ditch/channel, as well as adjacent upland annual grassland areas. This would be an adverse effect on the CCR and in the absence of compensatory mitigation, the temporary loss of 18.43 acres of CCR habitat would be a significant impact.

Upon completion of the construction and removal of exclusion fencing, the temporarily impacted areas would be allowed to re-vegetate and would return to the same quality of CCR habitat as before the temporary disturbance. Providing endangered species habitat compensation at the same ratios as required by the USFWS Biological Opinion for the Proposed Project (Alternative B), and implementing the same protective measures as the USFWS required for implementation of the Proposed Project, would reduce these temporary impacts to a not significant level. These habitat compensation and protective measures are described in Section 5.9.4 and Section 5.9.5. See Section 5.10, *Wetlands* for additional discussion about wetland impacts and potential mitigation.

Construction Impacts

Individual CCRs may be harassed by noise and vibrations associated with construction activities and the operation of heavy equipment within and adjacent to the salt marsh. The most likely effect would be to displace CCRs as they move farther from these activities to avoid disturbance. The level of harassment of individual CCRs may vary depending on the type of equipment being used; different pieces of equipment have different noise levels and, thus, cause more or less disturbance. Noise and vibrations may result in displacement of CCRs from protective cover and their territories. These disturbances are likely to disrupt normal behavior patterns. Displaced CCRs may have to compete for resources in occupied habitat, and may be more vulnerable to predators. No nesting CCRs will be disturbed by the implementation of Alternative D because the areas does not contain suitable breeding habitat for the CCR.

Construction activities could attract predators of the CCRs to the area if trash and food waste are left on the ground. Also CCRs may also become more susceptible to predation due to the temporary loss of cover. The use of nighttime lighting during nighttime work could result in the disturbance of CCR activities by disrupting activity cycles and the internal circadian system. Disruption of the circadian clock from artificial night lighting can result in changes to foraging efficiency, and risk of predation, which could have adverse effects on the CCR. These individuals would be out of sync with their neighbors living in a natural light-dark cycle.

High brackish marsh and annual grassland habitat within the area could become degraded if construction activities result in a spill of fuel or other hazardous materials or an increase in sedimentation in the marsh.

These construction impacts could result in an adverse impact on the CCR and therefore could result in a significant impact on the CCR. However, with implementation of the protective and habitat compensation measures described in Section 5.9.4 and 5.9.5, the impacts to the CCR during construction would be reduced to a not significant level.

Table 5.9-1 provides a summary of the permanent and temporary impacts for Alternative D. **Exhibit 5.9-2, *Permanent and Temporary Impact Areas – Alternative D***, depicts these impact areas. All of the permanent and temporary acreages in Table 5.9-1 and permanent and temporary impacts areas depicted in Exhibit 5-9.2 would be impacted.

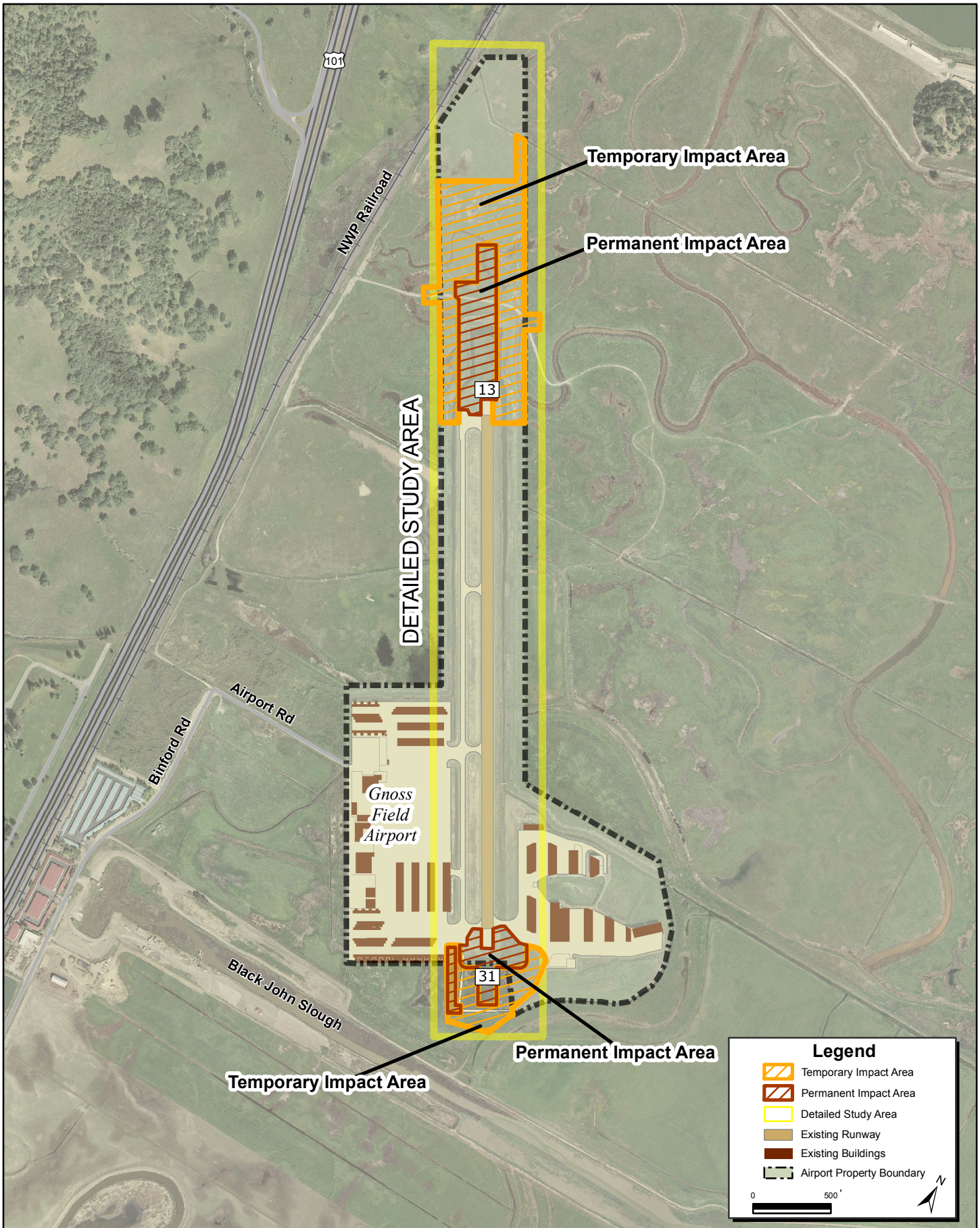
Table 5.9-3 provides acreage of habitat disturbed and the acreage habitat compensation required for the SMHM and the CCR with the implementation of Alternative D. Table 5.9-3 uses the same habitat compensation ratios identified by the USFWS in the Biological Opinion for the Proposed Project (Alternative B) issued April 3, 2013. The USFWS only issues a Biological Opinion for a specific Proposed Project. If the FAA chooses Alternative D instead of Alternative B, the ESA, Section 7, consultation with the USFWS would need to be reinitiated to confirm the habitat compensation ratios approved by the USFWS for Alternative B are considered appropriate by the USFWS for impacts associated with implementation of Alternative D.

A range of acreage for the off-site habitat compensation is shown in Table 5.9-3 because the USFWS Biological Opinion requires higher habitat compensation for temporary habitat impacts that last one to two years as compared to temporary habitat impacts that last less than one year. These differences in habitat compensation requirements are discussed in detail in Section 5.9.4 and Appendix I.

Table 5.9-3
ALTERNATIVE D ACRES OF SALT MARSH HARVEST MOUSE AND CALIFORNIA CLAPPER RAIL HABITAT DISTURBED AND RESTORED/COMPENSATED
Gnoss Field Airport

HABITAT TYPE	PERMANENT IMPACTS[1] (ACRES)	TEMPORARY IMPACTS[2] (ACRES)	ON-SITE RESTORATION[3] (ACRES)	OFF-SITE RESTORATION/ COMPENSATION[4] (ACRES)
High Brackish Marsh/ Annual Grassland	8.24	18.43	18.43	45.0-61.6
Open Water Ditch/ Channel[5]	2.31	0.00	0.69	4.9

1 Permanent Impacts = effects to habitat lasting for more than 2 years.
2 Temporary Impacts = includes short-term temporary effects (lasting for less than 1 year) and long-term temporary effects (lasting for more than 1 year but less than 2 years).
3 The Proposed Project will result in a net loss of 1.62 acres of open water ditch/channel habitat.
4 The total amount of off-site restoration depends on how quickly the areas of high brackish marsh/annual grassland habitat are restored on-site. See Appendix I, Table I-4 and Table I-5 for details of calculations.
5 The open water ditch/channel habitat is considered habitat for the California clapper rail, but not the salt marsh harvest mouse (USFWS Biological Opinion April 3, 2013).



Environmental Impact Statement
Gnoss Field Airport

FINAL
7/10/2013 Prepared by Landrum & Brown
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Permanent and Temporary Impact Areas
Alternative D

Exhibit:
5.9-2

California Red-Legged Frog

There are no localized occurrences of the California Red-legged frog documented west of the Petaluma River. However, it was determined by the USFWS that there is low potential for the frog to be present onsite during the winter months as a result of dispersing from adjacent localized freshwater habitat areas. If the species migrates into the site outside of the winter months (i.e., during the region's dry period), it is not anticipated to survive. Therefore, construction of Alternative D would not be likely to adversely affect the California Red-legged frog.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

As with Alternative B, Alternative D would have no effect on protected fish species or EFH and therefore would not have a significant impact on the environment.

MIGRATORY BIRD TREATY ACT

As with Alternative B, the impact of Alternative D on migratory birds would not be significant.

CALIFORNIA SPECIAL STATUS SPECIES

As with Alternative B, the impact of Alternative D on California special status would not be significant.

OTHER PLANT SPECIES OF CONCERN

As with Alternative B, the impact of Alternative D on plant species of cultural significance to the FIGR is not significant

5.9.4 PROTECTIVE AND HABITAT COMPENSATION MEASURES

The following provides an overview of protective and habitat compensation measures for impacts to Federally threatened and endangered species, as well as protective measures to avoid or minimize potential impacts to special status species that would be implemented under either Alternative B or Alternative D. Habitat compensation for the SMHM would occur in tandem with habitat compensation for the CCR, as they are both associated with the tidal salt marsh habitat. Creating functioning habitat for these species in a suitable location approved by the USFWS would contribute to the long term survival needs of these species.

The USFWS only issues a Biological Opinion for a specific project description (in this case Alternative B). If the FAA chooses Alternative D instead of Alternative B, the ESA, Section 7, consultation would need to be reinitiated to confirm the habitat compensation ratios proposed for Alternative B, were still considered acceptable to the USFWS for Alternative D. Therefore, when determining habitat compensation acreages for this EIS, it was assumed the compensation ratios from the Biological Opinion provided for Alternative B would apply to Alternative D.

As habitat compensation for both the CCR and SMHM requires off-site habitat compensation, and these species prefer tidal salt marsh, it is likely that Marin County will choose to coordinate endangered species habitat compensation requirements identified in the USFWS Biological Opinion with the wetland mitigation requirements that will be finalized in the Clean Water Act, Section 404 permit for the runway extension project. Such an approach is specifically allowed under the USACOE compensatory mitigation regulations at Title 33 CFR § 332. In general, replacing the high brackish marsh and annual grassland to be temporarily or permanently removed as a result of the DVO runway extension project at a compensatory mitigation site considered suitable for restoration to tidal salt marsh in the USFWS *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (USFWS *Draft Recovery Plan*) (USFWS 2010a) would result in the establishment or enhancement of tidal salt marsh habitat that would provide greater wetland functions, and improved habitat for the CCR and SMHM, as compared to the wetlands and other habitat being removed by Alternative B or Alternative D.

As discussed in more detail in Section 5.10, the habitat compensation requirements identified in the USFWS Biological Opinion are sufficient to also address the impacts to wetlands and aquatic resources resulting from implementation of Alternative B or Alternative D.

SALT MARSH HARVEST MOUSE

Habitat Compensation Measures

The USFWS Biological Opinion requires on-site habitat restoration for short-term temporary impacts and long-term temporary impacts to SHMH habitat. The USFWS Biological Opinion also requires off-site habitat compensation for short-term temporary impacts, long-term temporary impacts, and permanent impacts to SHMH habitat. The Biological Opinion requires that Marin County develop a habitat compensation plan for USFWS approval using all the following compensation ratios:

- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for short-term temporary SMHM habitat impacts (lasting for less than one year);
- 1.1:1 ratio (replaced:removed) off-site habitat replacement for short-term temporary SMHM habitat impacts (lasting for less than one year);
- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for long-term temporary SMHM habitat impacts (lasting for more than one year but less than two years);
- 2:1 ratio (replaced:removed) off-site habitat restoration or replacement for long-term temporary SMHM habitat impacts (lasting for more than one year but less than two years); and
- 3:1 ratio (replaced:removed) off-site habitat restoration or replacement for permanent SMHM habitat impacts (lasting for more than two years).[9]

[9] USFWS, *Biological Opinion*, April 3, 2013, page 6, Table 1.

Based on these ratios, the total amount of off-site endangered species habitat compensation would be between 42.9 acres and 57.3 acres for Alternative B[10] and between 49.9 acres and 66.5[11] acres for Alternative D. The exact amount of off-site habitat compensation will depend on what percentage of temporary habitat impacts last one year or less, requiring only 1.1:1 off-site compensatory habitat replacement, as opposed to temporary habitat impacts that last between 1 to 2 years, and require 2:1 off-site compensatory habitat replacement. The habitat compensation will provide breeding, feeding, or sheltering habitat commensurate with or better than the habitat lost as a result of the construction of the Sponsor's Proposed Project. This additional habitat will help maintain the geographic distribution of the species and will contribute to the recovery of the species.

Protective Measures

To minimize effects to the SMHM, areas of disturbance related to the project would be completely fenced off with SMHM exclusion fencing as necessary. Prior to installation, the USFWS would review and approve location and design specifications for proposed SMHM exclusion fencing. A USFWS-approved biologist would monitor installation of the SMHM exclusion fencing to ensure no SMHM are harmed during fence construction. A USFWS-approved biologist would inspect and approve fence installation methods and the finished installation.

The USFWS Biological Opinion requires that only non-motorized hand tools be used to remove vegetation during the SHMH breeding season from March 1 to November 30. Mechanical or motorized equipment may be used to remove vegetation from December 1 to February 28, outside of the SMHM breeding season. A USFWS-approved biologist would be onsite during initial ground disturbance and vegetation removal to monitor for SMHM. Installation of exclusion fencing would occur in progression with land clearing activities. Vegetation clearing would occur from south to north and exclusion fencing would remain open on the northern end of the temporary impact area to provide an "escape route" for SMHM during initial clearing and excavation.

