# AGRICULTURAL IMPACT STATEMENT

# CTH "TT" (West Waukesha Bypass): IH 94 to STH 59/CTH "X" Waukesha County

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Wisconsin Department of Agriculture,
Trade and Consumer Protection
DATCP #3761

# Agricultural Impact Statement

Wisconsin Department of Agriculture,
Trade and Consumer Protection


Ben Brancel, Secretary

John Petty, Administrator
Division of Agricultural Resource Management

Kathy F. Pielsticker, Director
Bureau of Land and Water Resources

Sara Walling, Chief
Resource Planning and Water Quality Section

Alice Halpin, Author

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# AGRICULTURAL IMPACT STATEMENT

## CTH "TT" (West Waukesha Bypass): IH 94 to Sunset Drive
## Waukesha County
## Project ID#: 2788-01-00

## I. INTRODUCTION

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) has prepared this agricultural impact statement (AIS) in accordance with §32.035, *Wisconsin Statutes*. The AIS is an informational and advisory document that describes and analyzes the potential effects of the project on farm operations and agricultural resources, but cannot stop a project.

The DATCP is required to prepare an AIS when the actual or potential exercise of eminent domain powers involves an acquisition of interest in more than 5 acres of land from any farm operation[1]. The DATCP may choose to prepare an AIS if an acquisition of 5 or fewer acres will have a significant impact on a farm operation. Significant impacts could include the acquisition of buildings, the acquisition of land used to grow high-value crops, or the severance of land. The DATCP should be notified of such projects regardless of whether the proposing agency intends to use its condemnation authority in the acquisition of project lands. The proposing agency may not negotiate with or make a jurisdictional offer to a landowner until 30 days after the AIS is published.

[1]The term *farm operation* includes all owned and rented parcels of land; buildings and equipment; livestock; and personnel used by an individual, partnership, or corporation under single management to produce agricultural commodities.

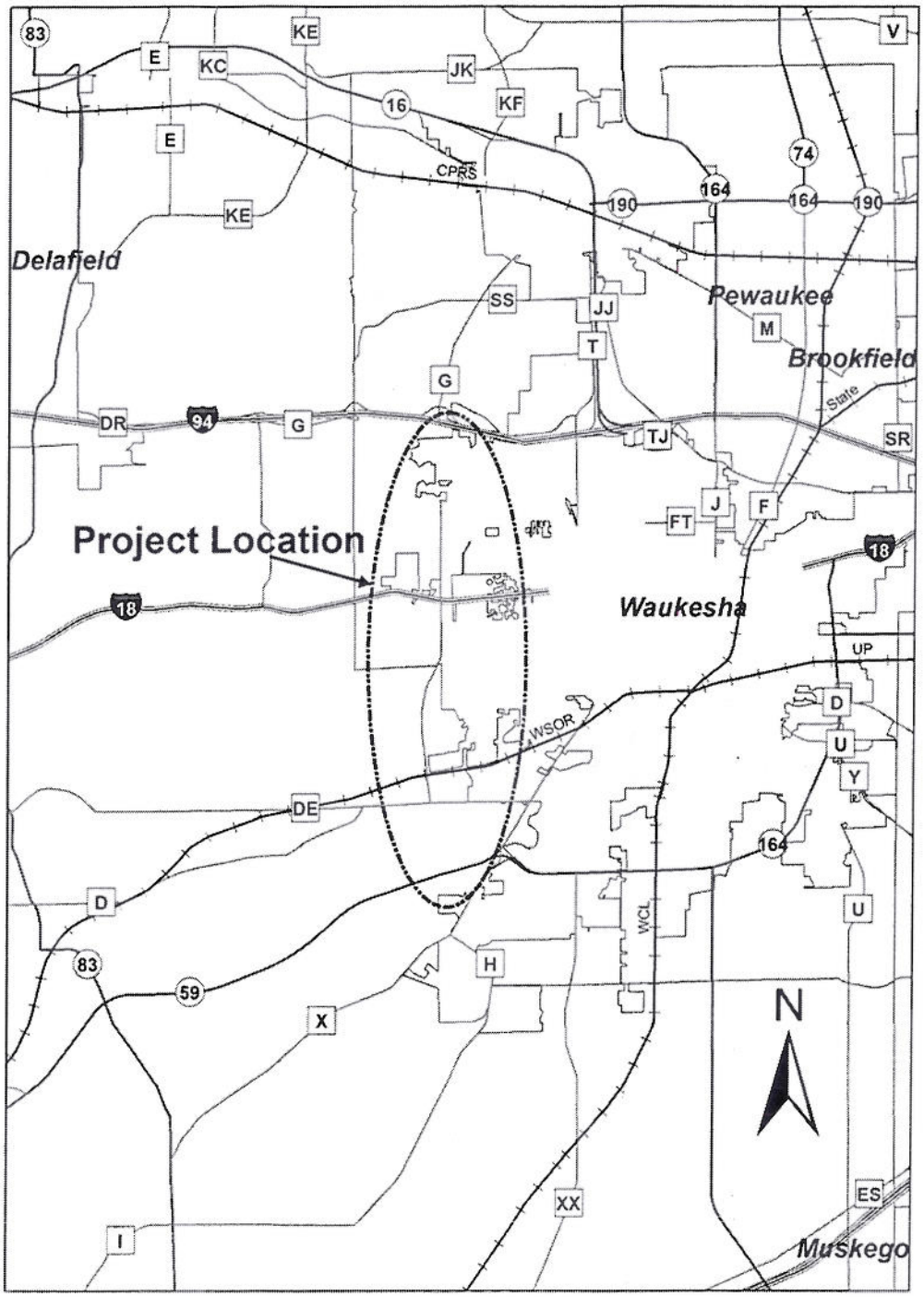
The DATCP is not involved in determining whether or not eminent domain powers will be used or the amount of compensation to be paid for the acquisition of any property. The AIS reflects the general objectives of the DATCP in its recognition of the importance of conserving important agricultural resources and maintaining a healthy rural economy.

Sources of information used to prepare this statement include the *Wisconsin 2010 Agricultural Statistics Bulletin* and other yearly issues; the *2007 Census of Agriculture*; the *Waukesha County Farmland Preservation Plan*; the *Soil Survey of Milwaukee and Waukesha County*; Waukesha County Extension; CH2M Hill, the consulting firm for this project; and the owners and operators of the affected farmland.

## II. DESCRIPTION OF THE PROJECT

The Waukesha County Department of Public Works is proposing to establish the western portion of the Waukesha Bypass. This 5-mile segment will include the reconstruction of a portion of County Trunk Highway (CTH) "TT" and the construction of new roadway. The project limits are from State Trunk Highway (STH) 59 and CTH "X" north to Interstate Highway (IH) 94. All of the farmland that will be affected by the proposed project is located in the town of Waukesha T6N-R19E and the city of Pewaukee T7N-R19E in Waukesha County. Refer to the Project Location Map on page

# West Waukesha Bypass



2. The project will require the fee-simple[2] acquisition of 37.8 to 40.9 acres of land from five farmland owners. Acquisitions of the needed land are expected to start in 2013 or 2014 and construction of the portion of the project affecting farmland is expected to occur in 2015 or 2016.

Waukesha County is proposing to construct a four-lane roadway along new and existing right-of-way. The proposed project will incorporate part of the existing CTH "TT" right-of-way. The final right-of-way will be 200 feet wide. The roadway will have four 12-foot driving lanes, two in each direction, with 6 to 8-foot shoulders. Typically, the median will be 24 to 30 feet wide, but if the Pebble Creek alternative is selected, the median will be 14 feet wide in that section and it will have a concrete median barrier. A 10-foot wide recreation trail separated from the roadway by a terrace will be located along the east side of the proposed roadway, with the exception of the alignment through Pebble Creek if that alternative is selected.

**Existing Highway**

Existing CTH "TT" is also called Meadowbrook Road or Merril Hills Road within the project limits. Between Sunset Drive and U.S. Highway (USH) 18/Summit Avenue, CTH "TT" is a rural roadway with two 11-foot wide driving lanes and 2-foot gravel shoulders. From USH 18 to Rolling Ridge Drive, it is generally a rural two-lane roadway with two 12-foot driving lanes. It also has 3 to 6-foot paved shoulders and 2 to 7-foot gravel shoulders beyond. From Rolling Ridge Road to the IH 94 interchange, CTH "TT" is a four-lane divided urban roadway with curb and gutter and a raised median. Within the project limits, the right-of-way varies.

Between CTH "TT" and CTH "X," Sunset Drive is generally a two-lane rural roadway with 11-foot lanes and 3-foot gravel shoulders.

Within the project limits, the posted speed of the existing highway is 35 to 45 mph and there are seven intersections with traffic signals.

**Project Need**

The project is being proposed to address the growing local and regional traffic volumes, and to enhance traffic flow and safety. The proposed project would provide a north/south link between IH 94 and STH 59 that will complete the Waukesha Bypass.

**Alternatives**

Waukesha County's study team evaluated alternatives within the CTH "T," CTH "TT," and CTH "SS" corridors. Only the CTH "TT" alignments were carried forward based on engineering factors, environmental impacts, costs, and public and agency input. Further screening resulted in the one proposed alternative between IH 94 and the Wisconsin and Southern Railroad. South of

[2]A fee-simple acquisition means that the buyer purchases exclusive rights to the property. This is in contrast to an easement where a buyer purchases partial rights to property.

the railroad, the no build and three build alternatives remain under consideration.

*No build:* Under this alternative, no new highway construction for the Waukesha Bypass would be done south of the Wisconsin and Southern Railroad.

*Sunset Drive to STH 59:* This alternative would cross one farm field south of the railroad crossing before tying into Sunset Drive. Sunset Drive including the bridge over Pebble Creek would be widened to four lanes. From there the bypass would follow Sunset Drive and CTH "X" to the CTH "X"/STH 59 intersection. CTH "X" was widened to four lanes in 2010.

*Pebble Creek West and Pebble Creek Far West:* These alternatives would roughly follow the mapped Waukesha Bypass route included in regional, county, and city plans. Both would cross agricultural land, wetlands, floodplain, and primary environmental corridor between Sunset Drive and the CTH "X"/STH 59 intersection.

## III. AGRICULTURAL SETTING

In a 2011 report, the University of Wisconsin-Extension describes agriculture's contribution to the Waukesha County[3] economy. Researchers estimate that agriculture provides jobs for 3,231 Waukesha County residents, which represents 1.1 percent of the county's workforce. Agricultural business sales total $980 million or 2.1 percent of the county's business sales. Waukesha County agriculture also pays $14.3 million in taxes. This does not include property taxes for local school districts.

### Agricultural Productivity

In 2010, Waukesha County farmers harvested 23,200 acres of corn for grain, 19,800 acres of soybeans, and 6,400 acres of alfalfa hay.[4] They also raised 8,900 head of cattle and calves.

Fifteen years earlier, Waukesha County farmers harvested 36,000 acres of corn for grain, 17,500 acres of soybeans, and 17,100 acres of alfalfa hay. They also raised 15,700 head of cattle and calves.

### Land in Farms, Number of Farms, and Average Size of Farms

Waukesha County is classified as an urban county, which is defined as having an average of 100 or more residents per square mile. According to the *2007 Census of Agriculture*, Waukesha County has 86,602 acres of land in farms,[5] which represents

[3] *The Economic Impacts of Agriculture in Wisconsin Counties*, University of Wisconsin-Extension, Cooperative Extension program areas of Agriculture and Natural Resources and Community, Natural Resources, and Economic Development, Deller and Williams, March 2011. http://www.aae.wisc.edu/pubs/misc/docs/deller.economic%20impacts.03.11.pdf

[4] *Wisconsin 2011 Agricultural Statistics*, Wisconsin Agricultural Statistics Service, National Agricultural Statistics Service USDA, Wisconsin Department of Agriculture, Trade and Consumer Protection, August 2011, pp. 18 through 54.

[5] Land in farms consists primarily of agricultural land used for crops, pasture, or grazing. It also

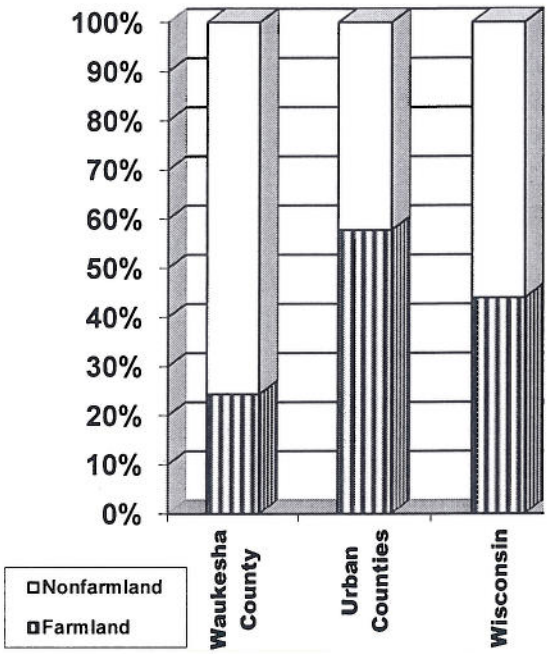
24.4 percent of the total land area. The average for urban counties is 196,635 acres of land in farms or 58.7 percent of the total county land area. These can be compared to the average of 213,955 acres or 44.0 percent of land in farms among all Wisconsin counties. Refer to Chart 1 for a graphic comparison of the percentage of land in farms in Waukesha County, urban counties, and Wisconsin.