Upon completion of vegetation removal in the impact area the SMHM exclusion fencing would be closed to preclude SMHM from potentially re-entering the temporary impact area. Upon completion of vegetation removal/ground clearing activities and installation of the SMHM exclusion fencing, the construction area would no longer be considered habitat for SMHM and the biological monitor would no longer be required onsite. The USFWS-approved biologist would train the construction crew on approved avoidance measures and on the life history of SMHM and train Marin County and/or construction contractor staff in appropriate monitoring techniques and methods for SMHM protection so that these individuals can conduct daily monitoring on their own for the duration of the project work. The USFWS-approved biologist would be available on an "on-call" basis for the

[10] See Table I-2 and Table I-3, in Appendix I for calculations of these acreage values.
[11] See Table I-4 and Table I-5, in Appendix I for calculations of these acreage values.

duration of the project. Upon completion of the Sponsor's Proposed Project and removal of the SMHM exclusion fencing the temporary impacted areas will be allowed to re-vegetate and will again be suitable habitat for the SMHM.

If a SMHM is observed on the project site, work would stop and the USFWS-approved biologist would be notified. If this species vacates the work area on its own volition, then work can proceed. If this species does not vacate the project site, then no work would be restarted until the USFWS has been notified and additional avoidance measures, if any, are discussed and implemented.

Incidental Take

The USFWS identified the measures described below and in Section 5.9.5 for the SMHM as nondiscretionary, and directed these measures must be implemented by FAA so that they become binding conditions of any grant or permit issued to Marin County, as appropriate, for the exemption from unauthorized take of listed species under ESA section 7(o)(2) to apply. The USFWS stated the FAA has a continuing duty to regulate the activity that is covered by the incidental take statement. If FAA (1) fails to require Marin County or any of its contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of ESA section 7(o)(2) may lapse.

The Biological Opinion requires the FAA ensure that Marin County implement Conservation Measures 1, 2, 3, 4, and 5 identified and described in detail in the Description of the Proposed Project in the Biological Opinion and summarized here as follows:

- Conservation Measure 1: Construction Stormwater Pollution Plan: The proposed project will be designed to minimize off-site stormwater runoff that might otherwise impact surrounding habitat and water quality.
- Conservation Measure 2: Hand Removal of Vegetation and Installation of Temporary Exclusion Fencing: To minimize effects to the salt marsh harvest mouse the perimeter of the construction area will be fenced to exclude the salt marsh harvest mouse.
- Conservation Measure 3: Provide Environmental Awareness Training: A USFWS-approved biologist will train the construction crew on approved avoidance measures and on the life history of salt marsh harvest mouse and California clapper rails and train the County of Marin and/or construction contractor staff in appropriate monitoring techniques and methods for salt marsh harvest mouse and California clapper rail protection so that these individuals can conduct daily monitoring on their own for the duration of project work.
- Conservation Measure 4: Halting Work if Federally-Listed Species Observed: If a salt marsh harvest mouse or California clapper rail is observed on the project site, work will stop and the USFWS-permitted or approved biologist will be notified.

- Conservation Measure 5: Off-site Tidal Marsh Restoration: The FAA proposes to require the County of Marin, prior to initiating construction or otherwise taking actions associated with this project that result in adverse effects to the SHMH or CCR, to develop and submit to the USFWS for their review and approval a revegetation plan and habitat compensation plan based on the habitat compensation ratios in the Biological Opinion.

The USFWS provided the following incidental take statement in the Biological Opinion received on April 3, 2013. The USFWS anticipated incidental take of individual SMHM would be difficult to detect or quantify because of the variable, unknown size of any resident population over time, their elusive and cryptic behavior, and the difficulty of finding killed or injured animals. Due to the difficulty in quantifying the number of SMHM that will be taken as a result of the implementation of Alternative B, the USFWS quantified the take of listed species incidental to Alternative B as the following:

- The harassment and harm of all SMHM within the 22.93 acres of marginal quality high brackish marsh/annual grassland habitat disturbed during construction of the Proposed Project (Alternative B.)

The USFWS determined that this level of anticipated take resulting from Alternative B is not likely to jeopardize the continued existence of the SMHM.

CALIFORNIA CLAPPER RAIL

Habitat Compensation Measures

The USFWS Biological Opinion requires on-site habitat restoration for short-term temporary impacts and long-term temporary impacts to CCR habitat. The USFWS Biological Opinion also requires off-site habitat compensation for short-term temporary impacts, long-term temporary impacts, and permanent impacts to CCR habitat. The Biological Opinion requires that Marin County develop a habitat compensation plan for USFWS approval using all the following compensation ratios:

- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for short-term temporary California clapper rail habitat impacts (lasting for less than one year);
- 1.1:1 ratio (replaced:removed) off-site habitat replacement for short-term temporary California clapper rail habitat impacts (lasting for less than one year);
- 1:1 ratio (replaced:removed) on-site habitat restoration or replacement for long-term temporary California clapper rail habitat impacts (lasting for more than one year but less than two years);
- 2:1 ratio (replaced:removed) off-site habitat restoration or replacement for long-term temporary California clapper rail habitat impacts (lasting for more than one year but less than two years); and

- 3:1 ratio (replaced:removed) off-site habitat restoration or replacement for permanent California clapper rail habitat impacts (lasting for more than two years).[12]

Based on these ratios, the total amount of off-site habitat compensation will be between 42.9 acres and 57.3[13] acres for Alternative B and between 49.9 acres and 66.5 acres for Alternative D[14]. The exact amount of off-site habitat compensation will depend on what percentage of temporary habitat impacts last one year or less, requiring only 1.1:1 off-site compensatory habitat replacement, as opposed to temporary habitat impacts that last between one to two years, which require 2:1 off-site compensatory habitat replacement. The habitat compensation will provide breeding, feeding, or sheltering habitat commensurate with or better than the habitat lost as a result of the effects from the construction of the Sponsor's Proposed Project. This additional habitat will help maintain the geographic distribution of the species and will contribute to the recovery of the species.

Protective Measures

To avoid potential impacts to the species, initial excavation and grading associated with the project would be scheduled during annual summer and fall dry periods when standing water and seasonally available foraging areas are not present. Once that work is complete the runway extension area would no longer be suitable habitat for CCR and no further seasonal restriction for CCR would be required. Following rainfall events, consolidated precipitation is pumped off the site and into the Petaluma River (which happens during the winter and spring of every year). Due to the absence of suitable foraging habitat during the summer and fall dry period, the CCR would not occur within the Airport runway extension area during that period, and would not be negatively affected by summer/fall (dry period) construction.

Incidental Take

The general conditions regarding incidental take of CCR under the ESA are the same as described above for the general conditions of incidental take regarding the SMHM.

The USFWS identified the measures described below as nondiscretionary, and directed these measures must be implemented by FAA so that they become binding conditions of any grant or permit issued to Marin County, as appropriate, for the exemption under ESA section 7(o)(2) to apply. The USFWS stated the FAA has a continuing duty to regulate the activity that is covered by the incidental take statement. If FAA (1) fails to require Marin County or any of its contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of ESA section 7(o)(2) may lapse.

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[12] USFWS, *Biological Opinion*, April 3, 2013, page 6, Table 1.
[13] See Table I-2 and I-3, in Appendix I for calculations of these acreage values.
[14] See Table I-4 and I-5, in Appendix I for calculations of these acreage values

The Biological Opinion requires the FAA ensure that Marin County implement Conservation Measures 1, 2, 3, 4, and 5 identified and described in detail in the Description of the Proposed Project in the Biological Opinion. These conservation measures are the same conservation measures as those discussed under SMHM Incidental Take section earlier in Section 5.9.4.

The USFWS provided the following incidental take statement in the Biological Opinion received on April 3, 2013. The USFWS anticipated incidental take of individual CCRs will be difficult to detect or quantify because of the variable, unknown size of any resident population over time, their elusive and cryptic behavior, and the difficulty of finding killed or injured animals. Due to the difficulty in quantifying the number of CCRs that will be taken as a result of the implementation of Alternative B, the USFWS is quantifying take incidental to Alternative B as the following:

- The harassment of all California clapper rails within the 25.24 acres of non-breeding high brackish marsh/annual grassland and open water ditch/channel habitats disturbed during construction of the Proposed Project (Alternative B).

The USFWS determined that the level of anticipated take resulting from Alternative B is not likely to jeopardize the continued existence of the CCR.

CALIFORNIA RED-LEGGED FROG

There is a potential for the California red-legged frog to disperse onto the Airport site during winter months. The preferred season for construction activities would be the dry season work window of May 15 to October 15, because there is a lesser potential for water quality impacts, even though that timing overlaps with the migratory bird nesting season. However, if work activities cannot be confined to this work window, no direct or incidental take of the California red-legged frog is expected because the exclusion fence for the SMHM would be installed around the work area, precluding the California red-legged frog from entering the area of disturbance associated with the project.

WESTERN BURROWING OWL

Relocation of burrowing owls and loss of burrows and/or foraging habitat may occur as a result of implementing either of the development alternatives. In the event that this occurs, CDFG recommends 6.5 acres of foraging habitat for burrowing owl to be preserved for each active burrow that would be impacted by project activities. Marin County as the sponsor of the project, in coordination with CDFG, would responsible for prescribing appropriate mitigation for any project-related impacts to burrowing owls.

A pre-construction clearance survey of burrowing owls would be conducted no more than 30 days prior to the onset of construction. Burrowing owls can be present during all times of the year in California, so this survey would be completed even if the initiation of construction is outside of the typical February 1 to August 31 migratory bird breeding season. If active owl burrows are located during the

pre-construction survey, a 250-foot buffer zone would be established around each burrow with an active nest until the young have fledged and are able to exit the burrow. In the case of occupied burrows without active nesting, active burrows after the young have fledged, or if development commences after the breeding season (typically February 1 to August 31), passive relocation of the birds would be performed. Passive relocation involves installing a one-way door at the burrow entrance, which encourages the owls to move from the occupied burrow. CDFG would be consulted for current guidelines and methods for passive relocation of any burrowing owls found on the site.

5.9.5 BIOLOGICAL OPINION TERMS AND CONDITIONS

The USFWS provided its Biological Opinion for the Proposed Project, dated April 3, 2013, to the FAA. Although the USFWS Biological Opinion was specific to the Proposed Project (Alternative B), for purposes of this EIS the FAA assumes that it would require Marin County to implement these same terms and conditions if Alternative D was implemented instead of Alternative B. The USFWS determined the following two reasonable and prudent measures in their Biological Opinion are necessary and appropriate to minimize the effects of the proposed project on the SMHM and the CCR:

1. FAA through the applicant will implement the Conservation Measures in the *Description of the Proposed Project* in this biological opinion.
2. FAA through the applicant will minimize the effects of the proposed project on the salt marsh harvest mouse, California clapper rail, and their habitats.

The April 3, 2013 Biological Opinion included the following terms and conditions to implement the reasonable and prudent measures:

1. Measure Number One (1):
    a. FAA shall ensure that the salt marsh harvest mouse exclusion fencing is made of a heavy plastic sheeting material that does not allow salt marsh harvest mice to pass through or climb, and the bottom shall be buried to a depth of at least 4 inches so that the listed mouse cannot crawl under the fence. Fence height shall be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet. All supports for the exclusion fencing shall be placed on the inside of the work area. FAA shall ensure that the exclusion fencing is inspected and secured before the start of each work day and that no salt marsh harvest mice are able to enter the work area.
    b. FAA shall ensure that a compensation plan is finalized and approved by the Service prior to the initiation of construction of the proposed project. FAA shall ensure that the funding for the compensation plan is provided prior to the initiation of construction of the proposed project and that any required tidal marsh restoration is initiated within 1 year of the initiation of construction of the proposed project.

2. Measure Number Two (2):

   a. FAA shall ensure that in order to avoid the potential for disturbing any salt marsh harvest mice nests and injuring or killing any young salt marsh harvest mice before they have weaned that the contractor uses only non-motorized hand tools to remove salt marsh vegetation during the mouse's breeding season (March 1 through November 30) under the supervision of a USFWS-approved biological monitor. If a salt marsh harvest mouse nest is observed, all work shall cease within 100 feet of the nest until the USFWS-approved biological monitor has determined that the young salt marsh harvest mice have been weaned and left the nest. Vegetation removal occurring outside of the salt marsh harvest mouse's breeding season (December 1 - February 28) may utilize mechanized or motorized equipment. The USFWS-approved biological monitor shall supervise the vegetation removal, walk ahead of the vegetation removal equipment, and flush any salt marsh harvest mice out of the way.

   b. FAA shall ensure that all salt marsh and upland refugia habitat temporarily disturbed during construction of the proposed project is replanted or reseeded with appropriate local native plant species. The applicant shall install native salt marsh plant species including salt grass, dwarf spikerush, alkali heath, gumplant, and pickleweed as appropriate for the location of the disturbed areas and per a USFWS-approved revegetation and monitoring plan with success criteria. The revegetation monitoring plan shall be submitted to and approved by the USFWS prior to the initiation of construction of the proposed project. The revegetation and monitoring plan shall include photographs and annual reporting documenting the site conditions pre- and post-project. Any areas temporarily disturbed that do not meet the success criteria in the revegetation and monitoring plan within 2 years will be considered a permanent effect and shall be compensated off-site at USFWS-approved location at a 3:1 ratio.

   c. FAA shall ensure that in addition to compensating for the temporary disturbance and permanent loss of high brackish marsh and annual grassland habitat for the salt marsh harvest mouse and California clapper rail, that Marin County also compensates at a 3:1 ratio for the permanent loss of 1.54 acres of open water ditch/channel foraging habitat for the California Clapper rail.

   d. FAA shall ensure that the applicant develops and implements a USFWS-approved invasive plant species control plan. The invasive plant species control shall include measures to minimize the introduction and spread of perennial pepperweed and other invasive plant species.

   e. FAA shall ensure that the applicant implements the following BMPs:

      (1) All food and food-related trash items shall be enclosed in sealed trash containers and removed completely from the site at the end of the day.

(2) Construction and project personnel shall not bring any pets anywhere in the proposed project work area.

(3) All equipment shall be maintained in order to prevent leaks of automotive fluids such as gasoline, oils, or solvents. A Spill Response Plan shall be prepared. Hazardous materials such as fuels, oils, solvents, etc. shall be stored in sealable containers and designated locations at least 100 feet from wetlands and aquatic habitats.

(4) Servicing of vehicles and construction equipment including fueling, cleaning, and maintenance shall occur at least 100 feet from any aquatic habitat, unless the activities are separated by a topographic or drainage barrier. Staging areas may occur closer to the proposed project activities as required.

(5) If nighttime work is required, FAA shall ensure that the lighting is directed away from the marsh and shielded to prevent spillover into the marsh.

The USFWS Biological Opinion page 6 provides for increasing or decreasing habitat compensation mitigation ratios for compensation of losses of SMHM and CCR habitat as follows:

> "These compensation ratios may be adjusted by the USFWS based on the quality of the habitat being removed and the quality of the habitat to be created or enhanced to replace it. If after review of a habitat compensation plan, the USFWS determines that adequate high quality habitat acceptable to the USFWS can be provided at a lower compensation ratio, the FAA proposes to utilize a lower habitat compensation ratio if such a ratio is acceptable to the USFWS. The USFWS would likely increase these compensation ratios if the proposed off-site restoration area was outside of the San Pablo Bay Recovery Unit identified in the *Draft Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California*, which extends from Gallanis Creek in Marin County (at the southwestern end of the recovery unit) around San Pablo Bay north and east to Mare Island in Solano County."

The FAA anticipates that the ESA, Section 7, consultation would be reinitiated and the Biological Opinion updated or supplemented with revised *Terms and Conditions* for the *Reasonable and Prudent Measures* of the *Incidental Take Statement* if the USFWS determined revised habitat compensation ratios were appropriate.

5.9.6 HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR PUBLIC USE AIRPORTS

The FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Public Use Airports*, has advisory guidelines that relate to the proximity of landfills near airports. Landfills have the potential to attract wildlife that may be hazardous to air navigation. The southern edge of the Redwood Landfill and Recycling Center (RLI) is currently located approximately 3,460 feet northwest of Runway 13/31 at DVO. This separation is less than the 5,000 feet recommended by the FAA. The current

operating elevation at the RLI landfill is approximately 86-88 feet, with permitted maximum land fill height of 160 feet. Critical to the nature of the Redwood Landfill facility, with respect to aviation related activity at DVO, is the landfill's 'working face'. The working face at RLI at any given time is typically smaller than 1 acre, or less than 0.5 percent of the total area of the waste disposal/landfill. The working face delineates the exposed area of the landfill which is known to be an attractant to scavenging birds, particularly gulls. According to FAA National Wildlife Strike Database, January 1990–April 2003, gulls rank low on the FAA's relative hazard score with a ranking of 24 out of 100. To discourage gull populations, RLI currently has the following operational controls available as part of its wildlife hazard management plan.

- Minimize the area of the working face and push distance when possible;
- Use pyrotechnic devices to discourage scavenging gulls during refuse placement and compaction;
- Place daily cover consisting of a 6-inch thickness of compacted soil or approved alternative;
- Employ an outside contractor in the winter months who uses falcons to deter gulls from the landfill; and
- A propane gas-fired cannon may be used in conjunction with the pyrotechnic devices. The cannon emits a loud blast that discourages gulls from approaching the active face of the landfill.

Currently, aircraft fly over all portions of the RLI when arriving to and departing from DVO. There have been no reported bird strikes related to activity at the RLI. RLI's adaptive bird management plan is required by the Local Enforcement Agency (LEA) through its permitting approval authority over the RLI. The LEA has the authority under the provisions of RLI's operation permit to direct the landfill to undertake additional management measures if the existing measures at the landfill prove insufficient in preventing the area from becoming an attractant to birds.

RLI operates under the Solid Waste Facilities Permit #21-AA-0001, issued by the LEA on December 18, 2008, with concurrence by the State of California Integrated Waste Management Board.[15] RLI's Joint Technical Document, which describes operating practices at the facility, states that minimizing the size of the working face is one of the operational controls in RLI's vector and bird control management plan. Mitigation Measures 3.6.2a and 3.6.2d of the November 17, 2008 Mitigation Monitoring and Report Program, which is incorporated into the Solid Waste Facilities Permit, references bird control measures.

As a part of the application for an updated Solid Waste Facilities Permit, RLI underwent extensive environmental review including the preparation of an Environmental Impact Report (Redwood EIR), which was certified by Marin County on June 10, 2008. In 2009 the landfill received and updated Waste Discharge

[15] *Marin County Solid Waste Facilities Permit* #21-AA-0001.

Requirements from the San Francisco Regional Water Quality Control Board and received a Title 5 Air Permit from the Bay Area Air Quality Management District in 2010.[16]

The Redwood EIR identified the proximity of the landfill to DVO as a potential conflict with airport operations at DVO. Associated mitigation measures included in the Mitigation Monitoring and Reporting Program (MMRP) of the Redwood EIR, relative to the working face and the bird control measures, became part of the enforceable solid waste facility permit conditions, as required under CEQA.[17]

Marin County developed a local Airport Land Use Plan in 1991[18]. As stated in the Redwood EIR, the RLI site is located within the Marin County Airport Land Use Plan designated safety zones for DVO. These safety zones, established by Marin County in the 1991 Airport Land Use Plan, are areas in the vicinity of the Airport in which land use and/or zoning restrictions are established to protect public safety on the ground by limiting exposure to aircraft crash hazards. Five zones are established, with Zone 1 (Clear Zone) the closest to the Airport and Zone 5 (Referral) the farthest. The southern half (roughly) of the RLI landfill site is located in Zone 3, Traffic Pattern Zone, and the northern half is within Zone 4, Overflight Zone. Zone 5, Referral Area, extends 2 miles from DVO and therefore, RLI also falls within this zone. The proposed 1,100-foot runway extension to the north would bring the runway into closer proximity with RLI; however, the RLI would remain in Zone 3, Traffic Pattern Zone, Zone 4, Overflight Zone, and Zone 5, Referral Area.[19]

As referenced in the Redwood EIR, in addition to FAA distance criteria, the US Environmental Protection Agency adopted amendments to the Resource Conservation and Recovery Act, adding Title 40 CFR § 258.10 effective October 1993, to require FAA notification for proposed new or expanded municipal solid waste landfill units (MSWLF). Section 258.10 requires:

(a) owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions that are located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft or within 5,000 feet (1,524 meters) of any airport runway end used by only piston-type aircraft to demonstrate that the units are designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft;

(b) owners or operators proposing to site new MSWLF units and lateral expansions within a five-mile radius of any airport runway end used by turbojet or piston-type aircraft to notify the affected airport and the FAA; and

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16 *Redwood Landfill Final Environmental Impact Report*. On-line at:http://www.ciwmb.ca.gov/permittoolbox/Notices/RedwoodLF/default.htm. California Integrated Waste Management Board. September 26, 2011.

17 *Redwood Landfill Solid Waste Facilities Permit Revision, Mitigation Monitoring and Report Program*, November 17, 2008.

18 Prepared for the Marin County Planning Department by Cortright & Seibold in association with Brown-Buntin Associates, Inc, *Airport Land Use Plan, Marin County Airport Gnoss Field*, Adopted June 10, 1991.

19 *Redwood Landfill Solid Waste Facilities Permit Revision EIR*, July 2005.

(c) the owner or operator to place the demonstration in paragraph (a) in the operating record and notify the State Director that it has been placed in the operating record.

The combined State Water Resources Control Board/California Integrated Waste Management Board (CIWMB) regulations concerning facility siting and classification (Division 2, Title 27, §20270) include language nearly identical to items (a) through (c) above.[20]

The Redwood EIR states that because RLI is located in DVO Zones 3, 4, and 5, changes to the existing operations at RLI could potentially conflict with Airport operations. Originally, there were concerns that a potential increase in the working face and an increase in daily waste would result in more birds. However, the mitigated alternative did not include a lateral expansion of the landfill and the volume of material accepted for composting did not increase. Finally, the increased amount of light that would be needed to accommodate more frequent nighttime operations at the larger working face could potentially interfere with nighttime aircraft operations at DVO.[21]

Mitigation measures included in the MMRP of the Redwood EIR, and subsequently incorporated into the landfill's current operating Permit are listed below. The standards in the Permit also meet the requirements of the CIWMB pursuant to Public Resources Code Section 44009. The owner of RLI (Waste Management, Inc.) has agreed to comply with the mitigation measures contained in the MMRP of the Redwood EIR. Redwood Landfill is implementing the following bird control mitigation measures:

- Redwood Landfill will continue their existing bird control program, which has been discussed above.
- To ensure that nighttime activities do not interfere with operations at DVO, lights used during nighttime landfill operations will not be colored, will be shielded and directed downward to reduce glare, and will be placed in an irregular pattern in order not to appear to be a runway. Redwood Landfill will notify the DVO prior to any change in the way lighting is used for nighttime operations.
- If bird activity at the landfill, including the areas outside the permitted landfill footprint proposed for composting, increases as a result of the project, as determined by the LEA during regular site inspections, RLI shall adjust its existing bird control program as necessary to ensure that the facility does not pose a bird hazard to aircraft. RLI shall modify as necessary the demonstration required in 40 CFR Part 258, §258.10 (a) and 27 CCR, §20270(a) (that the landfill does not pose a bird hazard to aircraft).

[20] *Redwood Landfill Solid Waste Facilities Permit Revision EIR*, July 2005.
[21] *Redwood Landfill Solid Waste Facilities Permit Revision EIR*, July 2005.

The proposed extension of Runway 13/31 by 1,100 feet to the northwest would result in the north end of the runway being located 2,500 feet from the southern edge of the RLI. This would decrease the distance between the end of the runway and the RLI as compared to existing conditions. Aircraft currently fly over the landfill at an altitude of approximately 300-400 feet Above Ground Level (AGL) on approach from the northwest. When departing to the northwest, aircraft are at an altitude of approximately 500-700 feet AGL when they fly over the landfill. With the proposed runway extension, all aircraft landing at DVO from the northwest would overfly the landfill at an approximate altitude of 250-350 feet AGL. Some of the aircraft operating at DVO today would be able to accommodate heavier payloads or more fuel as a result of the extended runway. Due to these heavier overall weights, these aircraft would be at an approximate altitude of 475-675 feet AGL on departure to the northwest. Because there would be no change in the flight patterns and only a small change in altitude (25 – 50 feet) of aircraft as they overfly the landfill, the change in operational distance from aircraft in flight and the landfill would be relatively small. In addition, the RLI will continue the measures included in the bird management plan that have proven effective to date.[22]

The LEA previously authorized the continued operation of RLI near DVO, but in so doing, identified mitigation measures in the MMRP to minimize the attractiveness of the area to wildlife, especially birds, so as to avoid creation of a wildlife aircraft strike hazard at RLI and to prevent RLI from becoming an incompatible land use. The permit issued to RLI requires mitigation measures including ongoing management efforts to prevent minimize bird attractants. If deemed ineffective over time, the mitigation measures will change per the permit requirements. With the current measures in place it is not anticipated that there would be an increase in bird strikes due to the implementation of the Sponsor's Proposed Project or any of its alternatives. Therefore, the potential for implementation of Alternative B or Alternative D to result in an increase in wildlife-aircraft strikes between aircraft using DVO and hazardous wildlife potentially attracted to the RLI facility is not significant.

[22] Based on conversation between with John Roberto, Marin County Environmental Consultant, and Mark Janofsky, Marin County Environmental Health Services staff documented in EIS administrative file.

CHAPTER SIX
CUMULATIVE IMPACTS

6.1 INTRODUCTION

This chapter provides a discussion of cumulative impacts of actions proposed at Gnoss Field Airport (DVO or Airport) evaluated in this Environmental Impact Statement (EIS), in combination with other related or independent actions in the vicinity of DVO. The analysis of cumulative impacts recognizes that while the impacts of individual actions may be small, when combined with the impacts of past, present, and reasonably foreseeable future actions on populations or resources in and around DVO, the impacts could be potentially significant.

The Council on Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) defines cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." (*See* Title 40 Code of Federal Regulations (CFR) § 1508.7.) Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.[1]

6.2 REGULATORY SETTING

Cumulative impacts must be evaluated relative to the direct and indirect effects of the proposed action for each environmental category discussed in Chapter Five, *Environmental Consequences*. As with the discussion of environmental consequences, the Existing Condition (2008) serves as the reference point for the Alternative A (No Action) against which potentially significant cumulative impacts of Alternatives B and D are evaluated. Significant cumulative impacts are determined according to the same thresholds of significance used in the evaluation of each environmental category in the environmental consequences discussion.

It can be difficult to determine levels beyond which cumulative impacts significantly degrade a resource. Local, state, and Federal standards for some resources would apply, and goals or objectives from land use management plans and other guiding programs may serve as thresholds. Where numerical thresholds are not available or cannot be determined, impacts are typically qualified in relative terms of magnitude. The thresholds of significance for each environmental category, where applicable, are defined in FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions.*

[1] 40 CFR Part 1500, *Council on Environmental Policy*, § 1508.7 *Cumulative Impact*.

6.3 IDENTIFICATION OF PERTINENT PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The evaluation of cumulative impacts in this EIS considers the past, present, and reasonably foreseeable future projects or actions undertaken at the Airport by Marin County or other parties, as well as other actions, including development undertaken by others within the spatial boundaries of the General Study Area (GSA). For linear transportation projects, this evaluation considered the portions of the project physically located within the GSA. For the purposes of this assessment, the past actions are defined as those that were completed before or during 2008. Present actions are defined as those completed between 2009 and 2013. Reasonably foreseeable future actions are defined as those planned to be completed between 2014 and 2018, which is within the planning horizon of this EIS.

As there are several multiphase projects that completed construction phases in 2013, but also have ongoing or anticipated future work between 2014 and 2018, the present projects and reasonably foreseeable future projects are discussed in a combined section. The 2018 planning horizon represents a timeframe that is long enough to identify potential follow on environmental impacts yet near enough that realistic predictions of projects and associated environmental impacts can be made. This section evaluates those past, present, and reasonably foreseeable future projects.

6.3.1 PAST PROJECTS

Recent past projects could potentially add incremental impacts to those created by the Sponsor's Proposed Project or its alternatives. The availability of older data often determines how far back past effects may be examined. Certain types of data "may be available for extensive periods in the past," while other data "may be available only for much shorter periods," according to CEQ guidance. Consequently, because the data describing past conditions are usually scarce, the analysis of past impacts is often qualitative.[2] This section includes a discussion of recently completed past projects that were identified to have occurred within the GSA that have the ability to contribute to the cumulative impacts for this EIS.

6.3.1.1 DVO Levee Maintenance Project

The DVO Levee Maintenance Project consisted of two actions. The first was adding additional material to the top and sides of the levees and the second was the installation of culverts and flow control gates. These improvements provide a greater degree of flood protection for Airport facilities and allow the Airport to be autonomous in the event of an outer levee breach or intrusion of floodwater. In 2001, Marin County prepared an initial study in accordance with the California Environmental Quality Act, which found no significant impacts would result from the project. The only impacts discussed were related to construction activity and all

[2] Council on Environmental Quality, *Considering Cumulative Impacts Under the National Environmental Policy Act*, January 1997.

would occur only during the period when construction was occurring. Since the maintenance project was completed in 2007 and none of the impacts were identified to occur beyond the construction period, the impacts related to the levee maintenance project are not included in the discussion of cumulative impacts.

6.3.1.2 North Coast Rail Authority Russian River Division Freight Rail Project

The Russian River Division of the North Coast Rail Authority (NCRA) rail corridor extends approximately 142 miles from Willits in Mendocino County, California southward to Lombard in Napa County. From Willits the line runs southward generally following Highway 101 through Redwood Valley, Calpella, Ukiah, Hopland, Cloverdale, Geyserville, Healdsburg, Windsor, Santa Rosa, Rohnert Park, Cotati, Petaluma, and Novato. South of Novato, at Highway 37, the line runs eastward near the shore of San Pablo Bay, over the Petaluma River, past Black Point, past the old station at Schellville, over the Napa River, and terminates in Lombard north of the city of American Canyon. The NCRA proposed resuming freight rail service from Willits to Lombard, traveling through Novato. The rail line has provided rail service dating back to the early 1900's and required rehabilitation before trains could safely resume operations. Commercial freight operations began on July 13, 2011.[3]

6.3.1.3 Redwood Landfill Solid Waste Facility[4]

The Redwood Landfill (RLI) is located approximately 3,000 feet north/northwest of DVO along Highway 101. This project included the following activities:

- Merge the existing landfill permit and composting permit into a single solid waste facility permit;
- Establish maximum daily tonnages of solid waste, compostable material, cover material and recyclables, the total of which is 2,310 tons per day;
- Increase traffic to 662 vehicles per day;
- Clarify hours and days for the receipt of wastes and other materials and for certain landfill activities;
- Add food waste as a compost feedstock;
- Increase site capacity; and
- Extend the estimated closure date to July 2024.