According to the *Census of Agriculture*, Waukesha County lost 16 farms (a 2.3 percent decrease) between 1992 and 2007 as the total number fell from 691 to 675. Wisconsin as a whole gained 10,504 farms (a 15.5 percent increase) as the total number of farms in the state rose from 67,959 to 78,463 during the same period. The amount of land in farms decreased from 114,184 to 86,602 acres (a 24.2 percent decrease) in Waukesha County. In Wisconsin as a whole, the amount of land in farms declined from 15.5 to 15.2 million acres (a 1.8 percent loss) during this fifteen-year period. The average size of farms fell from 165 to 128 acres in Waukesha County and from 228 to 194 acres in Wisconsin as a whole.

**Size Distribution of Farms**

Table 1 shows the percentage of farms in each size category for Waukesha County, urban counties, and all Wisconsin counties.[6]

**Chart 1**
**Land in Farms, 2007**




Proportionately, Waukesha County has more farms that are smaller than 50 acres in size compared to the averages for urban counties and for all Wisconsin counties.

**Table 1**
**Percent of Farms per Size Category**

| Acres per Farm | % of Waukesha County Farms | % of Urban County Farms | % of all Wisconsin Farms |
|---|---|---|---|
| 0-49 | 59.7% | 41.0% | 31.6% |
| 50-179 | 27.1% | 33.0% | 37.9% |
| 180-500 | 7.7% | 18.4% | 22.7% |
| More than 500 | 5.5% | 7.6% | 7.8% |

includes woodland and wasteland not actually under cultivation or used for pasture or grazing, providing it was part of the farm operator's total operation.

[6] *2007 Census of Agriculture*, U.S. Department of Agriculture, Wisconsin Agricultural Statistics Service, 2009.

## Property Taxes and Values

Table 2 lists the average property tax, assessed value, and sale price per acre of agricultural land in Waukesha County, urban counties, and all Wisconsin counties. The assessed values and property taxes are based on the "use value" of agricultural land. Wisconsin Statutes define agricultural land as "land, exclusive of buildings and improvements, that is devoted primarily to agricultural use." In 2010/11, average property taxes[7] on Waukesha County agricultural land were 9.0 percent lower than the average for urban counties and 1.2 percent higher than the average for all counties.

**Table 2**
**Farmland Taxes and Values**

| | 2010 Dollars per Acre of Farmland | | |
|---|---|---|---|
| | Average Tax | Assessed Value | Sale Value |
| Waukesha County | $3.42 | $244 | $13,924 |
| Urban Counties | 3.76 | 221 | 5,901 |
| All Counties | 3.38 | 188 | 4,028 |

On average, the assessed value[8] of farmland in Waukesha County was 10.4 percent higher than the average for all urban counties and 29.8 percent higher than the average for all Wisconsin counties.

The average sale price[9] of farmland in Waukesha County was 136.0 percent higher than the average for urban counties and 245.7 percent higher than the average for all counties. These values do not include farmland sold for nonfarm purposes.

## Soils

The soils that will be affected in the greatest quantities by the proposed project include Hochheim loam with 2 to 6 percent slopes and Fox silt loam with 2 to 6 percent slopes on the northern Christoph parcel; Hochheim loam with 6 to 12 percent slopes-eroded on the Danner parcel; Fox silt loam with 2 to 6 percent slopes, Fox loam with 6 to 12 percent slopes-eroded, and St. Charles silt loam gravelly substratum with 2 to 6 percent slopes on the Johnson-Hendricks parcel; Fox silt loam with 2 to 6 percent slopes, Mundelein silt loam with 1 to 3 percent slopes, and Kendall silt loam with 1 to 3 percent slopes on the School District of Waukesha parcel; and Sebewa silt loam, Matherton silt loam with 1 to 3 percent slopes, Hochheim loam with 2 to 6 percent slopes-eroded, and Lamartine silt loam with 1 to 4 percent slopes on the southern Christoph parcels.[10]

[7] Wisconsin Department of Revenue, Division of Research and Analysis, Bureau of Local Fiscal Policy.

[8] Ibid.

[9] *Wisconsin 2011 Agricultural Statistics*, Wisconsin Agricultural Statistics Service, National Agricultural Statistics Service USDA, Wisconsin Department of Agriculture, Trade and Consumer Protection, August 2011, pp. 10 and 11.

[10] *Soil Survey of Milwaukee and Waukesha Counties*, USDA Soil Conservation Service in cooperation with the University of Wisconsin, Wisconsin Geological and Natural History Survey, Soils Department, and the Wisconsin Agricultural Experiment Station, July 1971, Sheet 72, pp. 23-65.

Fox soils are well drained and underlain by calcareous sand and gravel outwash. They are found on glacial outwash plains. They are moderately permeable, have moderate natural fertility, and have moderate available water capacity. Fox loam with 6 to 12 percent slopes-eroded has lost part of its original surface layer. The remaining topsoil has mixed with part of the underlying subsoil. Runoff is medium and further erosion is a moderate hazard. This soil is included in capability class IIIe-2. Fox silt loam with 2 to 6 percent slopes has medium runoff and the erosion hazard is slight. This soil is classified as prime farmland and it is included in capability class IIe-2. Refer to Appendix II for a definition of prime farmland and Appendix III for descriptions of capability classes.

Hochheim loam is well drained and underlain by highly calcareous loam glacial till. Permeability and available water capacity are moderate. Where the slopes are 2 to 6 percent, runoff is medium and the erosion hazard is slight. This soil is classified as prime farmland and it is included in capability class IIe-1. Where the slopes are 2 to 6 percent and eroded, it is also classified as prime farmland and included in capability class IIe-1. Where the slopes are 6 to 12 percent and eroded, this soil has lost part of its original surface layer. Runoff is medium and the hazard of further erosion is moderate. This soil is included in capability class IIIe-1.

Kendall silt loam with 1 to 3 percent slopes is somewhat poorly drained and underlain by calcareous loam glacial till. It is found on the concave side of ridges and drainageways, and on ground moraines and foot slopes of glacial uplands. Permeability is moderate and available water capacity is high. Groundwater is less than 3 feet below the surface during wet periods. Natural fertility is high. Runoff is slow and the erosion hazard is slight. This soil is classified as prime farmland where drained and it is included in capability class IIw-2.

Lamartine silt loam with 1 to 4 percent slopes is somewhat poorly drained. It is found on foot slopes, in drainageways, and in slight depressions of glacial uplands and ground moraines. This soil is silt loam over a mainly silty clay loam and clay loam subsoil. It is underlain by calcareous loam glacial till. Permeability is moderate and available water capacity is high. Ground water is less than 3 feet below the surface during wet periods. Natural fertility is high. This soil is classified as prime farmland where drained and it is included in capability class IIw-2.

Matherton silt loam with 1 to 3 percent slopes is somewhat poorly drained. It formed partly in deposits of medium-textured material and partly in calcareous outwash. It is found on glaciated outwash plains. Permeability and the available water capacity are moderate. Groundwater is less than 3 feet below the surface during wet periods. Runoff is slow and little or no erosion has taken place. This soil is classified as prime farmland where drained and it is included in capability class IIw-5.

Mundelein silt loam with 1 to 3 percent slopes is somewhat poorly drained soil that is underlain by stratified lacustrine silt and

fine sand. It is found on the concave side slopes of drainageways, old glacial lake basins, and river benches. Permeability is moderate and available water capacity is high. Ground water is less than 3 feet below the surface during wet periods. Natural fertility is moderate. Runoff is slow and ponding occurs in spring and during periods of heavy rainfall. This soil is classified as prime farmland where drained and it is included in capability class IIw-2.

St. Charles silt loam gravelly substratum with 2 to 6 percent slopes is well drained. It is underlain by calcareous, stratified sand and gravel or sandy loam glacial till. It is generally found on broad glacial outwash plains. Permeability is moderate and the available water capacity is high. Natural fertility is also high. Runoff is medium and the hazard of erosion is slight. This soil is classified as prime farmland and it is included in capability class IIe-1.

Sebewa silt loam is poorly drained and underlain by calcareous sand and gravel outwash. It is found in low depressions and river basins, and on flats of glacial outwash plains. Permeability and available water capacity are moderate. Groundwater is at or near the surface throughout most of the year. Natural fertility is moderate. Runoff is very slow and erosion is not typically a hazard. This soil is classified as prime farmland where drained and it is included in capability class IIw-5.

**Farmland Preservation**

The Waukesha County Farmland Preservation Plan was certified in 1984. The plan identifies farmland preservation areas in the county and provides tax credit eligibility to farmers who wish to participate in the Farmland Preservation program.

The state of Wisconsin is currently transitioning from the old Farmland Preservation Program to the Working Lands Initiative that was included in the 2009/2011 state budget. As part of the transition, all 70 counties with Farmland Preservation Plans are required to update those plans within the next few years. The new initiative increases tax credits for farmland owners whose land is in the program.

Neither the town nor the city of Waukesha has adopted an exclusive agricultural zoning ordinance. Therefore, farmland owners in these communities can only participate in the program if they have Farmland Preservation Agreements. There are no current agreements in either of these communities.

The loss of farmland enrolled in the federal government's various commodity programs could affect a farmer's base acreage resulting in lower revenue from these programs.

## IV. AGRICULTURAL IMPACTS

An Agricultural Impact Statement (AIS) is required by law when an interest in more than 5 acres from any farm operation will be acquired for a public project. Thirty days after the publication date of the AIS, the purchasing agency may begin negotiating with the affected farmland owners.

The following table lists the farmland owners who will lose more than one acre of land as a result of the proposed project.

**Table 3**
**Proposed Acquisitions of Farmland**

| Farmland Owners | Acres to be Acquired |
|---|---|
| Christoph Family Trust | 18.3 or 21.4 |
| Robert Johnson Farm Trust & Carol Jean Hendricks | 6.4 |
| Waukesha School District | 6.5 |
| Hazel Danner Revocable Trust | 2.1 |
| Carol Smart | 4.5 |
| TOTALS | 37.8 or 40.9 |

DATCP contacted the affected farmland owners by phone. The information provided by those who could be reached is summarized below.

**Farm Owner/Operator:** Christoph Family Trust
**Proposed Acquisition:** Fee-simple acquisition of 18.3 to 21.4 acres

The proposed project will affect two separate Christoph parcels of property. The northern parcel is 29 acres in size and located east of CTH "TT" in section 6 of the town of Waukesha. The southern parcel is 90 acres in size and located north of CTH "D" in section 8 of the town of Waukesha. Waukesha County is proposing to acquire 8.5 acres of land from the northern parcel and 9.8 or 12.9 acres of land from the southern parcel depending on the alignment chosen. The proposed acquisitions represent a combined 15.4 to 18.0 percent of the two Christoph properties. The proposed acquisition from the northern parcel will include some of the buildings on this property. It will also sever 2 acres of land from the remaining northern Christoph property.

The Christoph family grows crops, but does not raise livestock on this property. They are very concerned that the loss of land plus the creation of small, irregularly shaped parcels will make farming the remaining land much more difficult. They are also concerned that they will not be permitted to drive their farm equipment on the proposed bypass, which will make traveling between the north and south parcels much more difficult. Trips between these parcels are likely to be longer, which will lead to more equipment wear, lost time spent driving equipment, and greater risk of traffic accidents due to the increased time spent on the roads.

The owners are strongly opposed to the proposed project and they are concerned that the combined impacts on their property could put their farm operation out of business.

**Farmland Owners:** Robert J. Johnson Farm Trust and Carol Jean Hendricks
**Operator:** Bob Stigler
**Proposed Acquisition:** Fee-simple acquisition of 6.4 acres

Robert Johnson is very concerned about the proposed project's impacts on drainage. This property is part of the Genessee Drainage District. Mr. Johnson indicated that there are drainage tiles on his land near the creek. He is concerned that the new

roadway will create too much runoff for the adjacent farmland to absorb. Waukesha County is proposing to increase the capacity of the ditches along the new roadway and some of the existing roadways in the vicinity to accommodate the runoff from the bypass and from development that has occurred in recent years. Mr. Johnson indicated that his land is at a low spot and that increasing the capacity of the ditches will not prevent runoff water from accumulating on his property. He is very concerned that this runoff and any salt it may contain would ruin his land.

Mr. Stigler is also very concerned about the project creating more runoff and its impacts on drainage. He indicated that he has been farming in the area most of his life and that whenever there is road construction or private development; the impacts on drainage are always negative. When excess water flows into farm fields it severely damages or kills the crops.

Mr. Johnson's other concern is access to his remaining property. The project will sever an 8-acre parcel of land from the rest of the Johnson property. This parcel includes a house, a silo, two barns, and two sheds. Mr. Johnson indicated that because of the project's alignment on this land, there are two areas that would be cut off if access is not provided. These are located south of the severed parcel and north of his home.

Mr. Stigler is also concerned about having adequate access to the remaining cropland. He indicated that field entrances should be at least 30 feet wide with adequate visibility to accommodate large farm equipment and semi trucks. He would like to see agricultural crossovers constructed in the median to aid in accessing fields. Mr. Stigler is also concerned that the proposed project will lead to increased traffic in the area, which will be less safe for farmers driving large, slow-moving equipment on these roads.