[3] *North Coast Rail Authority Draft Environmental Impact Report, 2009,* On-line at: http://www.northcoastrailroad.org

[4] *Redwood Landfill Solid Waste Facilities Permit Revision Final Supplemental Environmental Impact Report*. On-line at: http://www.ciwmb.ca.gov/permittoolbox/Notices/RedwoodLF/default.htm.

Mitigation for this project, which is included as a condition of the expanded permit from Marin County, includes the continued implementation of the RLI bird control program. To discourage gull populations, RLI currently has the following operational controls available as part of its wildlife management plan.

- Minimize the area of the working face and push distance when possible;
- Use pyrotechnic devices to discourage scavenging gulls during refuse placement and compaction;
- Place daily cover consisting of a 6-inch thickness of compacted soil or approved alternative;
- Employ an outside contractor in the winter months who uses falcons to deter gulls from the landfill; and
- A propane gas-fired cannon may be used in conjunction with the pyrotechnic devices. The cannon emits a loud blast that discourages gulls from approaching the active face of the landfill.

Currently, aircraft fly over all portions of the RLI when arriving to and departing from DVO. There have been no reported bird strikes related to activity at the RLI.

In 2009 the landfill received and updated Waste Discharge Requirements from the San Francisco Regional Water Quality Control Board and received a Title 5 Air Permit from the Bay Area Air Quality Management District in 2010.[5]

6.3.2 PRESENT PROJECTS AND REASONABLY FORESEEABLE FUTURE ACTIONS

Projects that are presently ongoing, or soon to get underway could potentially add incremental impacts to those created by Alternative B or Alternative D. Like past and present projects, future projects could potentially add incremental impacts to those created by Alternative B or Alternative D. This section includes a discussion of development and improvement plans within the GSA that are currently being proposed, are underway, were recently completed as well as reasonably foreseeable future development and improvement plans.

6.3.2.1 Binford Road LLC Storage Project

This project involves the development of multi-purpose self-storage facility on 29 acres of the Binford Road LLC's 47.3-acre project site, located at 8190 Binford Road, Novato, directly west of DVO. The project would contain approximately 685 storage units in 25 buildings (approximately 247,440 square feet of floor area) ranging from 18 to 24 feet in height for personal vehicles, RV's, boats, general household items and office storage. Access to the storage units would be from Binford Road and from two internal roadways that would extend along the north

[5] *Redwood Landfill Final Environmental Impact Report*. On-line at: http://www.ciwmb.ca.gov/permittoolbox/Notices/RedwoodLF/default.htm. California Integrated Waste Management Board. September 26, 2011.

and south levees of the Black John Slough. A public viewing area with parking for viewing the marsh wetlands would be provided immediately off Binford Road to afford the public views down the length of the canal towards the Petaluma River. The project includes amending the Countywide Plan Land Use Designation from RC (Recreational Commercial) to IND (Industrial) (Parcels 1 and 2) and OS (Open Space) (Parcel 3) and re-zoning the property from RCR (Resort and Commercial Recreation District) to BFC-IP (Bayfront Conservation – Industrial Planned District) (Parcels 1 and 2) and BFC-OA (Bayfront Conservation – Open Space) (Parcel 3).[6] The Marin County Board of Supervisors adopted County Ordinance 3467 on April 3, 2007, to rezone the property for the Binford Road LLC Self-Storage Facility. The construction timeline is to be determined based on applicant cash flow.[7]

6.3.2.2 Sonoma Marin Area Rail Transit Project

The Sonoma-Marin Area Rail Transit District (SMART) project includes development of a 70-mile-long passenger railroad and parallel bicycle-pedestrian path along the existing Northwestern Pacific Railroad right of way through Marin and Sonoma counties. The rail line would run from Cloverdale, at the north end of Sonoma County, to Larkspur, where the Golden Gate Ferry connects Marin County with San Francisco. Stations are to be located at major population and job centers of the North Bay, including San Rafael, Novato, Petaluma, Cotati, Rohnert Park, Santa Rosa, Windsor, and Healdsburg. Estimated project cost is $690 million, the majority of which would be funded by a voter-approved one-quarter percent sales tax increase.

Since that vote, the economic downturn has reduced SMART's projected revenues by several hundred million dollars over the 20-year life of the sales tax, leaving the agency short of the money needed to complete the project as originally envisioned. Consequently, SMART's Board of Directors has decided to build in stages. Construction on the Phase 1 Segment, 37 miles from downtown San Rafael with Railroad Square in Santa Rosa, began in 2012 and will connect the two largest cities in the North Bay and all of the cities in between. Passenger train service is scheduled to begin in 2016. Future segments, ultimately completing the project from Larkspur to Cloverdale, will be built as additional revenues become available.[8]

6.3.2.3 Redevelopment of Fireman's Fund Campus/The Commons at Mount Burdell

American Assets, Inc., a San Diego based real estate investment and development company, has submitted a proposal to the City of Novato to redevelop the Fireman's Fund Office Campus located on San Marin Drive, just north of the

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[6] Marin County Planning Commission, Meeting Agenda, August 28, 2006. On-line at: http://www.co.marin.ca.us/EFiles/docs/CD/PlanCom/06_0828_AG_060818125653.pdf

[7] http://www.co.marin.ca.us/depts/CD/Main/pdf/Propdev/PD45_Report.pdf. Telephone conversation between with Curtis Havel, Senior Planner, Marin County; March 18, 2013.

[8] *Sonoma Marin Area Rail Transit Project*, On-line at: www.sonomamarintrain.org/get-smart Retrieved October 9, 2013.

intersection with Redwood Boulevard, approximately 1.5 miles south/southwest of DVO along Highway 101. The project proposes a comprehensive redevelopment of the 65-acre Fireman's Fund campus to add approximately 700,000 square feet of new office and retail space, pedestrian-friendly walkways, parks and plazas, an interactive museum on sustainability, a hotel/meeting center, health club, community facility, 150 multi-family residential units, and underground and structured parking facilities. The existing three office buildings at the site (totaling 710,000 square feet) would remain. In addition, a proposed SMART Rail Station would be located near the southeast corner of the project site, along Redwood Boulevard, in between the project site and Highway 101. Associated traffic improvements at major intersections surrounding the project site are also proposed. The project has been designed with the goal of achieving carbon neutral building operations, relying on passive and active measures to meet the energy, heating/cooling, water, and solid waste disposal needs of the development. A public scoping meeting was held on October 5, 2009 to accept comment on the preparation of an Environmental Impact Report (EIR) for the proposed development. Since the publication of the Draft EIS this project was withdrawn therefore this project has been abandoned and is not considered in the cumulative impact evaluation.[9]

6.3.2.4 Marin Sonoma Narrows HOV Widening Project

This proposed project would widen Highway 101 along specific freeway portions located in Novato and Petaluma in Marin and Sonoma Counties, respectively. This section discusses the portions of the project within the GSA. This widening would occur primarily in the existing freeway median. The proposed project also includes widening and realigning the roadway in the Petaluma portion, and upgrading the Highway 101 facility along its entire length. The various improvements that are being proposed include:

- Adding northbound and southbound High Occupancy Vehicle (HOV) lanes the entire project length of 26.0 kilometers (km) (16.1 miles) that would be restricted to vehicles carrying two or more people per vehicle (also referred to as carpool lanes). These HOV lanes would be installed in the median of Highway 101 and directly connect to proposed HOV lanes to the south near the SR 37 Interchange and to proposed HOV lanes to the north beginning at Old Redwood Highway in the City of Petaluma (Sonoma County); Widening and realigning Highway 101 in the Central Segment along the Novato Narrows, which makes up 13.1 km (8.1 miles) of the entire project boundaries. This would result in converting the existing expressway to an access-controlled freeway. Access would be available through new interchanges and existing local roads, which would be reconfigured to connect to new interchanges in this segment;
- Replacing bridges and constructing new bridges across San Antonio Creek and replacing the Petaluma River Bridge;
- Constructing soundwalls along the Novato and Petaluma Segments;

[9] Conversation with Elizabeth Dunn, City of Novato on March 18, 2013.

- Constructing bicycle and pedestrian paths within the Central Segment to replace bicycle access that currently exists along the expressway shoulder; and
- Upgrading drainage facilities.

A Final EIR was released in July 2009. Ground was broken on July 14, 2011. As of October 2013 the Transportation Authority of Marin[10] had the following information available regarding Phase 1 of the project:

- *A1 - HOV Lanes in Novato* – Primarily addresses congestion by adding HOV lanes through median widening, which includes NB HOV lanes from Highway 37 to north of Atherton Boulevard and SB HOV lanes from Highway 37 to Rowland Boulevard. The HOV lanes opened to traffic in summer 2012.
- *A2 - Extend Southbound HOV Lane* – to Franklin overhead. Construction started in June 2013 and is expected to be completed by the end of 2013.
- *A3 - Extend Northbound HOV Lane* - from Atherton to 1.4 miles south of the Redwood Landfill Interchange. Construction started in April 2013 and is expected to be completed in spring 2014.

6.4 POTENTIAL INCREMENTAL INCREASES IN ADVERSE EFFECTS

Chapter Four, *Affected Environment,* describes the existing environmental conditions within the study area for the runway development alternatives. If no action were to take place, it can be reasonably determined that the existing environment at DVO and its vicinity would not change significantly from current conditions. However, as the population of the region changes in the future, related changes are anticipated to occur; these changes would occur regardless of whether any of the runway extension project alternatives are approved and implemented. Therefore, the conditions described in Chapter Four, *Affected Environment,* serve as a basis for comparison of the incremental increases in adverse effects that would potentially result from implementation of any of the runway extension project alternatives.

6.5 CUMULATIVE IMPACT COMPARISON

Impacts of Alternative B and Alternative D are evaluated in this section as compared to the Alternative A (No Action) for the future years. Several past, present, and future projects in the vicinity of DVO are described in this section as they may relate or contribute to potential cumulative impacts within the various environmental categories evaluated in this EIS.

[10] *Transportation Authority of Marin*, On-line at: http://www.tam.ca.gov/index.aspx?page=92, Retrieved October 9, 2013.

In general, the projects considered in this cumulative impact analysis are included because they are either within the existing Airport boundary where the EIS alternatives would be implemented or are in close proximity of the Airport. Consideration of impacts beyond the DVO property boundary is dependent on the environmental resource being considered, and is influenced by such factors as political and land use jurisdictions, any unique characteristics of the resource, importance of the resource in a local and regional setting, and the distance the impact within that resource can travel.

For environmental resources where implementation of Alternative B or Alternative D would have no environmental impact, there is no potential for an adverse cumulative environmental impact to occur. Therefore the following discussion of cumulative impacts discusses only those environmental categories where environmental impacts could result from implementation of Alternative B (Sponsor's Proposed Project) or Alternative D. Those categories are: air quality; water quality; fish, wildlife, and plants; wetlands and streams; natural resources, energy supply, and sustainable design. Cumulative construction impacts are discussed within the impact categories previously listed.

6.5.1 AIR QUALITY

The air quality assessment of future conditions presented in Section 5.5, *Air Quality*, in Chapter Five, *Environmental Consequences*, is required to include all reasonably foreseeable[11] future conditions associated with emission sources at the Airport, particularly for the use of motor vehicles, Ground Service Equipment (GSE), and aircraft. As such, all known and quantifiable past, present, and reasonably foreseeable future actions relating to emission sources at the Airport for the 2018 and 2023 analyses were included in the emissions inventory. A discussion of this analysis is included in Appendix F, *Air Quality*. The analysis showed that none of the future baseline conditions under Alternative A, or conditions under Alternative B or Alternative D would have the potential to cause significant air quality impacts.

DVO is located in Marin County which, for Federal air quality attainment status, is included in the San Francisco Bay Intrastate Air Quality Region. The region does not currently meet the Federal eight hour standard for ozone levels and has been designated by the U.S. Environmental Protection Agency (USEPA) as a marginal nonattainment area for ozone.[12] Further, USEPA has determined the county exceeds the 24 hour standard for emissions of fine particulate matter ($PM_{2.5}$). In the past Marin County was been designated as nonattainment for Carbon Monoxide (CO) but in April 1998 the Bay Area was redesignated to attainment and now operates under a maintenance plan in order to prevent emissions from exceeding the current CO standard.

[11] FAA, *Environmental Impacts: Policies and Procedures Order 1050.1E*, Appendix A Section 2.1c, 2006.
[12] USEPA website, http://www.epa.gov/oar/oaqps/greenbk, accessed October 2011.

For State of California air quality attainment status, DVO is located within the Bay Area Air Quality Management District (BAAQMD). California maintains more stringent standards than the USEPA for which the County must adhere called the California Ambient Air Quality Standards. Marin County has been designated by the BAAQMD as nonattainment for the eight-hour and one-hour standards for ozone, the annual arithmetic mean and the twenty four-hour standards for coarse particulate matter (PM_{10}), and the annual arithmetic mean standard for $PM_{2.5}$.[13]

Construction activities associated with this project would result in temporary air quality impacts, including direct emissions from construction equipment and trucks, fugitive dust emissions from site demolition and earthwork, and increased emissions from motor vehicles and haul trucks on the on-site and off-site roads. The impacts would occur only within the immediate vicinity of the construction site and would be mitigated through best management practices to reduce emissions, particularly fugitive particle emissions, during construction.

As discussed in Section 5.5, *Air Quality*, in Chapter Five, *Environmental Consequences*, and Appendix F, the increase in onsite emissions due to construction and project implementation would not exceed the applicable Clean Air Act (CAA) thresholds and are therefore not significant. The mitigation procedures identified in Section 5.5 would be implemented to minimize potential impacts that would occur during construction.

Due to their proximity to DVO and similar timing of construction with implementation of either Alternative B or Alternative D, the following projects have the potential to cumulatively impact air quality within the San Francisco Bay Intrastate Air Quality Region/BAAQMD:

- Sonoma Marin Area Rail Transit Project – this project would cause a temporary increase in emissions during construction. Implementation of this project would generate CO, Reactive Organic Gas (ROG), Nitrogen Oxides (NO_x), and PM_{10} air emissions. Operation of the passenger trains would generate some new pollutant emissions as diesel fuel is consumed to operate the trains. However, reductions in pollutant emissions would be achieved as a result of a slight decrease in motor vehicle usage as some members of the public reduce their vehicle usage and take the train.[14] The net emissions of CO, ROG, NO_x, and PM_{10} as a result of this project would not exceed the significance thresholds set by the CAA.[15]

[13] BAAQMD website, http://www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, accessed October 2011.
[14] *Sonoma-Marin Area Rail Transit Draft Environmental Impact Report*, November 2005.
[15] *Sonoma-Marin Area Rail Transit Final Environmental Impact Report*, June 2006.