Waukesha County has indicated that the locations of access points have not yet been determined. Some existing driveways and field entrances may need to be relocated. If access cannot be provided to the severed parcels, Waukesha County will offer to purchase them.

**Farmland Owner:** Hazel Danner Revocable Trust
**Proposed Acquisition:** Fee-simple acquisition of 2.1 acres

Ms. Danner declined to respond to DATCP's inquiry about the impacts the proposed project would have on her property.

**Farmland Owner:** School district of Waukesha
**Operator:** Rob Schuett
**Proposed Acquisition:** Fee-simple acquisition of 6.5 acres

The proposed roadway will sever 17 acres of the School District land from the rest of this property. No one from the School District responded to the request for information about the proposed project's potential impacts on this property.

Mr. Schuett indicated that maintaining adequate access will be important for him to be able to continue farming this land. He is also concerned that if roundabouts are implemented, it may be difficult for him to maneuver a tractor pulling machinery such as a baler and wagon through the intersection. The county has not yet determined if roundabouts or signalized intersections will be constructed for this project.

Mr. Schuett does not know if the cropland owned by the school district has any drainage tiling. He said that there are ditches on the parcel.

**Farmland Owner:** Carol Smart
**Proposed Acquisition:** fee-simple acquisition of 4.5 acres

This property is located along the west side of Meadowbrook Road, which extends south to join CTH "TT." Waukesha County has indicated that the proposed acquisition consists of 1.6 acres of cropland and 2.9 acres of ditches. Carol's son David said that he does not have any major concerns about the project.

**Drainage**

A short segment of the proposed project is located in the Genessee Drainage District. The two properties that are located within the district are the Johnson and Hendricks parcel and the Waukesha School District parcel. Waukesha County Public Works officials will be required to coordinate with the Waukesha County Drainage Board to ensure that the district's water movement is not impaired.

Robert Johnson indicated that there is drainage tiling on the Johnson/Hendricks property near the stream. He is very concerned about the potential impacts the project could have on runoff from the highway and the drainage of his property. Waukesha County representatives have indicated that they are aware of existing and potential drainage concerns in the vicinity of the Johnson/Hendricks property. They are proposing to increase the capacity of the roadway ditches to accommodate the runoff.

Proper field drainage is vital to a successful farm operation. Highway construction can disrupt improvements such as drainage tiling, grassed waterways, ditches, and culverts, which regulate the drainage of farm fields. In addition, construction of impervious surfaces can impede drainage and increase runoff. If drainage is impaired, water can settle in fields and cause substantial damage, such as harming or killing crops and other vegetation, concentrating mineral salts, flooding farm buildings, or causing hoof rot and other diseases that affect livestock. Where salt is used on road surfaces, runoff water can increase the content of salt in nearby soils.

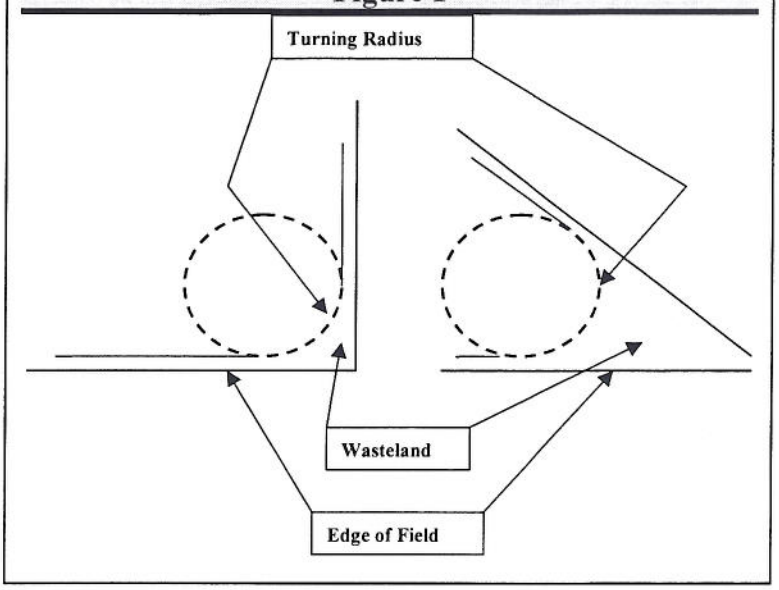
**Access**

Waukesha County has not yet made the final determination for the location of access points. Some driveways and field entrances may need to be relocated. If access to the severed parcels cannot be provided,

Waukesha County will offer to purchase these parcels.

Changes in access can have significant negative impacts on farm operations if new access points are not in safe and efficient locations for farm work. Farmers operating large equipment require large areas for turning and backing up. Adequate space is also needed adjacent to buildings and pens for loading/unloading seed chemicals, feed, and livestock.

**Figure 1**




### Acquisition of Buildings

Most of the buildings on the northern parcel of the Christoph property will be included in the proposed acquisition from this property. Because of the potential displacement impacts of the proposed project, the acquiring agency (Waukesha County) will be required to file a relocation service assistance plan in accordance with §32.25, *Wisconsin Statutes*.[11]

### Severances

In addition to the acquisition of land, the proposed bypass will sever small parcels from the property of several farmland owners. If Waukesha County cannot provide access to a severed parcel, the County will offer to purchase that parcel. The proposed project will sever 3.7 acres of the northern Christoph Family Trust property. An 8-acre parcel of the Johnson/Hendricks property will be severed from the rest of this property. This parcel will include a house, a silo, two barns, and two sheds. Property owned by the School District of Waukesha will have 17 acres severed from the southeast corner of this property.

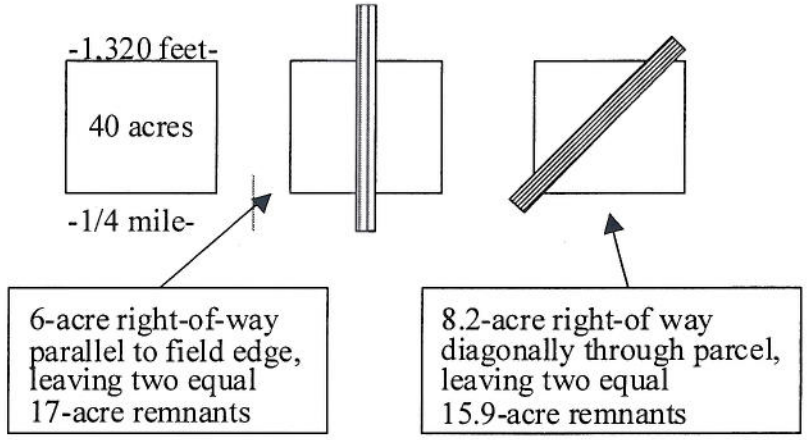
Acquisitions that sever farmland frequently create irregularly shaped fields, making equipment usage awkward and production more costly. This increased cost is due in part to the additional time, fuel, and equipment wear associated with maneuvering equipment in corners of fields that are not square or along sides of fields that are not straight. Nonproductive time and labor costs associated with the frequent working of these fields may reduce the possibility of generating profits on these parcels. In addition, when fields are made smaller, an increased proportion of wasteland is created along the edges and in

[11]For more information, contact the Relocation Assistance Program, Department of Commerce, P.O. Box 7970, Madison WI 53707-7970, or call (608)267-0317.

narrow corners of the fields reducing their productive capacity. Figure 1 shows the increased amount of wasteland in fields that have narrow corners. Compensation for the reduction in the value of parcels that are small and/or irregularly shaped will be addressed in the appraisal of each affected parcel.

**Figure 2**

Severances created by a 200-foot right-of-way passing through a 40-acre square parcel of farmland.




The proposed project will create a barrier on farms with land on both sides of the highway. Some farmland that is now contiguous and easily accessible from one area to another will be divided. If direct access to the highway is not provided in efficient locations, farmers with land on both sides of the highway, whether owned or rented, may have to drive their machinery longer distances and use side roads between parcels. This will increase the time spent and cost of farming these parcels. Refer to the discussion on access for additional information about this issue. Figure 2 shows examples of the impacts on a 40-acre parcel that is severed by a four-lane highway with 200 feet of right-of-way.

**Fencing**

Compensation for fencing within the acquired right-of-way will be included in the appraisal. If fencing or other improvements are damaged outside of the right-of-way, the owner could receive damages, or the improvement will be repaired or replaced to a condition similar or equal to that existing before the damage was done.

**Appraisal Process**

Waukesha County will provide an appraisal of the affected property to the landowners. This will be the basis for their offer. Landowners have the right to obtain their own appraisal of their property. They will be compensated for the cost of this appraisal if the following conditions are met.

1. The appraisal must be submitted to Waukesha County within 60 days after the landowner receives the County's appraisal.

2. The appraisal fee must be reasonable.

3. The appraisal must be complete.

The amount of compensation is based on the appraisal(s) and is established during the

negotiation process between Waukesha County and the individual landowner. An appraisal is an estimate of fair market value. The County is required to provide landowners with information about their rights in this process before negotiations begin.[12]

## V. RECOMMENDATIONS

The DATCP recommends the following as ways to mitigate the potential adverse impacts associated with the proposed project:

1. Waukesha County should consult with landowners whose access points must be relocated to ensure that the new access points are in safe and efficient locations for farm work.

2. Waukesha County should consider constructing agricultural crossover points in the median to accommodate agricultural traffic at farm driveways and field access points.

3. The Waukesha County Public Works Department should coordinate with the Waukesha County Drainage Board as early as possible in the design phase to minimize any disruption of the Genessee Drainage District.

4. In order to address potential drainage problems that may occur as a result of the project, representatives of the Waukesha County Public Works Department should discuss design and construction plans with the Waukesha County Land Resources Manager during the design process for this project.

5. The Waukesha County Land Resources Manager should be consulted to ensure that construction proceeds in a manner that minimizes crop damage, soil compaction, and soil erosion on adjacent farmland.

6. Farmland owners and operators should be given advanced notice of acquisition and construction schedules so that farm activities can be adjusted accordingly. To the extent feasible, the timing of the acquisition and construction should be coordinated with them to minimize crop damage and disruption of farm operations.

[12]For more information, contact the Relocation Service Unit, Division of Community Development, Department of Commerce, P.O. Box 7970, Madison WI 53707-7970, or call (608)267-0317.

## APPENDICES

The information provided in this section summarizes and is an interpretation of some of the statutes associated with the acquisition of farmland for public projects. It serves as a reference and should not be considered an exhaustive summary of the statutes or your rights. It is not a substitute for legal advice. In the event of any conflict between the information summarized below and the statutes, the statutes are controlling.

## Appendix I: Agricultural Impact Statements

*The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) is required to prepare an Agricultural Impact Statement (AIS) whenever more than five acres of land from at least one farm operation will be acquired for a public project if the agency acquiring the land has the authority to use eminent domain for the acquisition(s). The DATCP has the option to prepare an AIS for projects affecting five or fewer acres from each farm. An AIS would be prepared in such a case if the proposed project would have significant effects on a farm operation. The agency proposing the acquisition(s) is required to provide the DATCP with the details of the project and acquisition(s). After receiving the needed information, DATCP has 60 days to analyze the project's effects on farm operations, make recommendations about it and publish the AIS. DATCP will provide copies of the AIS to affected farmland owners, various state and local officials, local media and libraries, and any other individual or group who requests a copy. Thirty days after the date of publication, the proposing agency may begin negotiating with the landowner(s) for the property.*

### Section 32.035 of the *Wisconsin Statutes:* Agricultural impact statement.

(1) Definitions. In this section:
(a) "Department" means department of agriculture, trade and consumer protection.
(b) "Farm operation" means any activity conducted solely or primarily for the production of one or more agricultural commodities resulting from an agricultural use, as defined in s. 91.01 (1), for sale and home use, and customarily producing the commodities in sufficient quantity to be capable of contributing materially to the operator's support.
**(2)** EXCEPTION. This section shall not apply if an environmental impact statement under s. 1.11 is prepared for the proposed project and if the department submits the information required under this section as part of such statement or if the condemnation is for an easement for the purpose of constructing or operating an electric transmission line, except a high voltage transmission line as defined in s. 196.491(1)(f).
**(3)** PROCEDURE. The condemnor shall notify the department of any project involving the actual or potential exercise of the powers of eminent domain affecting a farm operation. If the condemnor is the department of natural resources, the notice required by this subsection shall be given at the time that permission of the senate and assembly committees on natural resources is sought under s. 23.09(2)(d) or 27.01(2)(a). To prepare an agricultural impact statement under this section, the department may require the condemnor to compile and submit information about an affected farm operation. The department shall charge the condemnor a fee approximating the actual costs of preparing the statement. The department may not publish the statement if the fee is not paid.
**(4)** IMPACT STATEMENT. (a) When an impact statement is required; permitted. The department shall prepare an agricultural impact statement for each project, except a project under ch. 81 or a project located entirely within the boundaries of a city or village, if the project

involves the actual or potential exercise of the powers of eminent domain and if any interest in more than 5 acres from any farm operation may be taken. The department may prepare an agricultural impact statement on a project located entirely within the boundaries of a city or village or involving any interest in 5 or fewer acres of any farm operation if the condemnation would have a significant effect on any farm operation as a whole.

(b) *Contents*. The agricultural impact statement shall include:

1. A list of the acreage and description of all land lost to agricultural production and all other land with reduced productive capacity, whether or not the land is taken.

2. The department's analyses, conclusions and recommendations concerning the agricultural impact of the project.

(c) *Preparation time; publicatio*n. The department shall prepare the impact statement within 60 days of receiving the information requested from the condemnor under sub. (3). The department shall publish the statement upon receipt of the fee required under sub. (3).

(d) *Waiting period.* The condemnor may not negotiate with an owner or make a jurisdictional offer under this subchapter until 30 days after the impact statement is published.

**(5)** PUBLICATION. Upon completing the impact statement, the department shall distribute the impact statement to the following:

(a) The governor's office.

(b) The senate and assembly committees on agriculture and transportation.

(c) All local and regional units of government which have jurisdiction over the area affected by the project. The department shall request that each unit post the statement at the place normally used for public notice.

(d) Local and regional news media in the area affected.

(e) Public libraries in the area affected.

(f) Any individual, group, club or committee which has demonstrated an interest and has requested receipt of such information.

(g) The condemnor.

## Appendix II: General Criteria for the Classification of Important Farmlands

The following discussion summarizes the USDA Natural Resources Conservation Service's written criteria for classifying farmlands, greater detail can be obtained from the Natural Resouces Conservation Service office located at 6515 Watts Road, Suite 200, Madison, WI 53719-2726.

### Prime Farmland

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

### Unique Farmland

Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. Examples of such crops are citrus, tree nuts, olives, cranberries, fruit, and vegetables.

### Additional Farmland of Statewide Importance

This is land, in addition to prime and unique farmland, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the appropriate state agency or agencies. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable. In some states, additional farmlands of statewide importance may include tracts of land that have been designated for agriculture by state law.

**Additional Farmland of Local Importance**

In some local areas there is concern for certain additional farmland for the production of food, feed, fiber, forage, and oilseed crops, even though these lands are not identified as having national or statewide importance. Where appropriate, these lands are to be identified by the local agency or agencies concerned. In places, additional farmlands of local importance may include tracts of land that have been designated for agriculture by local ordinance.

## Appendix III: NRCS Soil Capability Classes

The following discussion summarizes the USDA Natural Resources Conservation Service's written criteria for land capability classification, greater detail can be obtained from the Natural Resources Conservation Service office located at 6515 Watts Road, Suite 200, Madison, WI 53719-2726.

Land suited to Cultivation and Other Uses:

**Class I** soils have few limitations that restrict their use.

**Class II** soils have some limitations that reduce the choice of plants or require moderate conservation practices.

**Class III** soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.

**Class IV** soils have very severe limitations that restrict the choice of plants , require very careful management, or both.

Land Limited in Use-Generally Not Suited to Cultivation

**Class V** soils have little or no erosion hazard but have other limitations impractical to remove that limit their use largely to pasture, range, woodland, or wildlife food and cover.

**Class VI** soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.

**Class VII** soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland, or wildlife.

**Class VIII** soils and landforms have limitations that preclude their use for commercial plant production.

### Soil Capability Subclasses

A subclass is a group of capability units within a class which has the dominant soil or climatic limitations for agricultural use. Capability Class I has no subclasses. There are four subclasses, designated by letter symbols and defined as follows:

**e** Erosion susceptibility is the dominant problem or hazard. Both erosion susceptibility and past erosion damage are major soil factors for placement in this subclass.

**s** Soil limitations within the rooting zone, such as shallowness of rooting zones, stones, low moisture-holding capacity, low fertility that is difficult to correct, and salinity or sodium, are dominant.

**w** Excess water is the dominant hazard or limitation. Poor soil drainage, wetness, high water table, and overflow are the criteria for placing soils in this subclass.

**c** Climate (temperature or lack of moisture) is the only major hazard or limitation.

| MAILING LIST | | | |
|---|---|---|---|
| | GOV SCOTT WALKER | 115 E CAPITOL | |
| | SEN KATHLEEN VINEHOUT | AGRICULTURE COMMITTEE | 3 S CAPTOL |
| | SEN DAVE HANSEN | TRANSPORTATION COMMITTEE | 5 S CAPITOL |
| | REP LEE NERISON | AGRICULTURE COMMITTEE | 310 N CAPITOL |
| | REP JERRY PETROWSKI | TRANSPORTATION COMMITTEE | 11 N CAPITOL |
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| LRC DOCUMENTS DEPT | UW STEVENS POINT | 900 RESERVE ST | STEVENS POINT WI 54481 |
| DOA RELOCATION UNIT | PLANNING & TECH ASSISTANCE | 101 E WILSON ST | 6th FLOOR |
| BEN GOLDSWORTHY (3) | CH2M HILL | 135 S 84TH ST SUITE 400 | MILWAUKEE WI 53214 |
| | CHRISTOPH FAMILY TRUST | W271 S3016 MERRILL HILLS RD | WAUKESHA WI 53188 |
| | HAZEL DANNER TRUST | W271 S2290 MERRILL HILLS RD | WAUKESHA WI 53188 |
| ROBERT JOHNSON TRUST & | CAROL JEAN HENDRICKS | W272 S2431 MERRILL HILLS | WAUKESHA WI 53188 |
| | SCHOOL DISTRICT OF WAUKESHA | 222 MAPLE AVE | WAUKESHA WI 53188 |
| KATHY NICKOLAUS | WAUKESHA COUNTY CLERK | 515 W MORELAND BLVD #120 | WAUKESHA WI 53188 |
| ANGIE VAN SCYOC | WAUKESHA TOWN CHAIR | S51W25375 GLENDALE RD | WAUKESHA WI 53189 |
| JAMIE SALENTINE | WAUKESHA TOWN CLERK | W250S3567 CENTER RD | WAUKESHA WI 53189 |
| JEFF SCRIMA | MAYOR OF WAUKESHA | 201 DELAFIELD ST | WAUKESHA WI 53188 |
| THOMAS NEILL | WAUKESHA CITY CLERK | 201 DELAFIELD ST | WAUKESHA WI 53188 |
| PERRY LINDQUIST | WAUKESHA CO LAND RESRC | 515 W MORELAND BLVD AC260 | WAUKESHA WI 53188 |
| | WAUKESHA PUBLIC LIBRARY | 321 WISCONSIN AVE | WAUKESHA WI 53186-4586 |
| | THE FREEMAN | 200 PARK PLACE | WAUKESHA WI 53187 |
| RON WILLIAMS CHAIR | WAUKESH CO DRAINAGE BRD | W287S2002 COUNTY ROAD DT | WAUKESHA WI 53188-9553 |
| TOM KILPATRICK SECRETARY | WAUKESH CO DRAINAGE BRD | W288S2516 COUNTY ROAD DT | WAUKESHA WI 53188-9208 |
| ALLISON BUSSLER (3) | WAUDESHA PUBLIC WORKS | 515 W MORELAND BLVD | WAUKESHA WI 53188 |

| | | |
|---|---|---|
| BOB STIGLER | W235 S6089 BIG BEND RD | WAUKESHA WI 53189 |
| ROBERT SCHUETT III | W299 S6370 HIGHWAY 83 | MUKWONAGO WI 53149 |
| CAROL SMART | 1411 LOOKOUT DR | WAUKESHA WI 53186 |
| | | |
| | | |
| | | |

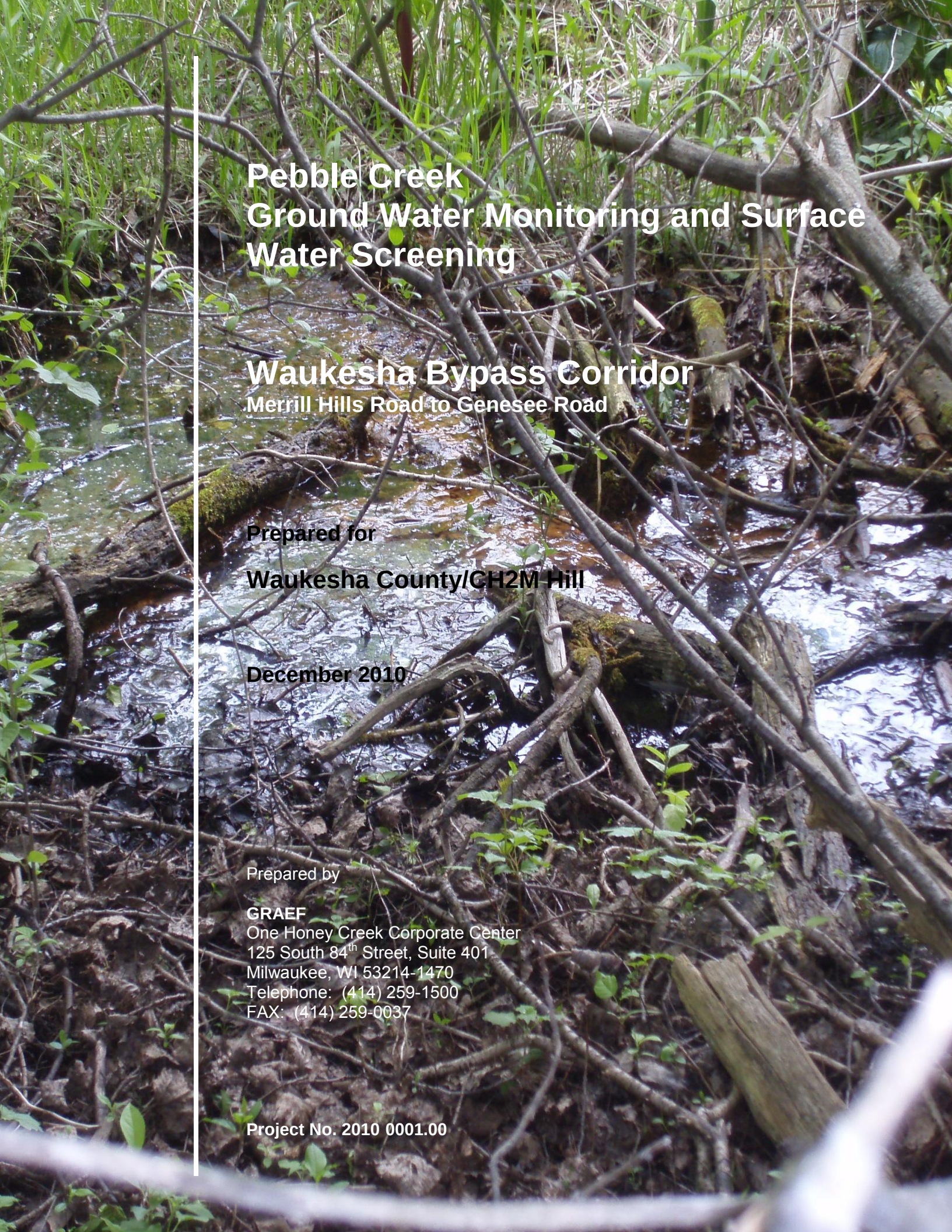
State of Wisconsin
Department of Agriculture,
Trade & Consumer Protection

Agricultural Resource Management

*For additional copies, contact:*

DATCP
Agricultural Impact Program
P.O. Box 8911
Madison, WI 53708-8911

Phone: 608/224-4650
608/224-4646
Fax: 608/224-4615



# Pebble Creek Ground Water Monitoring and Surface Water Screening

## Waukesha Bypass Corridor

**Merrill Hills Road to Genesee Road**

**Prepared for**

**Waukesha County/CH2M Hill**

**December 2010**

Prepared by

**GRAEF**
One Honey Creek Corporate Center
125 South 84th Street, Suite 401
Milwaukee, WI 53214-1470
Telephone: (414) 259-1500
FAX: (414) 259-0037

**Project No. 2010 0001.00**

**Pebble Creek Ground Water Monitoring and Surface Water Screening**
**Waukesha County/CH2M Hill**

**2010-0001.00**

Prepared for: Waukesha County/CH2M Hill

Site Address: Waukesha Bypass Corridor
Merrill Hills Road to Genesee Road

Prepared By: GRAEF
One Honey Creek Corporate Center
125 South 84th Street, Suite 401
Milwaukee, WI 53214-1470
(414) 259-1500

Prepared by:

Kristi Jacobs
Geoffrey B. Parish P.G., P.H.
Mary Beth Pettit, P.E.
Randolph Videkovich, P.E., P.H, DWRI

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**APPENDIX**


Appendix A Ground Water Flow Map
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## 1. EXECUTIVE SUMMARY

The nature of surface water / ground water interactions and wetland hydrology in a proposed highway corridor along Pebble Creek in Waukesha, Wisconsin were investigated. Pebble Creek is classified as a Class II Trout Stream within a section of the project corridor. The viability of a trout stream is generally sensitive to changes in water temperature and water quality. The nature of stream base flow is a critical component of maintaining the quality of stream habitat. The investigation included review of background information and field study. Twenty-three hand auger holes were dug, logged and evaluated for hydrogeological significance. Twelve data logging well points were installed and programmed to monitor water levels every four hours. Water samples were obtained from the creek at three locations along the corridor and screened for water quality parameters. Sections of the creek bank were walked and the character and nature of the stream channel noted. Observations of hydrological and geomorphological features were made while walking between the auger locations and well points during the investigation.