- Marin Sonoma Narrows HOV Widening Project – this project would cause a temporary increase in emissions during construction. Implementation of this project would not result in a significant impact to air quality as a result of emissions of criteria pollutants. Implementation of this project would lead to a reduction in traffic congestion along Highway 101 in Marin and Sonoma Counties.[16]
- Redwood Landfill Solid Waste Facility – construction and implementation of this project would result in an increase in criteria air emissions. This increase would not exceed the applicable CAA thresholds for these air emissions and is not significant.[17]
- North Coast Rail Authority Russian River Division Freight Rail Project – this project would reintroduce freight rail service in Marin County along the existing Northwestern Pacific Railroad, the same route that would be used by the SMART passenger service. The Supplemental EIR for this project included an analysis of cumulative air emissions of criteria pollutants from the freight rail service. This analysis found that the reintroduction of freight service would add to air emissions; however, cumulative criteria air pollutant emissions were still below the applicable CAA significance thresholds.[18]
- Binford Road LLC Storage Project – construction of this project is to be determined by applicant cash flow.[19] Therefore it is unknown whether air quality impacts from construction activity would occur in the same timeframe as construction impacts from implementation of Alternative B or Alternative D. In either case air emissions associated with construction activities are temporary. This project would likely result in a minor increase in air emissions due to additional surface vehicles accessing the site; however, due to the minimal number of additional vehicles these air emissions are likely to be below the CAA *de minimis* thresholds for criteria air pollutants.
- In addition to the projects above, implementation of Alternative B or Alternative D would increase the need for electricity to light the extended runway and taxiway. This would require additional electricity generation offsite, which may increase emissions from fossil fuel burning power plants. The utility plants serving electricity to the Airport are required to follow strict guidelines concerning air emissions. The relatively small increase in electricity that would be needed to power the additional lights would not result in the need for additional power generating systems and therefore is assumed to be able to be handled by the existing system.

The additional criteria pollutant air emissions resulting from implementation of either Alternative B or Alternative D are below the CAA and BAAQMD *de minimis* thresholds, and as such the project is assumed not to cause an exceedance of the

[16] Marin-Sonoma Narrow (MSN) HOV Widening Project Final Environmental Impact Report/Final Environmental Impact Statement, July 2009.
[17] Redwood Landfill Solid Waste Facilities Permit Revision Environmental Impact Report, July 2005.
[18] Sonoma-Marin Area Rail Transit Draft Supplemental EIR, March 2008.
[19] http://www.co.marin.ca.us/depts/CD/Main/pdf/Propdev/PD45_Report.pdf. Telephone conversation between with Curtis Havel, Senior Planner, Marin County; March 18, 2013.

National Ambient Air Quality Standards (NAAQS).[20] Furthermore, none of the past, present, or reasonably foreseeable future projects described above would cause criteria air pollutant emissions that exceed CAA *de minimus* thresholds.

Marin County has been designated by the USEPA as a marginal nonattainment area for ozone, nonattainment for the 24 hour standard for emissions of $PM_{2.5}$, and maintenance for CO. In addition, Marin County has been designated by the BAAQMD as nonattainment for the eight-hour and one-hour standards for ozone, the annual arithmetic mean and the twenty four-hour standards for PM_{10}, and the annual arithmetic mean standard for $PM_{2.5}$.

The net increase in emissions calculated for Alternative B and Alternative D for the projects listed above are *de minimis* and as such are considered negligible and insignificant. Therefore, while the projects contribute to the cumulative emissions of air pollutants in Marin County, the cumulative effect of the net air emissions would not cause or contribute to any new violation of the NAAQS or the CAAQS, would not increase the frequency or severity of an existing violation, and would not delay timely attainment of any standard, and the cumulative impact on air quality is not significant.

The cumulative impact of this Proposed Action on the global climate when added to other past, present, and reasonably foreseeable future actions is not currently scientifically predictable. Aviation has been calculated to contribute approximately three percent of global carbon dioxide ($C0_2$) emissions; this contribution may grow to five percent by 2050. Actions are underway within the U.S. and by other nations to reduce aviation's contribution through such measures as new aircraft technologies to reduce emissions and improve fuel efficiency, renewable alternative fuels with lower carbon footprints, more efficient air traffic management, market-based measures and environmental regulations including an aircraft CO_2 standard. The U.S. has ambitious goals to achieve carbon-neutral growth for aviation by 2020 compared to a 2005 baseline, and to gain absolute reductions in GHG emissions by 2050. At present there are no calculations of the extent to which measures individually or cumulatively may affect aviation's $C0_2$ emissions. Moreover, there are large uncertainties regarding aviation's impact on climate. The FAA, with support from the U.S. Global Change Research Program and its participating Federal agencies (e.g., NASA, NOAA, EPA, and DOE), has developed the Aviation Climate Change Research Initiative (ACCRI) in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions, with quantified uncertainties for current and projected aviation scenarios under changing atmospheric conditions.[21]

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[20] FAA, *Air Quality Procedures for Civilian Airports and Air Force Bases*, April 1997, quoted from Section 2.5.1, *NAAQS Assessment*, "If the action is in a nonattainment or maintenance area and exempt or presumed to conform under conformity requirements, it is assumed that a NAAQS assessment is not required for an airport or air base action since it is unlikely the action's pollutant concentrations would exceed the NAAQS."

[21] 27th International Congress of the Aeronautical Sciences, Nathan Brown, et. al. *The U.S. Strategy for Tackling Aviation Climate Impacts,* 2010.

6.5.2 WATER QUALITY

Section 5.6, *Water Quality*, in Chapter Five, *Environmental Consequences*, discussed the potential water quality impacts of Alternative B and Alternative D. It is disclosed in that section that cumulatively there would be an increase in stormwater quantity from implementing the projects identified in this cumulative impact section. The increase would not exceed applicable standards. Marin County would amend the existing Stormwater Pollution Prevention Plan (SWPPP) for DVO and Best Management Practices (BMPs) would be adhered to in order to minimize erosion and runoff during construction.

Alternative B and Alternative D do not have the potential to disturb hazardous materials that could impact water quality. However, previous contamination from leaking underground storage tanks (USTs) exists on Airport property. It was determined by the California Regional Water Control Board San Francisco Bay Region that this subsurface contamination poses a potential threat to human health and water quality and needs to be addressed. Marin County was issued a Requirement for Technical Report in June 2009. Marin County submitted a Technical Report in September 2009 and is currently coordinating with the Regional Water Quality Control Board to address this situation. The area in question is located immediately east of the Airport manager's office and would not be affected by implementation of Alternative B or Alternative D. As such, it is assumed for the purposes of this EIS that any impact to water quality that is present due to this site would be remediated with or without implementation of Alternative B or Alternative D. Due to these remediation efforts, the contamination it is not expected to cause significant cumulative impacts to water quality.

The other projects identified in this chapter would be required to comply with all existing and future water quality regulatory criteria and permit requirements. In addition, these projects would also be required to develop BMPs that would ensure that concentrations of pollutants of concern do not exceed regulatory criteria. Therefore, there would be no significant cumulative impacts to water quality.

6.5.3 FISH, WILDLIFE, AND PLANTS

As discussed in Section 5.9, *Fish, Wildlife, and Plants*, in Chapter Five, *Environmental Consequences*, Alternative B would result in permanent impacts to 6.88 acres of salt marsh harvest mouse (SMHM) and California clapper rail (CCR) endangered species High Brackish Marsh/Annual Grassland habitat, 1.54 acres of Open Water CCR habitat, and 16.05 acres of temporary impacts SMHM and CCR habitat. Alternative D would result in result in permanent impacts to 8.24 acres of SMHM and CCR endangered species High Brackish Marsh/Annual Grassland habitat, 1.62 acres of Open Water CCR habitat, and 18.43 acres of temporary impacts SMHM and CCR habitat.

Through formal Endangered Species Act (ESA) Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) on Alternative B, suitable mitigation options and restoration/compensation ratios were determined along with habitat compensation ratios. The habitat compensation ratios are presented in Section 5.9, *Fish, Wildlife and Plants* and possible locations of the habitat compensation sites are discussed concurrently with wetland mitigation sites in Section 5.10, *Wetlands and Streams*. No fish species or sensitive plant species occur on DVO.

The necessary habitat compensation for impacts to the endangered SMHM and CCR required for implementation of Alternative B or Alternative D, would also provide habitat compensation for more common plant and animal species that currently occur on the Airport.

The following projects have the potential to cause cumulative impacts to the same biological resources as Alternative B and Alternative D due to their geographic proximity.

- Sonoma Marin Area Rail Transit Project – this project would result in the permanent loss of approximately 31.7 acres of wetland habitat and temporary disturbance of upland habitat. A portion of this acreage is within the GSA for the Sponsors' Proposed Project and its alternatives. Temporary impacts to upland habitat would be minimized to the extent possible and permanent loss of wetlands would be mitigated through wetland replacement at a minimum ratio of 1:1. This project also has the potential to disturb nesting birds. Impacts to nesting birds associated with this project would be mitigated through surveying, limiting construction activity to periods when birds are not present, and adherence to appropriate buffers around nesting locations.[22]
- Marin Sonoma Narrows HOV Widening Project – right-of-way acquisition for this project would cause the loss of up to 7.3 acres of wetlands, depending upon the access option that is selected. A portion of these wetlands are located within the GSA for this project. Impacts to wetlands associated with this project would be mitigated through wetland replacement at ratios to be determined by the U.S. Army Corps of Engineers. The project also has the potential to disturb nesting birds. Impacts to nesting birds would be avoided by conducting surveys and removing nesting locations prior to construction.[23]
- Redwood Landfill Solid Waste Facility – construction and implementation of this project has the potential to disturb the western burrowing owl and other bird species. This impact is not considered significant due to the abundance of habitat for these species located to the west of the landfill.[24]

[22] *Sonoma-Marin Area Rail Transit Draft Environmental Impact Report*, November 2005.
[23] Marin-Sonoma Narrow (MSN) HOV Widening Project Final Environmental Impact Report/Final Environmental Impact Statement, July 2009.
[24] Redwood Landfill Solid Waste Facilities Permit Revision, Environmental Impact Report, July 2005.

Implementation of Alternative B or Alternative D combined with the implementation of one or more of the projects described above would not result in a cumulative impact to fish, wildlife, or plants because each of these projects is required to have their own protective measures to avoid, minimize, and provide habitat compensation during implementation of their project. Therefore, implementation of Alternative B or Alternative D, when combined with other past, present, or reasonably foreseeable projects would not result in significant adverse impacts to fish, wildlife, or plants.

6.5.4 WETLANDS AND STREAMS

Wetlands located on Airport property were delineated and classified in 2009. Section 5.10, *Wetlands and Streams*, in Chapter Five, *Environmental Consequences*, discusses the potential impacts of Alternative B and Alternative D on wetlands and streams and provides a thorough description of Clean Water Act (CWA), Section 404 permitting requirements including compensatory mitigation requirements, and possible locations of compensatory mitigation sites. Alternative B would result in the filling of approximately 11.83 acres wetlands and other waters and Alternative D would result in the filling of approximately 12.73 acres of wetlands and other waters. Marin County would conduct wetland mitigation in accordance with U.S. Army Corps of Engineers (USACOE) guidelines.

The following projects have the potential to cause cumulative impacts to the same wetland and other waters resources as Alternative B and Alternative D due to their geographic proximity.

- Sonoma Marin Area Rail Transit Project – this project would result in the permanent loss of approximately 31.7 acres of wetland habitat and temporary disturbance of upland habitat. A portion of this acreage is within the GSA for the Sponsors' Proposed Project and its alternatives. Permanent loss of wetlands would be mitigated through wetland replacement at a minimum ratio of 1:1 in accordance with a Clean Water Act, Section 404 permit issued by the USACOE.[25]
- Marin Sonoma Narrows HOV Widening Project – right-of-way acquisition for this project would cause the loss of up to 7.3 acres of wetlands, depending upon the access option that is selected. A portion of these wetlands are located within the GSA for this project. Impacts to wetlands associated with this project would be mitigated through wetland replacement at a minimum ratio of 1:1 in accordance with a Clean Water Act, Section 404 permit issued by the USACOE.

As discussed in Section 5.10 the habitat acreages necessary to compensate for wetland and aquatic resource impacts under Alternative B and Alternative D based on the 3:1 (replaced:impacted) off-site habitat compensation ratio identified in the Marin Countywide Plan, Natural Systems Goal Bio-3, Policy Bio-3.2, are shown in **Table 5.10-3** and **Table 5.10-4**. Under Alternative B, 35.49 acres of

[25] *Sonoma-Marin Area Rail Transit Draft Environmental Impact Report*, November 2005.

compensatory mitigation acreage would be needed to compensate at a 3:1 ratio for the removal of 11.83 acres of wetland and aquatic habitat. Under Alternative D, 38.19 acres of compensatory mitigation acreage would be needed to compensate at a 3:1 ratio for the removal of 12.73 acres of wetland and aquatic habitat.

The CWA, Section 404, USACOE permit regulations require that each permitted project provide compensatory mitigation for the impacts to wetlands and waters created by that project. As this EIS identifies compensatory wetland mitigation that would be required to implement Alternative B or Alternative D, and other projects that could occur at the same time would also be required to provide compensatory mitigation for their impacts to wetlands, implementation of Alternative B or Alternative D would not result in a significant cumulative impact to wetland resources.

6.5.5 ENERGY SUPPLY, NATURAL RESOURCES, AND SUSTAINABLE DESIGN

Section 5.15, *Energy Supply, Natural Resources, and Sustainable Design,* in Chapter Five, *Environmental Consequences*, discusses the potential impacts of Alternative B and Alternative D on the supply of energy and natural resources. Implementation of either Alternative B or Alternative D would result in increased use of energy resources, such as natural gas, fuel, and electricity. Implementation of Alternative B or Alternative D would result in a minor increase in the electricity consumption to light the extended runway and taxiway. This would require additional electricity generation offsite. PG&E indicated that they could serve this load for the Airport with no further infrastructure upgrades. There would also be a temporary increase in demand for building materials. However, as these additional demands for electricity and building supplies is relatively small, this would not result in a significant impact on energy or natural resources supplies.

None of the other present or reasonably foreseeable cumulative projects require substantial increases in energy supplies or natural resources. Combining the impacts of other past, present, or reasonably foreseeable future projects with implementation of Alternative B or Alternative D would not result in a significant impact to natural resources or energy supplies.

6.6 CONCLUSIONS

The discussion of cumulative impacts discloses the impacts of Alternative A and Alternative D in combination with other past, present, and reasonably foreseeable future actions at DVO.

As described in Chapter Four, *Affected Environment*, the GSA encompasses approximately 12,655 acres and is defined as the area where potential indirect impacts may result from the Sponsor's Proposed Project or its alternatives. The area surrounding DVO within the GSA is predominantly agricultural, vacant, and open space to the east and south with light industrial/office areas to the north

and west. With combined cumulative effects of the implementation of Alternative B or Alternative D and the past, present and reasonably foreseeable projects described in this chapter, cumulative impacts are limited to those categories listed under Section 6.5, *Cumulative Impact Comparison*. The level of cumulative impacts anticipated to occur within these categories is not significant due to the types of projects proposed, the extent of the built environment in which they would occur, and the existing requirements to provide mitigation for Alternative B, Alternative D, and the past present, and reasonably foreseeable projects that may be occur when either Alternative B or Alternative D is implemented. Therefore, implementation of either Alternative B or Alternative D would not result in significant cumulative environmental impacts.