Within the project corridor south of Sunset Drive ground water discharges were observed at the land surface on the upland slopes west of Pebble Creek. The discharges were in extensive zones and seeps that drained toward Pebble Creek. A similar pattern of discharge on the slopes uphill from the creek was not observed north of Sunset Drive. The hill slopes north of Sunset Drive were actively farmed and may be drained by agricultural tile lines.

Variations were noted between and among the areas investigated with the hand augers and well points. The well point hydrographs reflect the nature of the water budgets and the relative importance of the various additions to and subtractions from the local budgets. In general, areas dominated by ground water discharge appeared to have comparably less variation in ground water level than areas supplied by local infiltration. Areas on the uplands appeared to be both recharge areas and flow through areas supplying water to down slope ground water discharge at the ground surface and ground water discharges to the creek. Recharge and ground water flow through also supplied root zone waters to plants farther down slope, as evidenced by the evapotranspiration patterns in the hydrographs of wells lower on the slopes.

The section of Pebble Creek classified as a trout stream north of Sunset Drive is likely to be more sensitive to changes to the local ground water flow regime than the section south of Sunset Drive. The proposed alignment north of Sunset Drive is situated on clayey soils that are likely to supply less ground water recharge, and as such supply less of the local creek base flow. The sandy soils to the east of the proposed alignment are likely to supply a relatively greater fraction of the local creek base flow. To the south of Sunset Drive the alignment of the proposed roadway is in an area

where pavement could impact the surface discharge of ground water and sheet flow to the creek. Changing the sheet flow patterns of the discharged ground water could have an impact on the temperature and chemistry of the waters that could in turn, impact the nature of the creek base flow. This area of Pebble Creek is a warm water fishery, and as such fish communities may be less sensitive to changes in thermal regime than the trout species to the north.

Areas of mounded plant growth were noted, and in one particular area investigated, it was noted to have at least a three foot deep void beneath the surface peaty deposits. Areas of mounded surface plant growth sometimes result from upward flowing ground water, such as grown over seeps or springs.

On the three dates that water quality screening parameters were measured, significant differences in water quality were not noted between the north and south ends of the study area.

## 2. INTRODUCTION

A section of a proposed alignment for the planned extension of the Waukesha Bypass from State Highway 59 (Genesee Road) on the south to County Hwy TT (Merrill Hills Road) in the north would traverse through a series of undeveloped parcels and farm fields (Figure 1). Developing an increased understanding of the nature of the interaction of the local ground water system and Pebble Creek within this area was the main objective of this study. To the north of this area, the proposed alignment of the bypass follows the existing right-of-way of County Highway TT. The study consisted of background information evaluation, field investigation and evaluation of the data obtained through the background and field phases. The following paragraphs document the results of these efforts.

## 3. BACKGROUND

Topographically, Pebble Creek flows through a valley between adjacent glaciated uplands. Glacial drumlin hills are located adjacent to the flood plain and adjacent to the Brady Brook flood plain (a tributary to Pebble Creek) to the west. The drumlin hills tend to have comparatively lower permeability soils and the glacial outwash sands and gravels in the valleys tend to have comparatively higher permeability soils. Locally, the ground water flow patterns are from the topographic high to Pebble Creek in the valley.

### 3.1. Soils

The properties of the soils in the uplands and wetlands (Figure 2) were evaluated because of the impact these properties have on uplands and wetlands hydrology, and the nature of the connection between the creek and the adjoining wetlands. The characteristics of the soils can also provide insights into the nature of the deeper subsurface materials. The local soils can be grouped into three general parent materials, which are: (1) soils formed in sands and gravels, (2) soils formed in glacial till (typically having greater silt and clay content), and (3) soils formed over other soils or organic material. The soils series mapped south of Sunset Drive to the Pebble Creek confluence with the Fox River were generally soils that formed in glacial till. The glacial sediments in this area range in thickness from 50 to 150 feet (SEWRPC, 2002).

The soils that formed in and over sands and gravels tend to have higher permeability, higher potential for recharge and higher conductivity for ground water in the subsurface than clay rich materials (USDA, 1971). The Casco soils (CeB and CeC2) formed in glacial outwash sands and gravels. The Fox soils (FsB) formed in glacial outwash sands and gravels. The Matherton soils (MmA) formed in glacial outwash sands and gravels. The Sebewa silt loam soils (Sm) are underlain by stratified sands and gravels. The Warsaw soils (WeA) were formed in glacial outwash sands and gravels.

Soils formed in glacial lake deposits are generally less permeable and likely to have lower conductivities in the subsurface than soils formed in outwash. Two examples of soils formed in glacial lake deposits are the Colwood and the Mundelein series soils. The Colwood soils (Cw) formed in lacustrine silt and fine sand. The Mundelein soils (MzfA) formed in stratified silt and fine sand.

Glacial tills typically reflect the nature of the materials from which they were derived. Generally speaking, sandy materials yield sandy till and fine grained material yields fine grained tills. The glacial materials generated from the sediments in the southeastern Lake Michigan basin and the adjoining dolomite bedrock are generally rich in silts and clay size particles. The Brookston soils (BsA) formed in loam glacial till. The Hochheim soils (HmB, HmC2 and HmE2) formed loam glacial till. The Lamartine soils (LmB) are described as forming over loam glacial till.

The Houghton muck soils (HtB) formed in the residue of aquatic plants (peat). The Palms muck (Pa) soil forms in herbaceous organic materials deposited over loamy deposits. The Pella (Ph) soils form in loamy materials in drainage ways. The Pistakee soils (PrA) formed in silty alluvium deposited over older buried soils. The Wallkill soils (Wa) formed in silty alluvium over organic

deposits. The soils mapped as wet alluvial land (Ww) are flood plain soils adjacent to streams. There is wide variation in soil textures with the map unit.

### 3.1. Stream Classification

Pebble Creek is designated an Area of Special Natural Resource Interest from the Fox River to headwaters north of Northview Road. Areas of Special Natural Resource Interest include state natural areas designated under Subsections 23.27 to 23.29 of Wisconsin Statutes, trout streams designated under NR 1.02 (7) Wisconsin Administrative Code, outstanding or exceptional waters, and several categories. Pebble Creek north of Sunset Drive is a Class II Trout Stream. A Class II trout Stream is a stream that may have natural reproduction, but not sufficient reproduction to utilize the available stream resources. Class II streams are stocked to maintain a desired level of sport fishery. In comparison, a Class I trout Stream requires no stocking to maintain the carrying capacity of the stream.

### 3.1. Ground Water

The shallow ground water flow patterns were mapped in the 1970's and again in the 2000's. A water table map from the Waukesha County internet mapping site is in Appendix A. The ground water elevations are highest at the north end of the proposed corridor where it meets Interstate Highway 94, and lowest at the southeastern end where the proposed bypass would connect to Highway 59. The mapped contours reflect interaction of Pebble Creek and the ground water system. The flow patterns presented in both the USGS and SEWRPC publications have Pebble Creek receiving ground water flow from both sides of the stream. The ground water system is recharged in the adjacent uplands, ground water flows from the uplands toward the creek, and then discharges to the adjoining wetlands and creek adding to base flow. The discharge of ground water at a temperature typically between 7 to 13 degrees Centigrade to the stream likely helps moderate the thermal regime of Pebble Creek.

A tributary to Pebble Creek that extends north by northeast toward County Highway TT also affects the local ground water flow pattern. Locally ground water contours rap around the northward extension of this tributary (Appendix A). East of County Highway TT ground water flow is to the northeast away from the corridor toward Pebble Creek. At County Highway TT south of Mac Arthur Road the local ground water flow is toward Pebble Creek, flowing south on the north side of the creek and flowing north on the south side of the creek. In this area the direction of ground water flow is parallel to the orientation of the corridor.

# 4. METHODS

## 4.1. Hand Augers

Over the course of four days, April 9, 19, and 29 and May 17, hand auger holes were dug to investigate the nature of the shallow soils in the project corridor on the west and south side of Pebble Creek between Merrill Hills Road on the west and Genesee Road on the south. A 2.5 inch diameter stainless steel bucked auger was used to advance holes to a maximum depth of 52 inches below grade. Shallower depths were obtained when holes were dug specifically for data logging well points or the auger could not be advanced because of gravel or cobbles. The recovered soils were described using in terms of dominant Munsell color, NRCS soil texture and redoximorphic features (Appendix B). The purpose of investigating soils was to determine the nature of the local soils and evaluate the potential connections between the uplands, wetlands and Pebble Creek. A total of 23 hand auger locations were investigated (Figure 3).

## 4.2. Well Points

Data logging well points were installed in twelve of the auger holes. The well points were installed by placing the screened section of the well point into a hole dug with the hand auger and backfilling the space between the screen and the surrounding soils with sand. A layer of bentonite clay was placed above the sand to seal the borehole from infiltration of surface water. The loggers were programmed to collect water level data every four hours beginning at midnight each day. The loggers recorded water level data as inches below a calibration point on the well points. The well points were installed with the calibration points coincident with the level of the adjoining ground surface.

At several of the well points, gravel prevented the advancing of the auger to allow for the full depth of the well points to be installed. At those well points, the data sets were adjusted to compensate for the heights of the calibration points above the adjacent ground surfaces.

## 4.3. Stream Flow

The original plan was to measure the flow in Pebble Creek at three locations within the investigation corridor – at the bridge at Merrill Hills Road, midway between Sunset Drive and Genesee Road and at the bridge at Genesee Road. Measuring the flow at these three locations would approximate the contribution of ground water to the creek along the area investigated. However, during all the field days, ground water was noted to be discharging at the ground surface uphill from the creek. This water was then noted to be flowing across the land surface to the creek.

There were extensive areas where this type of addition of ground water to surface sheet flows were noted and as a result, the local contribution of ground water directly to the creek could not be measured with any degree of accuracy using only flow measurements.

### 4.4. Water Quality

Screening water quality parameters were collected at three locations, which were the bridge at Merrill Hills Road (Co Hwy TT), the bridge at Sunset Drive and the bridge at Genesee Road (Hwy 59). The samples were screened in the field for temperature, dissolved oxygen, pH and conductivity using calibrated meters. The meter probes were suspended within the water column in flowing sections of the creek. The meters were allowed to stabilize and the results recorded in a field notebook. The purpose of the screening was to determine if there was appreciable differences in the water quality between the points where the screening was planned, which paralleled the area where ground water levels were being measured by data logging wells.

## 5. FINDINGS

### 5.1. Soils

#### 5.1.1. South of Sunset Drive

Well points HA-1/WL-1 and HA-2/WL-2 were located south of Sunset Drive (Figure 3). Hand auger HA-1/WL-1 was located within an area of birch trees on a shallow slope uphill (approximately four to six feet higher in elevation) from a sedge meadow. The soils encountered at the location of the well point were silty clays (Appendix B). The encountered soils at this auger location were hydric. Hand auger HA-2/WL-2 was located within the sedge meadow down slope of well point WL-1. The encountered soils were muck over silty clays over a silty clay loam, which was suggestive that granular soils could occur at depth. The soil at this location was also hydric.

Hand augers HA 3 and HA-3A were located along Pebble Creek south of Sunset Drive (Figure 3). Both augers were placed in a mounded area approximately 30 feet west of the creek. Auger HA-3 encountered peaty material to a depth of 30 inches, and silty clay beneath the peat. Auger HA-3A, which was located closer to the center of the mounded are approximately four feet to the north of auger HA-3, encountered approximately 24 inches of peaty material. Beneath the peaty material there was a void that extended to at least four feet below ground surface, which was the maximum depth of the hand auger. HA-7/DL-5 was located on the same mound as HA-3 and HA-3A. It was dug to install a data logging

well point. Soils encountered were similar to those at HA-3, consisting of fibrous peat above clay. The soils encountered at these auger locations were hydric.

The significance of the void space at the location of HA-3A was not determined from the available data. A possible explanation for the void space would be an area of ground water upwelling, such as a small seep that was closed off by vegetative overgrowth. This explanation is consistent with the general domed appearance of the ground surface and the ground water filled void.

Hand augers HA-8/DL-7 and HA-9/DL-6 were located within wooded areas along the proposed right-of-way west of the creek, south of Sunset Drive (Figure 3). HA-9/DL-6 was located approximately ten feet higher in elevation than HA-8/DL-7, close to the slope break on the east facing upland to the west. Hand auger HA-8/DL-7 encountered silty clay loam over silty and sandy clays. Hand auger HA-9/DL-6 encountered soils similar to those found at HA-8/DL-7 to a depth of 24 inches. Beneath the clayey soils, gravel and sand were encountered from 24 to 40 inches below grade.

Hand auger HA-10/DL-8 was located in a brushy area within the flood plain of Pebble Creek (FEMA, 2008). Silty clay loam and sandy clay loam was found above a sand layer at 22 to 32 inches below grade. Beneath the sand layer, clay soils were found to a depth of 46 inches. The encountered soils were hydric in nature.

Hand augers HA-12, HA-13 and HA-22 were located northwest of augers HA-8/DL-7 and HA-9/DL-6 at somewhat similar positions on the landscape (Figure 3). Auger HA-22 was located upslope of the slope break. Auger HA-12 was located in the northeast corner of an old field, down slope from the slope break. Sandy clay soils were encountered from ground surface to a depth of 23 inches. From 23 to 50 inches below grade silty clay loam soils were found. The auger hole was dry until a 2-inch sand seam was encountered at 48 inches. After digging through the sand seam, the auger hole filled with water to a depth of 10 inches below grade. Auger HA-13 encountered silty and sandy clay down to a depth of 38 inches. From 38 to 40 inches a sandy clay loam was found. From 40 to 50 inches sand and fine gravel were encountered. The auger hole filled with water to a depth of 10 inches below grade after the hole was dug through the sand and gravel. Auger HA-22 was located along the west edge of the old field, approximately 22 feet higher in elevation than HA-12. Auger HA-22 found primarily sandy loam from ground surface to a depth of 42 inches. The soils at all three locations were hydric.

Hand augers HA-14 and HA-15 were located at similar landscape positions as were augers HA-12 and HA-13. Auger HA-14 encountered loamy soils from ground surface to the bottom of the auger hole at 50 inches. The soils were either silty clay loams or sandy clay loams. The water table was located at five inches below grade. Auger HA-15 had sandier soils than at HA-14. The soils were sandy clay from 15 to 42 inches below grade, followed by sands from 44 to 50 inches. Based on the nature of the recovered samples, the soils were hydric at both of these locations.

Hand augers HA-18/DL-10, HA-19/DL-11, HA-20, HA-21/DL-12 and HA-23 were located north of Genesee Road, west of Pebble Creek, above the slope break (Figure 3). Auger HA-18/DL-10 was dug in an area of cedar trees. The auger encountered loamy soils to a depth of 25 inches. Beneath the loamy soils a clay layer was found from 25 to 31 inches. Beneath the clay layer a sandy loam with gravel was found from 31 to 52 inches below grade. The sandy and gravelly loam was saturated. Auger HA-19/DL-11 was located approximately eight feet higher in elevation than auger HA-18/DL-10. The encountered soils were primarily silty clays. The soils at both HA-18 and HA-19 were not hydric.

At auger HA-20 the encountered soils had sandy components and ranged from sandy clay to sandy loam to sand and gravel at the base of the auger hole. This soil was saturated at depth (38 to 42 inches below grade) and was an upland soil.

Hand auger HA-21/DL-12 was located near the southern end of the study area, north of the intersection of Genesee Road and Saylesville Road (Hwy 59). Beneath the topsoil, the soils became sandier with depth, ranging from silty clay at 11 to 18 inches below grade to sandy clay at 18 to 28 inches, to sand at 28 to 42 inches. The soils at the location of the auger hole were hydric.

Hand auger HA-23 was located near the slope break approximately 30 feet in elevation above the level of the creek (Figure 3). The beneath the top soil layer the soils were sandy clay over silty clay. The soils were hydric at the location of the auger hole.

#### 5.1.2. North of Sunset Drive

Hand augers HA-4/DL-3, HA-5/DL-4, HA-6, HA-11/DL-9, HA-16 and HA-17 were located north of Sunset Drive (Figure 3). Augers HA-4/DL-5 and HA-5/DL-6 were located east of the farmed fields. Auger HA-4/DL-3 encountered silty clay loam, sandy clay loam

and silty loam extending to a depth of 18 inches. Silty clay was encountered from 18 to 44 inches below ground surface. Auger HA-5/DL-4 encountered soils that were generally sandier than at HA-4/DL-3. Sandy clay and sandy clay loam were found from ground surface to a depth of 27 inches. A layer of clay extended from 27 to 36 inches below grade. Silty sand was present from 36 inches to the end of the auger hole at 44 inches below grade. The water table at HA-4/DL-3 was at approximately 28 inches below grade and at HA-5/DL-4 was at approximately 15 inches below grade. Movement of water through the soils at HA-4 will likely be comparably slower, while the movement of water through the soils at HA-5 will likely be comparably quicker.

Hand auger HA-6 was located in a shallow depression on the hill slope to the west of the location of HA-4/DL-3 and HA-5/DL-4. Silty clay loam soil was found to a depth of 17 inches. A layer of sandy clay extended from 17 to 20 inches. From 20 inches to the maximum depth the auger could reach at 32 inches, silty sand was encountered. At 32 inches a rock was encountered that could not be shifted by the auger. Ground water filled the auger hole to a depth of 24 inches below grade upon completion of the hole. The land owner indicated that the depressed area was drained by a tile line.

Hand auger HA-11/DL-9 was located approximately 50 feet south of Pebble Creek; approximately 100 feet southeast of the County Highway TT bridge over the creek (Figure 3). Clayey soils were encountered to a depth of 24 inches over sand and gravel, which were found to extend to the base of the borehole at 40 inches below grade. It is not known if these sands and gravels are continuous with the bed and bank of the creek, but the approximately elevation of these soils was similar to that of the creek bed and banks at this location.

Hand augers HA-16 and HA-17 were located north of Sunset Drive, east of the area presently farmed (Figure 3). At both of these locations the soils could be generalized as muck over clayey soils over sands. These auger holes were located on the east facing slope, approximately twelve to fourteen feet above the creek elevation. The soils at these two locations were hydric.

### 5.2. Well Points

Well point DL-1 was installed in soils that were considered to be hydric, and as such it was anticipated that the water table would be within the root zone for at least 14 consecutive days

during the growing season (Figure 3). The hydrograph from the data logger is shown on Figure 4. The location of this well point was on an east sloping section of a hill that drains to Pebble Creek. As such, it was not expected that water would pond at the well point location. The hydrology at this location would therefore have a significant ground water component (Figure 4). Inspection of the hydrograph reveals that the water level in the soils rarely falls below five inches below grade, and was not lower than the root zone (12 inches) for the duration of the monitoring. The variance of the ground water level was 4.0 inches, which was the second lowest variance of the evaluated data sets. The effects of evapotranspiration are evident on the hydrograph as the relatively small daily fluctuations of water level.

Well point DL-2 was installed in and area of sedge hummocks approximately four to five feet lower in elevation than DL-1 close to the approximate elevation of the creek (Figure 3). The soils were saturated for the duration of the monitoring, and showed little variation in water level, except following four precipitation events (Figure 5). The water level data from DL-2 has the least fluctuation of all the data, and had the lowest variance at 2.5 inches. In comparison, the maximum variance was calculated from the DL-6 at 108 inches. The consistency of the ground water level was interpreted to result from two factors, which are identified as: the area had sufficient slope to drain away excess surface flows during most rain events and the ground water flow into the area balanced the losses to evapotranspiration and ground water out flows.

Well point DL-3 was located adjacent to a farm field that was actively being cultivated (Figure 3). The hydrograph from DL-3 (Figure 6) documented wetland hydrology at the area where the well was installed, having saturated soils from June 2 through July 6 (34 days) and again from July 14 through August 26 (43 days). Well point DL-4 was adjacent to the same farm field as DL-3, located approximately 300 feet to the north. The hydrograph from DL-4 documented wetland hydrology at the area the well was installed (Figure 7), having saturated soils from June 2 through July 6 and again from July 14 through August 26. The water levels at both of these wells were affected by precipitation events more than the water levels at either DL-1 or DL-2. It can be inferred that infiltration of precipitation is a greater fraction of the water budget at the locations of DL-3 and DL-4 than at DL-1 or DL-2. The variance of the water level data at this well was 24 inches.

Well point DL-5 could not be relocated in the field.

Well point DL-6 was located in an area of weedy trees and brush approximately 150 feet east of an old field (Figure 3). The hydrograph of the DL-6 data fluctuates widely (Figure 8), compared to the previously discussed data, varying over 20 to 30 inches in response to wetting and drying events.

Based on the magnitude of the water table response to precipitation, the hydrology of this location is influenced by infiltration of precipitation, and it is likely that precipitation is a significant fraction of the local water budget. The area did not have wetland hydrology during the course of monitoring. This was consistent with the soils at the location, which did not have hydric indicators. As mentioned above, the variance of the water level data at this well was 108 inches.

Well point DL-7 was also located in a wooded area approximately 450 feet east of DL-6, which places DL-7 approximately ten feet lower on the slope than DL-6 (Figure 3). As at DL-6, the hydrograph shows a significant impact on the ground water level from infiltration of precipitation, with the water level fluctuating between ground surface and 22 inches below grade (Figure 9). There was an apparent evapotranspiration component to the decreasing segments of the hydrographs wherein the water levels would temporarily increase in response to the nightly cessation of transpiration. The water level was within the root zone from June 2 through June 18 for a total of 16 days of continuous saturation, which would meet the ACOE requirement for the duration of inundation or saturation necessary to establish wetland hydrology during five years out of ten. The variance of the water level data at this well was 52 inches.

Well point DL-8 was located within 10 feet of Pebble Creek in a shrubby area dominated by Buckthorn (Figure 3). The hydrograph has a pattern similar to that documented at well point DL-7 with slightly longer periods of saturation (Figure 10). There were, however, fewer periods of surface inundation at DL-8, despite its proximity to the creek and its low elevation compared to DL-7, which was approximately seven feet above the elevation of the creek. The soils and hydrograph were both characteristic of wetlands. The variance of the water level data at this well was 39 inches.

Well point DL-9 was located approximately 100 feet east of the bridge over Pebble Creek at Merrill Hills Road, approximately 45 feet south of the creek (Figure 3). The well point was located at the approximate elevation of the banks of the creek. The water level fluctuated from the more than five inches above ground surface to 17 inches below grade (Figure 11). The hydrograph had sections when the water level appeared to be affected by evapotranspiration (late May, early July and August). These periods were near the low points of the falling arms of the hydrographs. Based on the data from July and August, the soils were saturated for sufficient duration to be characterized as having wetland hydrology. The variance of the water level data at this well was 51 inches.

Well point DL-10 was located in a grove of cedars approximately 25 feet above the elevation of the creek (Figure 3). The water level fluctuated from approximately at the ground surface to as deep as 32 inches below grade (Figure 12). The water level was at or above the 32-inches below grade

level for most of the growing season. This depth is near the top of the sandy loam soil encountered in the borehole. There appeared to be little direct influence on the water level from evapotranspiration until late July and August. The variance of the water level data at this well was 80 inches.

Well point DL-11 was located in an old field that was filling in with woody and shrubby vegetation approximately 35 feet above the elevation of the creek (Figure 3). The water level fluctuated from the ground surface to as deep as 27 inches below grade (Figure 13). The hydrograph has the characteristic diurnal fluctuations of evapotranspiration on most of the draining arms of the hydrograph peaks following precipitation / infiltration events. Comparing the hydrograph from DL-11 to the hydrograph from DL-10, which was approximately ten feet lower on the same hill slope than DL-11. At both locations the water levels responded to infiltration from precipitation. The water level at DL-11 was generally shallower than at DL-10. The declining of the water table at DL-11 appears to be influenced more by evapotranspiration than at DL-10. The water levels at DL-11 also had fewer and briefer periods of inundation than at DL-10. The variance of the water level data at this well was 45 inches.

Well point DL-12 was located immediately to the north of a large area of Reed Canary grass approximately 20 feet above the elevation of the creek (Figure 3). The water level appeared to be influenced by evapotranspiration, having larger diurnal fluctuations than those recorded on the other hydrographs (Figure 14). The well point documented saturation for over 20 days during the growing season from mid July through early August. The variance of the water level data at this well was 29 inches.

### 5.1. Stream Gauging

As described in the methods section, the flows in the creek were not measured to assess the influx of ground water along the investigated reach because of the persistent discharge of ground water on the hill slopes adjacent of the creek. The changes in creek flow resulting from these upslope discharges would not be representative of direct ground water discharge into the stream bed. It is even possible that despite apparent increases in stream discharge over the investigated reach, the stream could actually be loosing water to the local water table, but gaining discharge from the overland flow from ground water discharge on the adjacent uplands. And as such, the impacts of direct ground water discharge on the water temperature within the creek cannot be directly assessed from measured changes in discharge over the investigated reach.

### 5.1. Water Quality Screening Samples

Pebble Creek north of Sunset Drive is classified as a Class II Trout stream. South of Sunset Drive the creek is classified as a warmwater sport fishery. It was therefore anticipated that there would be good water quality. The screening parameters were measured on June 17, August 3 and August 31, 2010. The results of the water screening are shown on Table 1.

The measured temperatures ranged from 16.4 degrees C to 20.6 degrees C, which is less than the limit established for maximum daily temperature for a coldwater stream (22 degrees C) in Wisconsin. There was no pattern to the water temperatures on the first screening date on June 17$^{th}$. The lowest temperature was measured at Sunset Drive and the highest was measured at Merrill Hills Road. During both dates in August the water temperature generally increased downstream.

The water conductivity, which is a measure of the inorganic dissolved solids such as chloride, nitrate, sulfate, calcium, magnesium and iron, varies from 0.050 to 1.500 mS/cm (millisiemen/cm) in river systems. In a fluvial system, changes in water conductivity typically reflect changes in the water quality of additions to the stream (runoff, ground water, storm sewers) or changing substrate character (bedrock, sands, clays). The US EPA reports (http://water.epa.gov/type/rsl/) that streams supporting mixed fisheries typically range from 150 to 500 mS/cm. The screening results were above this range, which could reflect the clayey nature of the local substrate.