CHAPTER SEVEN
LIST OF PREPARERS, LIST OF AGENCIES, AND PERSONS TO WHOM COPIES ARE SENT

7.1 LIST OF PREPARERS

This section lists the individuals who assisted in the preparation of this Environmental Impact Statement (EIS), a list of the individuals and agencies that received the Draft and Final EIS, and locations of where the Draft and Final EIS were made available for public review.

As required by Federal Aviation Administration (FAA) Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions,* and Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures,* the names and qualifications of the principal persons involved in preparation of this EIS are identified in this chapter. It should be noted that, in accordance with Section 1502.6 of the Council on Environmental Quality regulations, the efforts of an interdisciplinary team, consisting of technicians and experts in various fields, were required to accomplish this study. Specialists involved in this EIS included those in such fields as airport planning; noise assessment and abatement; land use planning; air quality; water quality; biology; historic, architectural, and archaeological resources; and other disciplines. It should also be noted that, while an interdisciplinary approach has been used, all decisions made with regard to the content and scope of this EIS are those of the FAA.

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Table 7.1
LIST OF PREPARERS
Gnoss Field Airport

Preparer	Title / Project Role	Project Responsibility	Years of Work Experience	Education
Federal Aviation Administration				
Doug Pomeroy	Environmental Protection Specialist, Airports Division, San Francisco District Office	FAA Project Manager; strategic direction; document review; lead on agency coordination process	27	Bachelor of Science Wildlife Management; Master of Science Wildland Resource Science
Barry Franklin	Environmental Protection Specialist, Airports Division, San Francisco District Office	FAA Project Advisor; strategic direction; document review; support on agency coordination process	22	Bachelor of Science, Civil Engineering
David B. Kessler, ACIP	Regional Environmental Protection Specialist, Airports Division, Western-Pacific Region	Principal FAA Planner/Environmental Protection Specialist responsible for detailed FAA evaluation of the Final EIS as well as coordination of comments from federal and state agencies in the FAA's Western-Pacific Region. Responsible for detailed evaluation and review of federal environmental documents for compliance with the NEPA	33	Master of Arts. Physical Geography, Bachelor of Arts Physical Geography (Geology Minor)
Peter F. Ciesla	Regional Environmental Protection Specialist, Airports Division, Western-Pacific Region	FAA Planner/Environmental Protection Specialist responsible for detailed FAA evaluation of the Draft EIS.	20	Master of Business Administration, Finance, Land Use and Environmental Planning Certification, Bachelor of Arts, Accounting
Thomas W. Cuddy	Environmental Protection Specialist, APP-400 National Planning and Environmental Division	Responsible for detailed evaluation and review of federal environmental documents for compliance with the NEPA.	15	Ph.D. Anthropology/Archaeology, Bachelor of Science, Anthropology
M. Thomas Bennett	Environmental Protection Specialist, APP-400, National Planning and Environmental Division	Responsible for strategic direction, project team consultation, and document review.	34	Bachelor of Arts, History

Table 7.1, *Continued*
LIST OF PREPARERS
Gnoss Field Airport

Preparer	Title / Project Role	Project Responsibility	Years of Work Experience	Education
Landrum & Brown, Incorporated				
Mark Perryman	President / Officer-in-Charge	Consulting Team Project Director; strategic direction; document review	29	Bachelor of Science, Design
Rob Adams	Vice President / Project Manager	Consulting Team Project Manager; technical documentation and subconsultant management; quality assurance/control; document review	17	Bachelor of Urban Planning
Sara Hassert	Senior Consultant / Deputy Project Manager	Consulting Team Project Coordinator	12	Master of Public Administration; Bachelor of Science, Aviation Management
Tricia Rollins	Project Administrator	Consulting Team Project Administrator; Administrative File, Administrative Record, quality assurance/quality control	6	n/a
Mark Heusinkveld	Senior Project Manager	Aviation activity forecasting	22	Master of Business Administration, Finance; Bachelor of Business Administration, Accounting
Monica Geygan	Senior Project Manager	Project alternatives	23	Bachelor of Environmental Design
Fred Greve, P.E.	Managing Director	Greenhouse gas assessment	39	Master of Science, Environmental Engineering; Bachelor of Science, Biological Sciences; Bachelor of Science, Civil and Environmental Engineering

Table 7.1, *Continued*
LIST OF PREPARERS
Gnoss Field Airport

Preparer	Title / Project Role	Project Responsibility	Years of Work Experience	Education
Landrum & Brown, Incorporated, *Continued*				
Scott Carpenter	Senior Project Manager	Noise modeling, noise analysis	20	Bachelor of Science, Electronic Engineering Technology
Sarah Potter	Project Manager	Quality assurance/control; document review	14	Bachelor of Arts, Mathematics
Chris Babb	Senior Consultant	Air Quality analysis, greenhouse gas assessment	12	Master of Aeronautical Science; Bachelor of Science, Aerospace
Chuck Lang	Senior Consultant	GIS and land use analysis, mapping	13	Bachelor of Science, Physical Geography
Chris Sandfoss, AICP	Consultant	Land use compatibility analysis, energy and natural resources analysis	6	Master of Community Planning; Bachelor of Political Science
Marin County				
John Roberto	Consultant to Marin County	NEPA and CEQA Compliance Review	43	Master of Arts, Geography & Human Environmental Studies; Bachelor of Arts, Geography

Table 7.1, *Continued*
LIST OF PREPARERS
Gnoss Field Airport

Preparer	Title / Project Role	Project Responsibility	Years of Work Experience	Education
Civil Engineering Solutions				
Thomas S. Plummer Jr., CE	President	Floodplains, hydrology, & drainage analysis	23	Bachelor of Science, Civil Engineering Water Resources
Glenn Uyeda, CE	Project Manager	Floodplains, hydrology, & drainage analysis	39	Bachelor of Science, Civil Engineering Water Resources
Jay Heiman, CE	Project Engineer	Floodplains, hydrology, & drainage analysis	14	Bachelor of Science, Civil Engineering Water Resources
Shoja Amani	Hydrologic Specialist	Floodplains, hydrology, & drainage analysis	32	Bachelor of Science, Civil Engineering Water Resources
ESA				
Michael Burns	Project Manager	Project management; Mineral Resources, Hazardous Materials, and Solid Waste	32	Bachelor of Science, Geology
Brian Pittman	Certified Wildlife Biologist	Salt Marsh Harvest Mouse mitigation analysis	16	Master of Science, Environmental Studies
Foothill Associates				
Brian Mayerle	Vice President/ Project Manager and Principal Biologist	Water quality, biotic communities, endangered & threatened species, wetlands	21	Bachelor of Science, Ecology & Systematic Biology
Kyrsten Shields	Assistant Project Manager/ Lead CEQA Specialist	Water quality, biotic communities, endangered & threatened species, wetlands	9	Bachelor of Science, Natural Resource Planning
David Bise	Project Biologist	Biotic communities, endangered & threatened species	13	Bachelor of Science, Zoology
Ryan Brown	Project Wetland Delineator	Wetlands	12	Bachelor of Science, Biological Sciences

Table 7.1, *Continued*
LIST OF PREPARERS
Gnoss Field Airport

Preparer	Title / Project Role	Project Responsibility	Years of Work Experience	Education
Foothill Associates, *Continued*				
Scott Perrou	Water Quality Specialist	Water quality	10	Bachelor of Science, Biology; Master of Science, Fisheries
Kleinfelder, Incorporated				
Kash Hadipour	Vice President	Project management	30	Ph.D., Civil/Transportation Engineering, M.Sc., Civil/Transportation Engineering, B.Sc., Structural Engineering
Brian M. Mulvey	Senior Professional	Coastal resources	22	Master of Science, Fisheries Science
Michael Johnson	Senior Principal	Coastal Resources and Hazardous Materials	15	Bachelor of Science, Ecology; Juris Doctorate, Environmental Law
William V. McCormick	Principal Professional	Geology, Seismicity, and Soils	25	Master of Science, Geology
William Goggin	Project Professional	Threatened and Endangered Species	16	Bachelor of Science, Wildlife Management
Jeffrey C. Richmond	Project Professional	Geology, Seismicity, and Soils	14	Bachelor of Science, Geology
Rachel Alvarez	Staff Professional II	GIS analysis and graphics	15	Master of Science, Geology
Mehagan Hopkins	Staff Professional II	Threatened and Endangered Species	7	Bachelor of Science, Biology; Master of Molecular & Cell Biology

Table 7.1, *Continued*
LIST OF PREPARERS
Gnoss Field Airport

Preparer	Title / Project Role	Project Responsibility	Years of Work Experience	Education
Tremaine & Associates				
Kim Tremaine	Principal	Historic, Archaeological, & Cultural resources analysis	27	Ph.D., Anthropology (Candidate) Ph.C., Anthropology Master of Arts, Cultural Resources Management Bachelor of Arts, Anthropology
Dwight D. Simons	Project Manager	Historic, Archaeological, & Cultural resources analysis	43	Bachelor of Science, Anthropology
Melissa Johnson	Projects Coordinator	Historic, Archaeological, & Cultural resources analysis	3	Bachelor of Science, Anthropology Bachelor of Arts, History

7.2 DOCUMENT DISTRIBUTION LIST

Table 7.2 lists the individuals and agencies in receipt of review copies of the Draft EIS. All of these organizations and individuals also received a copy of the Final EIS. In addition, all commenters on the Draft EIS that provided a mailing address received a Notice of Availability of the Final EIS. **Table 7.3** lists the locations where the Draft and Final EIS were made available for public review.

Table 7.2
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Contact Information
U.S. Environmental Protection Agency	ELECTRONIC SUBMISSION	Office of Federal Activities Ariel Rios Building (South Oval Lobby), Room 7220 1200 Pennsylvania Ave. N.W. Washington, DC 20004
U.S. Environmental Protection Agency	Jared Blumenfeld, Regional Administrator	Region 9 75 Hawthorne St. San Francisco, CA 94105
U.S. Environmental Protection Agency	Enrique Manzanilla, NEPA Reviewer	Region 9 75 Hawthorne St. San Francisco, CA 94105
Federal Aviation Administration	Robin Hunt, Manager	San Francisco Airports District Office 1000 Marina Boulevard, Suite 220 Brisbane, CA 94005-1835
U.S. Department of the Interior, U.S. Fish and Wildlife Service	Ren Lohefener, Regional Director	California-Nevada Region 8 2800 Cottage Way, Rm W-2605 Sacramento CA 95825
U.S. Department of the Interior, U.S. Fish and Wildlife Service	Mark Littlefield	California-Nevada Region 8 2800 Cottage Way, Rm W-2605 Sacramento CA 95825
U.S. Department of the Interior, U.S. Fish and Wildlife Service	Ryan Olah	California-Nevada Region 8 2800 Cottage Way,Rm W-2605 Sacramento CA 95825
U.S. Department of the Interior, National Park Service	Christine Lehnertz, Regional Director	Pacific West Region 333 Bush Street, Suite 500 San Francisco, CA 94104
U.S. Department of the Interior, Office of Environmental Policy and Compliance	Willie R. Taylor, Director	1849 C Street, N.W. Washington, D.C. 20240
U.S. Department of the Interior, Bureau of Indian Affairs	Amy Dutschke, Regional Director	Pacific Regional Office 2800 Cottage Way Sacramento, CA 95825
U.S. Army Corps of Engineers	Lt. Col. Torrey A. DiCiro, Commander	San Francisco District 1455 Market Street San Francisco, CA 94103-1398

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Contact Information
Federal Emergency Management Agency, Region IX	Sandro Amaglio, Regional Environmental Officer	1111 Broadway, Suite 1200 Oakland, CA 94607-4052
U.S. Department of Commerce	Rebecca Blank, Acting Secretary of Commerce	1401 Constitution Ave., NW Washington, DC 20230
U.S. Department of Agriculture, Natural Resources Conservation Service	Charlette Epifanio, District Conservationist	1301 Redwood Way Ste 170 Petaluma, CA 94954-1109
National Oceanic and Atmospheric Administration (NOAA)	Steve Kokkinakis, NEPA Coordination Staff	1315 E. West Highway Silver Spring, MD 20910
Federal Highway Administration, California Division	Vincent Mammano, Division Administrator	650 Capitol Mall, Suite 4-100 Sacramento, CA 95814
Federal Railroad Administration	Mr. Mark Yachmetz, Associate Administrator Rail Development	1200 New Jersey Ave. SE Washington, DC 20590
National Marine Fisheries Service	Shelby Mendez	501 West Ocean Blvd., Rm 4200, Long Beach, CA 90802
U.S. Department of Housing and Urban Development	Ophelia B. Basqal, Regional Administrator	Region IX 600 Harrison St. 3rd Floor San Francisco, CA 94107-1300
Advisory Council on Historic Preservation	John M. Fowler Executive Director	Old Post Office Building, 1100 Pennsylvania Ave. NW, Ste 803 Washington, DC 20004
U.S. Congress	Lynn Woosley, Congressional Representative, Dist #6	1050 Northgate Drive, Suite 354 San Rafael, CA 94903
U.S. Postal Service	Novato Postmaster	1537 S. Novato Blvd. Novato, CA 94947
Tribal Entities		
Stewart's Point Rancheria Kashia Band of Pomo Indians	Emilio Valencia, Tribal Historic Preservation Officer	3535 Industrial Drive Ste. B2 Santa Rosa, CA 95403
The Federated Indians of Graton Rancheria	Mr. Nick Tipon, Chairman of Sacred Sites Protection Council	6400 Redwood Drive, Ste. 300 PO Box 14428 Rohnert Park, CA 94928
The Federated Indians of Graton Rancheria	Mr. Greg Sarris, Chairperson	6400 Redwood Drive, Ste. 300 PO Box 14428 Rohnert Park, CA 94928
The Federated Indians of Graton Rancheria	Mr. Gene Buvelot Treasurer	6400 Redwood Drive, Ste. 300 PO Box 14428 Rohnert Park, CA 94928
The Federated Indians of Graton Rancheria	Mr. Frank Ross Council Member	813 Lamont Ave. Novato, CA 94928