**TABLE 1**
**Water Quality Screening**
**Pebble Creek Summer 2010**

| | Pebble Creek At Co Hwy TT | Pebble Creek At Sunset Drive | Pebble Creek Hwy 59 | Average |
|---|---|---|---|---|
| | | 6/17/2010 | | |
| Temperature (degrees C) | 19.4 | 16.4 | 18.7 | 18.2 |
| Conductivity (mS/cm) | 0.832 | 0.880 | 0.842 | 0.851 |
| pH | 7.72 | 7.66 | 7.84 | 7.74 |
| | | 8/3/2010 | | |
| Temperature (degrees C) | 18.5 | 18.7 | 19.4 | 18.9 |
| Conductivity (mS/cm) | 0.813 | 0.851 | 0.840 | 0.835 |
| pH | 7.75 | 7.82 | 7.98 | 7.85 |
| | | 8/31/2010 | | |
| Temperature (degrees C) | 18.6 | 19.7 | 20.6 | 19.6 |
| Conductivity (mS/cm) | 0.850 | 0.859 | 0.865 | 0.858 |
| pH | 8.69 | 8.40 | 8.46 | 8.52 |
| Dissolved Oxygen (ppm) | 8.9 | 7.7 | 8.6 | 8.4 |

The measured pH ranged from 7.66 to 8.69 and generally increased over time. The averages were 7.74 on June 17, 7.85 on August 3 and 8.40 on August 31. All of the measurements were on the basic side of neutral (7.0). The Wisconsin Administrative Code NR 102 specifies a range of 6.0 to 9.0 for all freshwater fish communities. The pH measurements were all within the acceptable range.

The dissolved oxygen meter measured levels at 100 percent of saturation at all three locations during the first two field visits. On the August 31 field screening the levels ranged from 7.7 mg/l to 8.9 mg/l. The Wisconsin Administrative Code NR 102 minimum for a coldwater community is 6.0

mg/l and 7.0 mg/l during spawning. The Wisconsin Administrative Code NR 102 minimum for a warmwater sport fish community is 5.0 mg/l. The measured dissolved oxygen met these requirements at all three locations.

## 6. SIGNIFICANCE OF FINDINGS

### 6.1 Soils

The uplands to the west of the creek were interpreted to be likely recharge areas for the ground water system that discharges toward Pebble Creek. Areas of sandy soils likely supply relatively greater levels of recharge than areas of clayey soils. Sandy soils can also be a surface expression of sand and gravel aquifers that extend beneath other soils. There is and area of soils formed in sandy and gravely material that parallels Pebble Creek beginning at Merrell Hills Road extending to the east. The sandy and gravelly material turns southeast paralleling the bend in the creek, extending southeast two thirds of the way to Genesee Road. To the west of the sandy soils, the soils were soils formed in clayey materials. Between the sandy soils and the creek, silty and mucky soils were mapped.

The nature of the mapped soils as delineated by the NRCS (Figure 2) was generally confirmed by the hand auger samplings. Hand augers encountered sandy and gravelly layers that could transmit relatively greater quantities of ground water than clayey or silty soils. The sandy and gravelly layers were not documented as extending to the creek.

### 6.2 Ground Water

The hydrographs from wells DL-1 and DL-2 had smaller drops in the water table elevation between precipitation events than any of the nine other hydrographs. Apparently, the water table at both these locations was less subject to draining than at other locations investigated. The wetlands in these two areas are likely adapted to continuous saturation. The hydrograph from DL-2 can also be interpreted that the area where the well was located had a balance between upwelling ground water and withdrawals by evapotranspiration, which would result in the stability documented on the hydrograph.

Given the similar physical conditions of the locations where well points DL-3 and DL-4 were installed, it was anticipated that the hydrographs would be similar. The two hydrograph were somewhat similar, but the water level at DL-4 appeared to be flashier than at DL-3. The water level dropped more quickly than at DL-3 without showing signs of evapotranspiration. The ground surface was also inundated more frequently than at DL-3. It is possible that there is draining of the

ground water at the location of DL-4 that is unrelated to evapotranspiration. Both of these wells were located close to the elevation of the creek bed, so there is not likely to be the same level of drop in the water table related to down slope ground water movement as there is at wells located up on the hill side. In other words, both of these well points were located close to be low point in the local ground water flow field, which is Pebble Creek. The hydrograph noted at DL-4, the side channel cut into the creek than extends toward the farm field and the lack of ground water discharge in the hill slope to the west are all suggestive that there may be drain tiles in the slopes to the west.

South of Sunset Drive, ground water was found to be discharging within wetlands along the slopes of the hills to the west of Pebble Creek. The discharged water then flows overland to the creek, concentrating in some areas into shallow rivulets that drain into the creek. North of Sunset Drive, the hill slopes were actively farmed and ground water discharge was not observed. It is possible that these fields are drained by agricultural tiles, but this was not investigated.

Well points DL-6 and DL-7 were arranged in a transect more or less parallel with the slope of the hill, DL-6 being the uphill well point and DL-7 being the downhill well point. As expected, there was greater variance in the water level logged at DL-6 (v= 107.9 inches) than at DL-7 (v=51.9 inches). This can be explained by the respective position of these two wells within the local flow field. The ground water at DL-6 drains toward DL-7, whereas the ground water at DL-7 is re-supplied by drainage from DL-6. Neither well point was located in an area of ground water discharge to the ground surface. Rather, both wells were located in areas that supplied local recharge to the local flow field that eventually supplied base flow to the creek.

Well points DL-8 and DL-9 were both located close to the banks of Pebble Creek. DL-8 was located within 20 feet of the creek south of Sunset Drive in the section of the creek classified as a warmwater fishery. A sand seam was encountered in the borehole for DL-8, but was only ten inches thick. DL-9 was located within 100 feet of the creek immediately east of Merrill Hills Road in the area where the creek is classified as a Class II Trout Stream. The soils encountered in the hand auger boring for DL-9 were sands and gravels from 21 to 45+ inches below grade, which can be interpreted to allow for a direct connection of the local ground water flow system and the creek. In comparing the two hydrographs, the location of DL-9 appeared to be inundated more frequently than at DL-8. The water levels at DL-8 appeared to drain slower than at DL-9 and showed the impacts of evapotranspiration more frequently than at DL-9. The relatively quicker drainage at DL-9 likely results from a physical connection of the sands and gravels and the creek.

The location of well point DL-10 within a grove of cedars is likely a recharge area for areas farther down slope. The rapid draining of the water levels noted in the well point is suggestive that the ground water in this area flows down gradient toward the creek. In comparison, the water level in DL-11 drops slower and shows the influence of evapotranspiration, despite being located farther upslope than DL-10. It is possible that the difference in the two locations reflects differences in the soils at the two locations. Finer grained soils will recharge and drain slower than coarser grained soils. The level of recharge at DL-10 is likely to be greater than at DL-11 because of the coarser grained soils. In general, the level of recharge within the study varies laterally depending on the soil, vegetation and depth to the water table, and the draining limbs of the hydrographs were anticipated to reflect these differences.

Well point DL-12 was located at the northern edge of a shallow broad swale that drained down the hill side toward Pebble Creek at the southern end of the study area. The hydrograph from well point DL-12 showed an influence from evapotranspiration. The hydrograph was incomplete, but the recorded sections were almost ubiquitously influenced by evapotranspiration. Topographically, the well point at the closest elevation was DL-6. It is possible that the comparatively shallower water depths at DL-12 reflect surface runoff being channeled into the broad swale increasing the water levels compared to at DL-6.

### 6.3 Surface Water

Although not quantified in this study, it is possible that a greater fraction of the stream base flow supplied within the studied reach south of Sunset Drive was supplied by the ground water discharged on the hill slopes to the west of the creek than ground water discharged directly to the creek. This is based on two general observations. The first was discharge of ground water at numerous areas on the hill slopes to the west of the creek. The ground water discharge was not in isolated seeps, but rather in extensive zones of diffuse discharge observed during field inspections. This water then sheet flowed to the creek. The second observation was that areas of granular material were not observed in channel bed of in the hand auger investigation along the creek south of Sunset Drive.

The measured screening parameters were not an indication of significant changes in water quality along the monitored reach of the creek.

There were apparent changes in the nature of ground water discharge to the creek along the reach investigated. In the north ground water was not noted discharging at the ground surface on the

slopes uphill of the creek. The hill slopes north of Sunset Drive were actively farmed and may have been drained with tile systems. South of Sunset Drive extensive areas of ground water discharge were noted on the hill slopes, and as described above, the discharged ground water sheet flowed over land to the creek.

The section of Pebble Creek north of Sunset Drive and east of Merrill Hills Road is mapped as a Class II Trout Stream. An essential quality of trout streams is the cool water and the associated dissolved oxygen levels. Trout streams have a more narrow range of acceptable temperature fluctuation than warm water fisheries.

North of Sunset Drive, the proposed alignment of the bypass would be located mainly in areas of clayey soils, which are located to the west of the sandy soils paralleling the creek. The surface soils in this area of clayey materials are likely to have relatively lower recharge rates than the soils developed in sandy materials to the east along the creek or to the south of Sunset Drive. The one exception is the area immediately to the east of the intersection of Merrill Hills Road and the Drumlin Trail. In that area the proposed alignment crosses an area of sandy soils that likely supplies relatively greater recharge to the creek.

If there are other areas where peaty soils cap voids in the subsurface, there may be challenges to roadway construction associated with upward flowing ground water discharge. Other areas of mounded vegetation were noted north of Genesee Road.

## 7. SUMMARY

A section of a proposed alignment for the planned extension of the Waukesha Bypass from State Highway 59 (Genesee Road) on the south to County Hwy TT (Merrill Hills Road) on the north would traverse through a series of undeveloped parcels and farm fields. Within this corridor the proposed roadway south of Sunset Drive would be constructed approximately parallel to Pebble Creek. North of Sunset Drive the creek trends more northerly than the roadway and diverges to the east. The area this study focused on was where the proposed roadway would be closest to the creek. North of Sunset Drive, Pebble Creek is designated a Class II Trout Stream. South of Sunset Drive Pebble the creek is classified as a warmwater sport fishery. One of the key components required for classification as a Trout Stream is the maximum stream temperature. Accordingly, changes to the thermal regime of the stream could be a negative impact due to it being a key component of its ecology.

The ground water flow system in the study area is within the glacial sediments, bedrock within the study is located fifty to one hundred feet below ground surface. The glacial sediments within the study area vary both laterally and vertically, which affects the direction and quantity of ground water flow. Within the study area, the general pattern of ground water flow is toward Pebble Creek from the adjoining uplands. On a larger scale the flow pattern is somewhat chaotic, with local changes in flow direction due to the proximity of Pebble Creek, its tributary creeks and the Fox River all located within the same general area.

The study area south of Sunset Drive was observed to have ground water discharge at the land surface on the side slope of the hill to the west of Pebble Creek. The discharge was in extensive zones and seeps that drained toward the creek. A similar pattern of discharge on the slope of the hill upslope from the creek was not observed north of Sunset Drive. The hill slope north of Sunset Drive was actively farmed and may be drained by agricultural tile lines. The discharge and subsequent flow into the creek precluded accurate determination of direct ground water discharge into the creek by stream gauging, and as such flows in the creek were not measured.

Variation in soil textures were noted between and among the areas investigated with the hand augers and well points. The recorded hydrographs likely reflect the nature of the hydrology and the relative importance of the various additions to and subtractions from the local budgets. In general, areas dominated by ground water discharge appeared to have comparably less variation in water level than areas supplied by local infiltration. Areas on the slopes of the uphill areas appeared to be both recharge areas and flow through areas supplying ground water to down slope surface discharge and discharge to the creek. Recharge and flow through also supplied root zone waters to plants farther down slope, as evidenced by the evapotranspiration patterns in the hydrographs of wells lower on the slopes.

The section of Pebble Creek north of Sunset Drive is likely to be sensitive to changes to the local ground water flow. The proposed alignment north of Sunset Drive is situated on clayey soils that are likely to supply less ground water recharge than the sandy areas, and as such supply less of the local creek base flow. The one exception to this is immediately east of the bridge over the creek at Merrill hills Road. The sandy soils to the east of the proposed alignment are likely to supply a relatively greater fraction of the local creek base flow than the clayey areas.

To the south of Sunset Drive the alignment of the proposed roadway is in an area where pavement could have an impact of the surface discharge of ground water noted in the study. Changing the flow patterns of the discharged ground water could possibly impact on the temperature and

chemistry of the waters that could in turn have an impact on the nature of the creek base flow. This area of Pebble Creek is a warm water fishery.

Areas of mounded plant growth were noted, and the one area investigated was noted to have an at least three foot deep void beneath the surface peaty deposits. Areas of mounded surface plant growth sometimes result from upward flowing ground water, such as grown over seeps or springs.

On the three dates that water quality screening parameters were measured, significant differences in water quality were not noted between the north and south ends of the study area.

The type and magnitude of the impacts to ground water from construction of the proposed bypass will depend on the selected alignment. There are not anticipated to be significant impacts to the deeper regional ground water system from construction of the proposed bypass. Rather, possible impacts are likely to be localized and restricted to the wetlands adjacent to and down flow (ground water) from the bypass. At these locations the impacts are likely to be changes in the quantity and quality of the ground water supplied to the wetlands. The other possible impacts are potential impacts to Pebble Creek. Specifically, changes to the temperature, quality and quantity of the ground water supplies to the local base flow of Pebble Creek.