Table 7.2, *Continued*
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Agency/Organization	Name & Title	Contact Information
The Federated Indians of Graton Rancheria	Ms. Kathleen Smith	1778 Sunnyvale Ave. Walnut Creek, CA 94596
Ya-Ka-Ama	Ms. Betty Molina Administrative Assistant	6215 Eastside Road Forestville, CA 95436
Cloverdale Rancheria of Pomo Indians	Ms. Patricia Hermosillo, Chairperson	555 S. Cloverdale Blvd. Ste. A Cloverdale, CA 95425
Cloverdale Rancheria of Pomo Indians	Mr. Mario Hermosillo Jr., Tribal Environmental Planner	555 S. Cloverdale Blvd. Ste. A Cloverdale, CA 95425
Coast Miwok Pomo	Ms. Dawn Getchell	PO Box 53 Jenner, CA 95450
Dry Creek Rancheria of Pomo Indians	Mr. Harvey Hopkins, Chairperson	PO Box 607 Geyserville, CA 95441
Lytton Rancheria Band of Pomo Indians	Ms. Margie Mejia, Chairperson	1300 N. Dutton Ste. A Santa Rosa, CA 95401
Lytton Rancheria Band of Pomo Indians	Ms. Lisa Miller, Tribal Administrator	1300 N. Dutton Ste. A Santa Rosa, CA 95401
Lytton Rancheria Band of Pomo Indians	Ms. Cathy Lopez, Vice-Chairperson	1300 N. Dutton Ste. A Santa Rosa, CA 95401
Mishewal-Wappo Tribe of Alexander Valley	Mr. Scott Gabaldon, Chairperson	PO Box 1794 Middleton, CA 95461
Mishewal-Wappo Tribe of Alexander Valley	Mr. Earl Couey, Cultural Resources Manager	PO Box 5676 Santa Rosa, CA 95402
Stewart's Point Rancheria	Mr. Eric Wilder, Chairperson	3535 Industrial Drive Ste. B2 Santa Rosa, CA 95403
Stewart's Point Rancheria	Ms. Lynne Rosselli, Environmental Planner	3535 Industrial Drive Ste. B2 Santa Rosa, CA 95403
State		
California Air Resources Board	Mary D. Nichols, Board Chairman	1001 "I" Street P.O. Box 2815 Sacramento, CA 95812
California Natural Resources Agency	John Laird, Secretary	1416 9th Street, Suite 1311 Sacramento, CA 95814
California Department of Food and Agriculture	Karen Ross, Secretary	1220 N Street Sacramento, CA 95814
California Department of Fish and Game, Region 3	Carl Wilcox, Regional Manager	7329 Silverado Trail Napa, CA 94558
California Department of Forestry and Fire Protection	Ken Pimlott, Acting Director	1416 9th Street PO Box 944246 Sacramento, CA 94244-2460
California Department of General Services	Fred Klass, Director	707 3rd St. West Sacramento, CA 95605
California Department of Housing and Community Development	Cathy E. Cresswell, Acting Director	1800 Third Street Sacramento, CA 95811-6942
California Department of Parks and Recreation	Ruth Coleman, Director	1416 9th Street Sacramento, CA 95814

Table 7.2, *Continued*
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Agency/Organization	Name & Title	Contact Information
California Department of Conservation	Derek Chernow, Acting Director	801 K Street, Suite 20-15 Sacramento, CA 95814
California Department of Transportation (Caltrans)	Malcolm Dougherty, Acting Director	1120 N Street P.O. Box 942873 Sacramento, CA 94273-0001
California Department of Transportation (Caltrans) District 4	Bijan Sartipi, District 4 Director	P.O. Box 23660 Sacramento, CA 94273-0001
California Department of Transportation (Caltrans), Division of Aeronautics	Terry Barrie, Office Chief, Office of Aviation Planning	PO Box 942874 MS-40, Sacramento, CA 94274
California Department of Water Resources	Mark Cowin, Director	1416 9th Street, Room 1115-1 Sacramento, CA 95814
California Department of Public Health and Drinking Water District 18	Janice Oakley	50 D Street, Suite 200 Santa Rosa, CA 95404
California Energy Commission	Melissa Jones, Executive Director	1516 Ninth Street, MS-29 Sacramento, CA 95814-5512
California Environmental Resources Evaluation System (CERES)	David Harris, Director	1416 Ninth Street, Suite 1311 Sacramento CA, 95814
California Environmental Protection Agency	Matthew Rodriquez, Secretary for Environmental Protection	P.O. Box 2815 Sacramento, CA 95814
California State Office of Historic Preservation	Milford Wayne Donaldson, State Historic Preservation Officer	1725 23rd Street, Suite 100 Sacramento, CA 95814
Governor's Office of Emergency Services	Henry Renteria, Director	3650 Schriever Ave Mather, CA 95655
Governor's Office of Homeland Security	Matthew R. Bettenhausen, Director	State Capitol Sacramento, CA 95814
Governor's Office of Planning and Research	Ken Alex, Director	1400 Tenth Street, Rm. 212 Sacramento, CA 95814
Governor's Office of Planning and Research	Scott Morgan, State Clearinghouse Director	P.O. Box 3044 Sacramento, CA 95812-3044
California Health and Human Services Agency	Diana Dooley, Secretary	1600 Ninth Street, Room 460 Sacramento, CA 95814
California Office of Environmental Health Hazard Assessment	George Alexeeff Ph.D. Acting Director	1001 I Street P.O. Box 2815 Sacramento, CA 95812-2815
California Native American Heritage Commission	Executive Secretary	915 Capital Mall, Rm. 364 Sacramento, CA 95814
California National Guard	Major General David S. Baldwin, Adjunct General	9800 Goethe Road Sacramento, CA 95827

Table 7.2, *Continued*
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Agency/Organization	Name & Title	Contact Information
California State Lands Commission	Curtis Fossum Executive Officer	100 Howe Ave Suite 100 South Sacramento, CA 95825-8202
California State Water Resources Control Board	Tom Howard, Executive Director	1001 I Street Sacramento, CA 95812-2000
San Francisco Bay Regional Water Quality Control Board, Region 2	Bruce Wolfe, Executive Officer	1515 Clay Street, Suite 1400, Oakland, CA 94612
San Francisco Bay Regional Water Quality Control Board, Northeast Bay Section	William Hurley, Sr., Section Leader	1515 Clay Street, Suite 1400 Oakland, CA 94612
California Public Utilities Commission	Paul Clanon, Executive Director	505 Van Ness Avenue, San Francisco, CA 94102
California Wildlife Conservation Board	John P. Donnelly, Executive Director	1807 13th Street, Suite 103 Sacramento, CA 95811
California Central Valley Flood Protection Board	Benjiman Carter, President	3310 El Camino Ave., Rm. 151, Sacramento, CA 95821
California Integrated Waste Management Board (CalRecycle)	Mark Leary, Acting Director	1001 I Street Sacramento, CA 95812-4025
California State Senate	Mark Leno, State Senator, District #3	3501 Civic Center Drive, #425, San Rafael, CA 94903
California State Assembly	Jared Huffman, State Assemblyman, District #6	3501 Civic Center Drive, #412, San Rafael, CA 94903
Regional		
Bay Area Air Quality Management District	David Burch, Principal Environmental Planner	939 Ellis St., San Francisco, CA 94109
San Francisco Bay Conservation & Development Commission	Will Travis, Executive Director	50 California St., Suite 2600, San Francisco, CA 94111
Metropolitan Transportation Commission	Steve Heminger Executive Director	101 8th St. Oakland, CA 94607
Association of Bay Area Governments	Mark Green, President	101 Eighth Street Oakland, CA 94607
Local		
Marin County Board of Supervisors	Kathrin Sears, Supervisor	3501 Civic Center Drive, #329 San Rafael, CA 94903
Marin County Board of Supervisors	Katie Rice Supervisor	3501 Civic Center Drive, #329 San Rafael, CA 94903
Marin County Board of Supervisors	Judy Arnold, Supervisor	3502 Civic Center Drive, #329 San Rafael, CA 94903
Marin County Board of Supervisors	Steve Kinsey, Supervisor	3501 Civic Center Drive, #329 San Rafael, CA 94903
Marin County Board of Supervisors	Susan Adams, Supervisor	3501 Civic Center Drive, #329 San Rafael, CA 94903

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Contact Information
Marin County Administrator	Matthew Hymel, County Administrator	3501 Civic Center Drive, #325 San Rafael CA 94903
Marin County Department of Public Works	Craig Tackabery, Assistant Director	3501 Civic Center Drive, #304 San Rafael, CA 94903
Marin County Department of Public Works, Engineering	Reuel Brady, Associate Civil Engineer	3501 Civic Center Drive, #304 San Rafael, CA 94903
Marin County Department of Public Works, Gnoss Field Airport	Dan Jensen, Airport Manager	451-A Airport Road Novato, CA 94945
Marin County Department of Public Works, Land Use & Water Resources	Berenice Davidson Manager	3501 Civic Center Drive, #304 San Rafael, CA 94903
Marin County Department of Public Works, Traffic Engineering	Dan Dawson,	P.O. Box 4186 San Rafael, CA 94903
Marin County Department of Public Works, Stormwater Pollution Prevention	Gina Purin	3501 Civic Center Drive, #304 San Rafael, CA 94903
Marin County Environmental Health Services	Mark Janofsky Senior Environmental Health Specialist	3501 Civic Center Drive, #236 San Rafael, CA 94903
Marin County Environmental Health Services	Rebecca Ng Deputy Director	3502 Civic Center Drive, #236 San Rafael, CA 94903
Marin County Community Development Agency	Brian Crawford, Director	3501 Civic Center Drive, #308 San Rafael, CA 94903
Marin County Community Development Agency	Tom K. Lai, Assistant Director	3501 Civic Center Drive, #308 San Rafael, CA 94903
Marin County Community Development Agency	Rachael Warner, Acting Environmental Coordinator	3501 Civic Center Drive, #308 San Rafael, CA 94903
Marin County Community Development Agency	Tammy Taylor Planning Aide	3501 Civic Center Drive, #308 San Rafael, CA 94903
Marin County Department of Cultural and Visitor Services	James Farley Director	Marin County Fair Office Avenue of the Flags San Rafael, CA 94903
Marin County Department of Parks and Open Space	Linda Dahl, Director and General Manager	3501 Civic Center Drive Room #260 San Rafael, CA 94903
Marin County Office of Education	Mary Jane Burke, Superintendent	1111 Las Gallinas Ave San Rafael, CA 94903
Marin County Transit District	Amy Van Doren, Director of Operations	750 Lindaro Street, Suite 200 San Rafael, CA 94903

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Contact Information
Marin County Office of Emergency Services	Janell Myhre, Emergency Services Manger	3501 Civic Center Drive #266 San Rafael, CA 94903
Marin County Farm Advisor	David Lewis, Director	1682 Novato Blvd. Novato, CA 94947
Marin County Farm Bureau	Jerry Corda Treasure	P.O. Box 219 Point Reyes Station, CA 94956
Marin County Fire Department	Ken Massucco, Fire Chief	P.O. Box 518 Woodacre, CA 94973-0518
Marin County Dept of Public Works Waste Management	Steve Devine Program Manager	P.O. Box 4186. San Rafael, CA 94913
Marin County Counsel	Patrick Faulkner, County Counsel	3501 Civic Center Drive, #275 San Rafael, CA 94903
Marin Agricultural Weights & Measures	Stacy K. Carlsen, Agriculture Commissioner	1682 Novato Blvd., Ste. 150-A Novato, CA 94947-7021
Sonoma County Administrator	Veronica Ferguson, County Administrator	575 Administration Dr. Rm 104A Santa Rosa, CA 95403
Sonoma County Permit and Resource Management Department	Pete Parkinson, Department Head	2550 Ventura Avenue Santa Rosa, CA 95403
City of Novato	Madeline Kellner, Mayor	75 Rowland Way #200 Novato, CA 94945
City of Novato	Michael S. Frank, City Manager	75 Rowland Way, Ste. 200 Novato, CA 94945
City of Novato Community Development	David Wallace Community Development Director	75 Rowland Way # 200 Novato, CA 94945
City of Novato	Hans Grant, Senior Planner	75 Rowland Way, Ste. 200 Novato, CA 94945
City of Novato Public Works	Jason Nutt, Director	75 Rowland Way, #200 Novato, CA 94945
City of Novato Department of Parks, Recreation, and Community Services	Pam Shinault, Director	75 Rowland Way # 200 Novato, CA 94945
Novato Unified School District	Dr. Shalee Cunningham, Superintendent	1015 7th St Novato, CA 94945
Novato Sanitary District	William C. Long, President	500 Davidson Street Novato, CA 94945
City of Novato Fire Protection District	Marc A. Revere Fire Chief	95 Rowland Way Novato, CA 94945
Novato Chamber of Commerce	Coy Smith Chief Executive Officer	807 DeLong Ave Novato, CA 94945
City of Belvedere	Jerry Butler, Mayor	25 Cove Road Belvedere, CA 94920
Town of Corte Madera	David Bracken, Town Manager	P.O. Box 159 Corte Madera, CA 94976
Town of Fairfax	Michael Rock, Town Manager	142 Bolinas Rd. Fairfax, CA 94930

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Contact Information
City of Larkspur	Larry Chu, Mayor	400 Magnolia Ave. Larkspur, CA 94939
City of Mill Valley	James McCann, City Manager	26 Corte Madera Ave. Mill Valley, CA 94941
City of Petaluma	John C. Brown, City Manager	11 English Street Petaluma, CA 94952
Town of Ross	Gary Broad, Town Manager	P.O. Box 320 Ross, CA 94957
City of San Anselmo	Debra Stutsman, Town Manager	525 San Anselmo Avenue San Anselmo, CA 94960-2682
City of San Rafael	Nancy Mackle, City Manager	1400 Fifth Avenue, Room 203 San Rafael, CA 94915-1560
City of Sausalito	Adam Politzer, City Manager	420 Litho St. Sausalito, CA 94966
Town of Tiburon	Margaret Curran, Town Manager	1505 Tiburon Blvd Tiburon, CA 94920
San Rafael Chamber of Commerce	Rick Wells, CEO & President	817 Mission Ave. San Rafael, CA 94901
Flood Control 7 Advisory Board	Neal Conatser, Assistant Engineer	P.O. Box 4186 San Rafael, CA 94913
Marin/Sonoma Mosquito & Vector Control District	Charles Bouey, President	595 Helman Ln Cotati, CA 94935
Bel Marin Keys Community Services District	Madeline Thomas, District Manager	4 Montego Key Novato, CA 94949
Bolinas Community Public Utility District	Jennifer Blackman, General Manager	P.O. Box 390 Bolinas, CA 94924
Marin City Community Services District	Johnathan Logan, Jr., District Manager	630 Drake Ave. Marin City, CA 94965
Bel Marin Keys Community Services District	Vincent Lattanzio, President	4 Montego Key Novato, CA 94948
Muir Beach Community Services District	Leighton Hills, District Manager	19 Seacape Dr. Muir Beach, CA 94965-9701
Tamalpals Community Services District	Jon Elam, District Manager	305 Bell Lane Mill Valley, CA 94941
North Coast Railroad Authority	Mitch Stogner, Executive Director	419 Talmage Road, Suite M Ukiah, CA 95482
SMART District Office	John Lackey, Capital Project Director	750 Lindaro Street, Suite 200 San Rafael, CA 94901
SMART District Office	Farhad Mansourian Executive Director	750 Lindaro Street, Suite 200 San Rafael, CA 94901
North Marin Water District	Chris DeGabriele, General Manager	P.O. Box 146 Novato, CA 94948
Marin Municipal Water District	Jack Gibson, Board President	220 Nellen Ave. Corte Madera, CA 94925
Local Agency Formation Commission	Peter Banning, Executive Officer	555 Northgate Dr., Suite 230 San Rafael, CA 94903

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Information
Persons Requesting Notification		
Marin Audubon Society	Barbara Salzman, President/Nominating Committee	48 Ardmore Road Larkspur, CA 94939
California Native Plant Society	Bob Soost	PO Box 589 Inverness, CA 94937
Marin Agricultural Land Trust	Bob Berner, Executive Director	P.O. Box 809 Point Reyes, CA 94956
Petaluma Riverkeeper	David Yearsley	521 Walnut St. Petaluma, CA 94952
Save the Bay	David Lewis, Executive Director	350 Frank Ogawa Plaza, # 900 Oakland, CA 94612-016
Environmental Action Committee of West Marin	Amy Trainer, Executive Director	P.O. Box 609 Pt. Reyes Station, CA 94956
Nature Conservancy	Jennifer Johnson	PO Box 860 San Anselmo, CA 94979
Marin Conservation League	Nona Dennis, President	1623A Fifth Avenue San Rafael, CA 94901
Marin Conservation League	Roger Roberts	223 S. Heights Blvd. San Rafael, CA 94901
SPAWN	Reuven Walder	Box 400 Forest Knolls, CA 94933
Friends of Novato Creek	Sue Lattanzio	PO Box 5312 Novato, CA 94948
SPAWN	Todd Steiner, Director	Box 400 Forest Knolls, CA 94933
Planning and Conservation League	Traci Sheehan, Executive Director	1107 9th Street, Ste. 360 Sacramento, CA 95814
Environmental Action Club	Newsletter Editor	885 College Ave. Kentfield, CA 94904
Sierra Club - Marin Group	Chairperson	P.O. Box 3058 San Rafael, CA 94912
Environmental Education Council of Marin	Aaron Lanstein	42 Bolinas Road, Suite G Fairfax, CA 94930
No Wetlands Landfill Expansion	Brent Newell	515 Hayes Lane Petaluma, CA 94954
Petaluma Wetlands Alliance	Gerald Moore, Chairman	P.O. Box 973 Petaluma, CA 94953
Sustainable Novato	John Schlag, President	852 Diablo Avenue, #106 Novato, CA 94947
Sustainable Marin	Kiki LaPorta, President	1017 Bel Marin Keys Boulevard Novato, CA 94949
Marin Conservation League	Lawrence Smith	21 Terry Circle Novato, CA 94947

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Information
The Water Quality Association	Richard Bailey	660 Plum Street Novato, CA 94945
Environmental Forum of Marin	Vicki Rupp, Executive Director	P.O. Box 150459 San Rafael, CA 94915
Environmental Health Network		P.O. Box 1155 Larkspur, CA 94977
Bay Institute of San Francisco	Angela Moskow, Executive Director	695 DeLong Avenue, Suite 100 Novato, CA 94945
The Bay Institute of San Francisco	Marc Holmes, Bay Restoration Program Director	695 DeLong Avenue, Suite 100 Novato, CA 94945
California Waterfowl Association	Bob McLandress, President	4630 Northgate Boulevard, Suite 150 Sacramento, CA 95834
Romberg Tiburon Center for Environmental Studies	Toby Garfield, Executive Director	3152 Paradise Drive Tiburon, CA 94920
Black Point Environmental Action Committee	Rosalie Webb	222 Crest Novato, CA 94945
River Vista Homeowners Association	Bruce Worthington	6 River Vista Ct. Novato, CA 94945
Partridge Knolls Homeowners Assoc	Cynthia Clinton	440 Woodhollow Drive Novato, CA 94945
Local Group	Dennis & Nancy Gates	851 Arlington Blvd El Cerrito, CA 94530
Bahia Homeowners Association	Helen Loorya, Steward Properties Services, Inc	720 South Point Blvd #210 Petaluma, CA 94945
San Marin Improvement Association	Mike Morris	936 B Seventh Street P.M.B.329 Novato, CA 94945
Verissimo Valley Homeowner's Association	Norm deBack	15 Saddle Ln Novato, CA 94947
San Marin Valley Homeowners Assoc	R. Crutchfield	PO Box 6533 Santa Rosa, CA 95406
Atherton Community Association	Vickie Miller	25 Archibald Lane Novato, CA 94945
McClay Road Homeowner's Association		704 McClay Rd Novato, CA 94947
Wildhorse Valley Association, Inc.		110 Wild Horse Valley Dr Novato, CA 94947
Aeroclub Marin		451 Airport Road Novato, CA 94945
California Groundwater Association	Augie Guardino, President	P.O. Box 14369 Santa Rosa, CA 95402
Local Group	Scott Shepardson	130 Sanchez Way Novato, CA 94947
Local Group	Susan Stompe	110 San Mateo Way Novato, CA 94945
Local Group	Kevin Lara	15 Oak Shade Lane Novato, CA 94945

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Information
Local Group	Harry Graves	686 Albatross Drive Novato, CA 94945
Local Group	John Yee	100 Saddle Wood Drive Novato, CA 94945
Local Group	T.J. Neff	363 Grandview Ave Novato, CA 94945
Kelleher Corporation	Theodore E. Fullmer, Flight Department Manager	2770 Canterbury Dr. Santa Rosa, CA 95405
Local Group	Tom Yarish	23 Nelson Avenue Mill Valley, CA 94941
Sunset Aviation	John Kibler, Operator	24 Pacheco St. Sausalito, CA 94965
Sunset Aviation	Bradford Archer, Director of Flight Standards	1 Nogales Court Novato, CA 94947
AAS	Brad Archer, President	1 Nogales Court Novato, CA 94947
Franecke Law Group	Louis S. Franecke	1115 Irwin St. Suite 100 San Rafael , CA 94901
Partridge Knolls II HOA	Brian Williams	254 Butterfield Dr. Novato, CA 94945
Black Point Improvement Club	Hank Barner	427 Grandview Novato, CA 94945
Rush Creek Homeowners Association	John & Joanne Trifoso	35 Dry Creek Lane Novato, CA 94945
Novato Library	Suella Kennedy-Fulmer, Reference Desk	1720 Novato Boulevard Novato, CA 94947
Preventive Psychiatry Associates	Gilbert Kliman	2105 Divisadero St. San Francisco, CA 94115
Rio Marin Restorations	Trevor Ham	336 Bon Air Center #329 Greenbrae, CA 94904
Neighboring Property Owner	David Leveroni III	3100 Novato Boulevard Novato, CA 94947
California Wildlife Conservation Board	John P. Donnelly, Executive Director	1807 13th Street, Suite 103 Sacramento, CA 95811
Neighboring Property Owner	Phillip Bortolussi	19 Mariele Drive Fairfax, CA 94903
Neighboring Property Owner	Shirley Fleischman	PO Box 2610 Novato, CA 94948
Alexander Anolik Professional Law Corporation	Alexander Anolik, Esquire	2107 Van Ness Ave. Suite 200 San Francisco, CA 94109
Anthony F. Silveira and Lorraine F. Silveira 2002 Trust		140 Blackstone Drive San Rafael, CA 94903
Binford Road LLC		984 Hensley Way Richmond, CA 94801
Buck Center for Research in Aging		8001 Redwood Boulevard Novato, CA 94945
Burdell Air Partners LLC		2660 Baker Street San Francisco, CA 94123

Table 7.2, *Continued*
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Gnoss Field Airport

Agency/Organization	Name & Title	Information
J Cashew Corp		300 Drakes Landing Road #120 Greenbrae, CA 94904
JHW Family LTD Partners		300 Drakes Landing Road #120 Greenbrae, CA 94904
Novato Redwood Properties, Inc.		PO Box 2625 Novato, CA 94948
Novato RV Park		1530 Armstrong Avenue Novato, CA 94945
Rancho del Pantano		100 Black John Road Novato, CA 94945
Redwood Landfill, Inc.		8950 Redwood Boulevard PO Box 793 Novato, CA 94948
State of California		1807 13th Street Ste-103 Sacramento, CA 95814
Novato Advance	Mary Connelly	P O Box 8 Novato, CA 94948
Marin Independent Journal	Matt Wilson, Executive Editor/Marin IJ	4000 Civic Center Drive, Floor 3 San Rafael, CA 94903
Novato Advance	Tim Omarzu, Editor	Po Box 8 Novato, CA 94948
Marin Independent Journal	Brad Breithaupt, Environmental Reporter	4000 Civic Center Drive, Floor 3 San Rafael, CA 94903
Marin Independent Journal	Richard Halstead, Reporter	4000 Civic Center Drive, Floor 3 San Rafael, CA 94903
Pacific Sun	Samantha Campos, Reporter	835 4th Street, Suite B San Rafael, CA 94901
Interested Public	Robert Raven	250 San Felipe Way Novato, CA 94945
Interested Public	Ted Newman	316 Degrtrail Lane Mill Valley , CA 94941
Interested Public	JoAnn Behm	160 H. Lane Novato, CA 94945
Interested Public	Lee Miller	475 Wilson Novato, CA 94947
Interested Public	Don Urban	28 Nunes Novato, CA 94945
Interested Public	Ed Mainland	1017 Bel Marin Keys Blvd Novato, CA 94949
Interested Public	Corey Stranger	260 Saddle Wood Dr. Novato, CA 94945
Interested Public	Christopher Gilkerson	220 Saddlewood Dr. Novato, CA 94945
Interested Public	Peter and Jean Harris Johnson	265 Saddlewood Dr. Novato, CA 94945
Interested Public	Don Wilhelm	21 Hayes St. Novato, CA 94947

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Information
Interested Public	Clarence Bracey	331 School Rd. Novato, CA 94945
Interested Public	Robert Rus	624 Santana Rd. Novato, CA 94945
Interested Public	Jeanette Weber	185 Saddlewood Novato, CA 94945
Interested Public	Sally Scotto	504 Santana Rd. Novato, CA 94945
Interested Public	Mark Barosko	604 Santana Rd. Novato, CA 94945
Interested Public	Carolyn Patterson	451 Airport Rd. Novato, CA 94945
Interested Public	Harold Bexton	640 Santana Rd. Novato, CA 94945
Interested Public	Ron Zechlin	25 Summers Ave. Novato, CA 94945
Interested Public	Fay Gale	9 William Rd. Novato, CA 94945
Interested Public	Lynn Baker	115 Cobblestone Crt. Novato, CA 94945
Interested Public	Leo Bourke	2320 Laguna Vista Novato, CA 94945
Interested Public	Greg Franc	2515 Laguna Vista Dr. Novato, CA 94945
Interested Public	Bob Minkin	28 Partridge Dr. Novato, CA 94945
Interested Public	Antonio Capretta	2408 Laguna Vista Dr. Novato, CA 94945
Interested Public	Steve Arago	1140 Daniel Dr. Petaluma, CA 94954
Interested Public	Mike Ring	170 Saddlewood Dr. Novato, CA 94945
Interested Public	Robert Fujimoto	346 School Rd. Novato, CA 94945
Interested Public	Michael Bozzuto	732 Santana Rd. Novato, CA 94945
Interested Public	Mike Dyvad	2511 Topaz Dr. Novato, CA 94945
Interested Public	Denise Moore	612 Santana Rd. Novato, CA 94945
Interested Public	Robert Pack	2511 Laguna Vista Novato, CA 94945
Interested Public	Joseph Valls	505 Santana Rd. Novato, CA 94945
Interested Public	Ed Budzinski	600 Santana Rd. Novato, CA 94945
Interested Public	Ramin Khany	23 Braun Ct. Sausalito, CA 94965
Interested Public	Elmo Shropshire	2521 Laguna Vista Novato, CA 94945

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Information
Interested Public	Monica Devincenzi	2000 Geng Rd. Palo Alto, CA 94403
Interested Public	Raul Garcia	77 Larkspur San Rafael, CA 94901
Interested Public	Richard Levy	2516 Laguna Vista Dr. Novato, CA 94945
Interested Public	Stephen Hoff	180 Wild Horse Valley Rd. Novato, CA 94945
Interested Public	Leslie Weber	235 Saddlewood Dr. Novato, CA 94945
Interested Public	Fred W. Patterson III	2 Entrada Circle American Canyon, CA 94503
Interested Public	Steve Isaacs	330 Via La Paz Greenbrae, CA 94904
Interested Public	Kathy Socal	PO Box 471148 San Francisco, CA 94147
Interested Public	Mr. & Mrs. Christenson	10 Westwood Dr. Novato, CA 94945
Interested Public	Collen Haysek	47 Nova Lane Novato, CA 94945
Kimley-Horn & Associates	Kevin Flynn, Project Manager	765 The City Drive Suite 400 Orange, CA 92868
Interested Public	Richard Geist	20 Espalda Ct. San Rafael, CA 94901
Interested Public	David Kliman	806 Butte St. Sauselito, CA 94965
Interested Public	Jerry Thomas	138 Kipling Drive Mill Valley, CA 94941
Interested Public	Interested Citizen	2575 14th Avenue San Francisco, CA 94127
Interested Public	Robert Spofford	61 Dunfries Terrace San Rafael, CA 94901
Interested Public	Jim Duckworth	PO Box 655 Novato, CA 94948
Interested Public	Trevor Cutrer	1409 Wabash Way Roseville, CA 95678
Interested Public	Kent Carter	233 Judah St San Francisco, CA 94122
Interested Public	Juanita Davis	1141 Nirvana Road Santa Barbara, CA 93101
Interested Public	Jean Gjevik	406 Ridge Road Novato, CA 94947
Interested Public	Delia West	ARCA Noong Street 18 London, England 11019
Interested Public	Ed Budzinski	600 Santana Rd. Novato, CA 94945
Interested Public	Bradford Archer	Archer Aviation Services 1 Nogales Court Novato, CA 94947

Table 7.2, *Continued*
DOCUMENT DISTRIBUTION LIST
Gnoss Field Airport

Agency/Organization	Name & Title	Information
Interested Public	Bob Spofford	61 Dunfries Terrace San Rafael, CA 94901
Interested Public	Trevor Ham	107 Corte Mesa Avenue San Rafael, CA 94901

Table 7.3
LOCATION OF EIS FOR PUBLIC REVIEW
Gnoss Field Airport

Location	Address
Federal Aviation Administration	Doug Pomeroy San Francisco Airports District Office 1000 Marina Boulevard, Suite 220 Brisbane, CA 94005-1853
Marin County Department of Public Works	3501 Civic Center Drive, Room 404, San Rafael, CA, 94903
Gnoss Field Airport	451-A Airport Road Novato, CA 94945
Marin County Library Novato Branch	1720 Novato Blvd Novato, CA 94947
Marin County Library South Novato Branch	6 Hamilton Landing, Suite 140A Novato, CA 94949
San Rafael Public Library	1100 E Street San Rafael, CA 94901
Marin County Library Civic Center Branch	3501 Civic Center Drive # 427 San Rafael, CA 94903
Marin County Library Bolinas Branch	14 Wharf Road Bolinas, CA 94924
Marin County Library Corte Madera Branch	707 Meadowsweet Drive Corte Madera, CA 94925
Marin County Library Fairfax Branch	2097 Sir Francis Drake Blvd. Fairfax, CA 94930
Marin County Library Inverness Branch	15 Park Avenue Inverness CA, 94937
Marin County Library Marin City Branch	164 Donahue St. Marin City, CA 94965
Marin County Library Point Reyes Branch	11431 State Route One Point Reyes Station, CA 94956
Marin County Library Stinson Beach Branch	3521 Shoreline Highway Stinson Beach CA 94970
Sonoma County Library Petaluma Branch	100 Fairgrounds Drive Petaluma, CA 94952
San Anselmo Public Library	110 Tunstead Avenue San Anselmo , CA 94960
Tiburon - Belvedere Library	1501 Tiburon Blvd Tiburon, CA 94920-2530
Mill Valley Public Library	375 Throckmorton Ave Mill Valley, CA 94941
Larkspur Public Library	400 Magnolia Ave Larkspur, CA 94939-2035
Sausalito Public Library	420 Litho Street Sausalito, CA 94965
Gnoss Field (DVO) EIS/EIR Website	http://www.gnossfieldeis-eir.com/

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