## 8. REFERENCE MATERIALS

FEMA, 2008, Flood Insurance Rate Map, Waukesha County, Wisconsin, Panel 306 of 500, Map Number 55133C0306F

South Eastern Wisconsin Regional Planning Commission (SEWRPC), 2002, Ground Water Resources of Southern Wisconsin, Technical Report No. 37, 203 pages.

South Eastern Wisconsin Regional Planning Commission (SEWRPC), 2008, Pebble Creek Protection Plan, Waukesha, County, Part 1, Community Assistance Planning Report No. 284, 246 pages.

United States Department of Agriculture, 1971, Soil Survey of Milwaukee and Waukesha Counties, Wisconsin, 177 p.

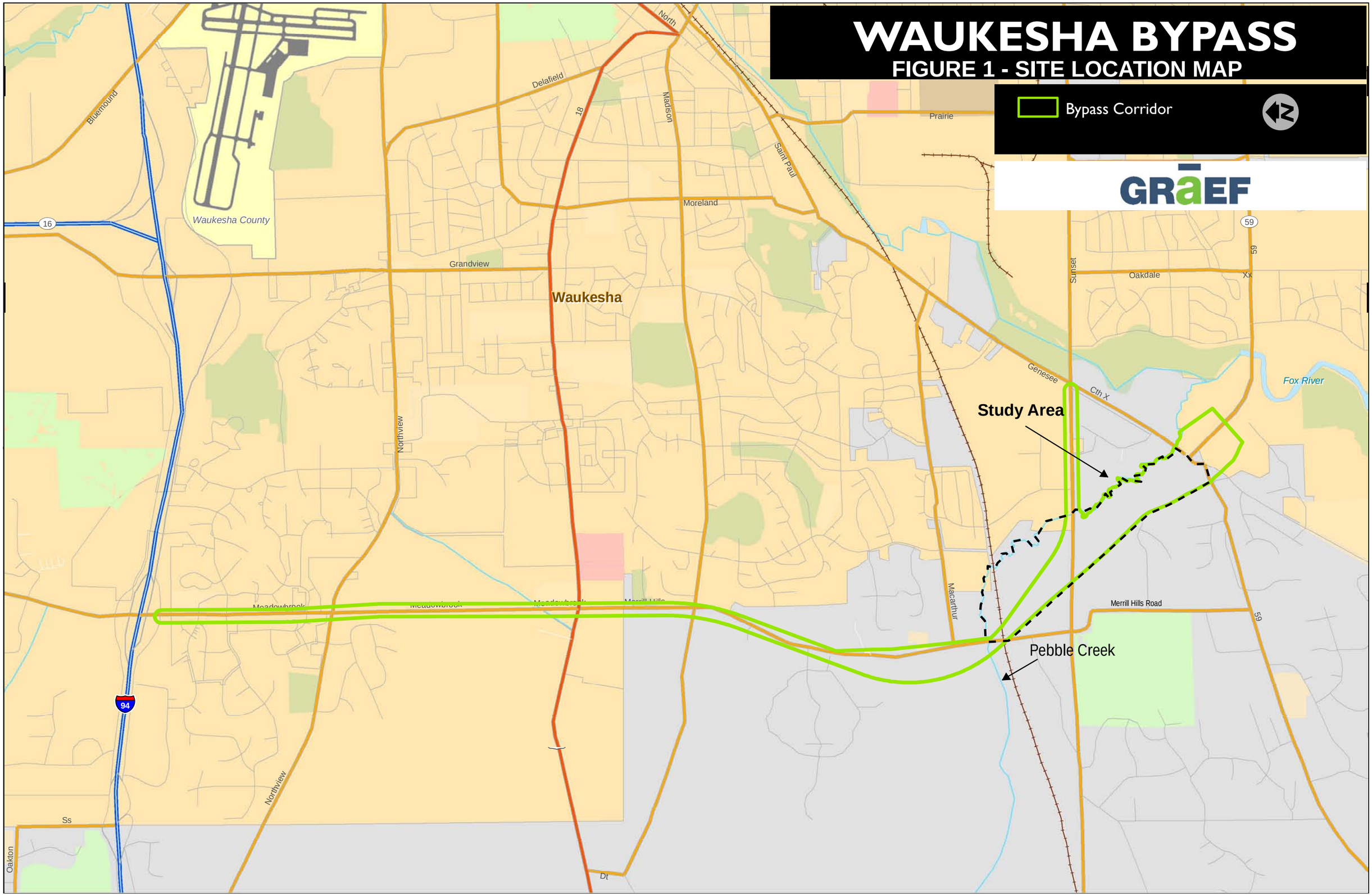
United States Geological Survey (USGS), 1975, Ground-Water Resources of Waukesha County, Wisconsin, Information Circular Number 29, 47 pages

Waukesha County Internet Mapping Site

# FIGURES

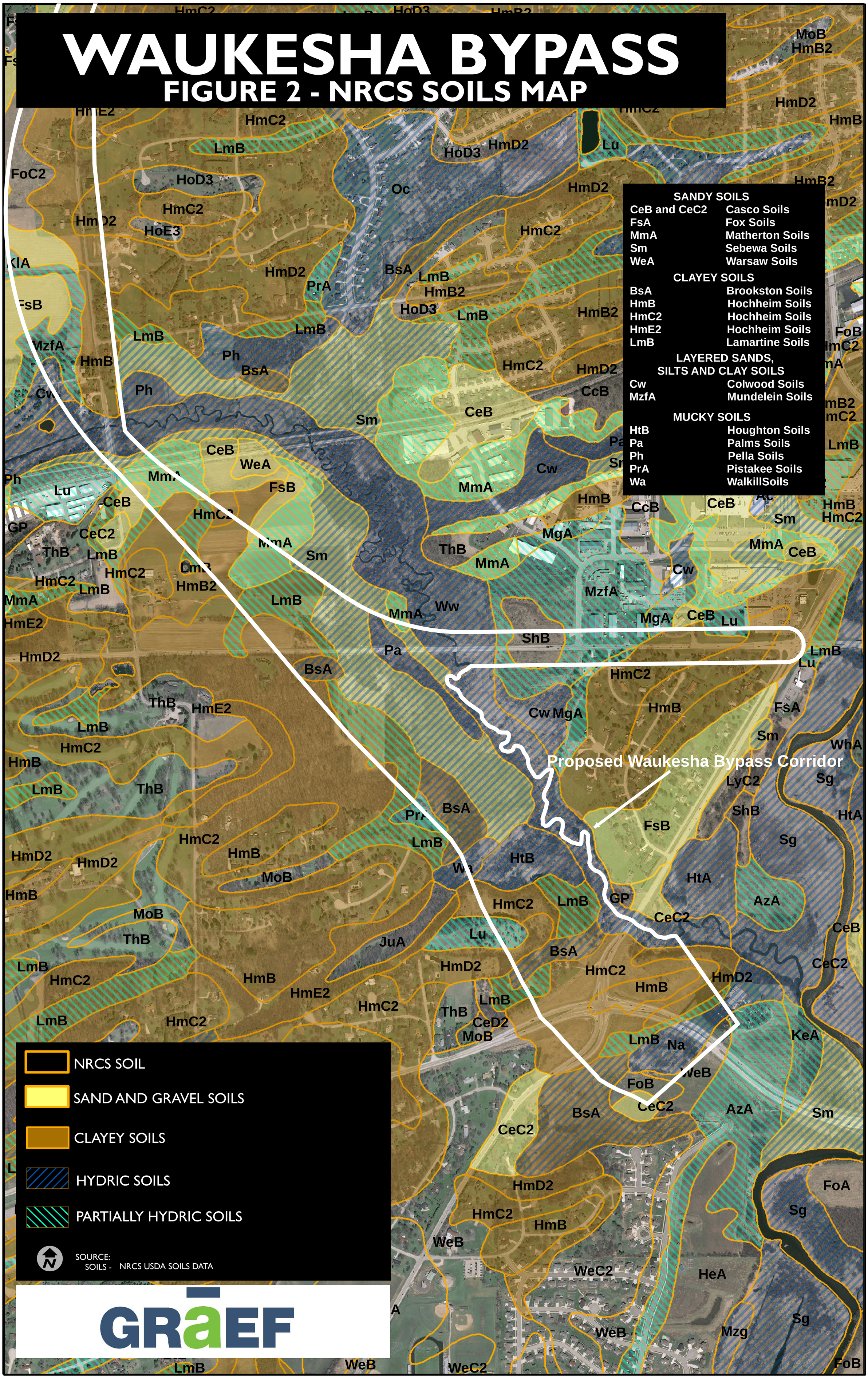
# WAUKESHA BYPASS

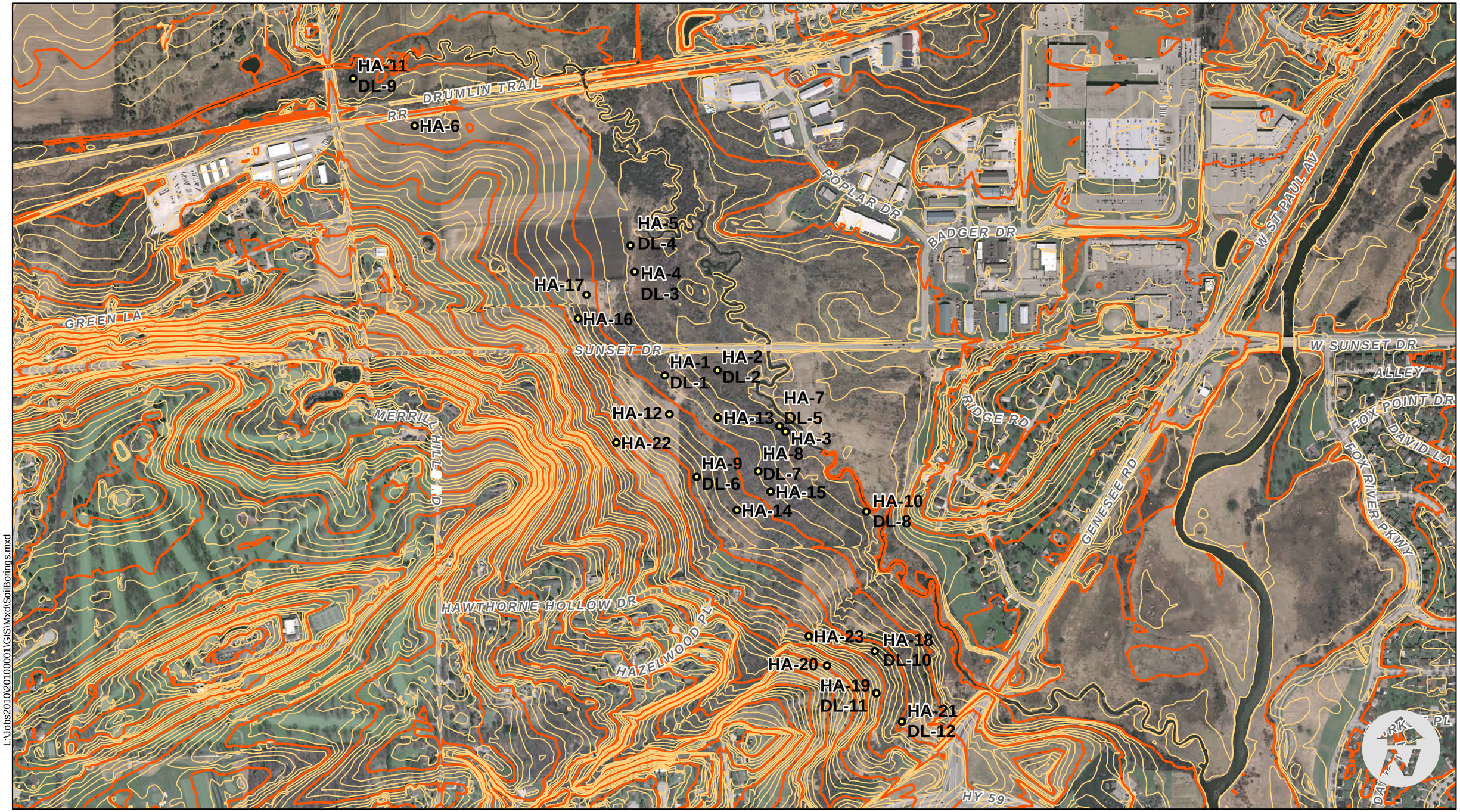
## FIGURE 1 - SITE LOCATION MAP



# WAUKESHA BYPASS

## FIGURE 2 - NRCS SOILS MAP






L:\Jobs2010\20100001\GIS\Mxd\SoilBorings.mxd

GRAEF

TEN FOOT CONTOURS
TWO FOOT CONTOURS
WELL POINT LOCATION

| | |
|---|---|
| PROJ. NUMBER: | 2010-0001 |
| DATE: | 11-10-2010 |
| PROJECT MGR: | GP |
| DRAWN BY: | KMJ |
| REVISED: | |

**SOIL BORING AND WELL POINT LOCATION MAP**

**WAUKESHA, WISCONSIN**

**FIGURE 3**

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-1 Data

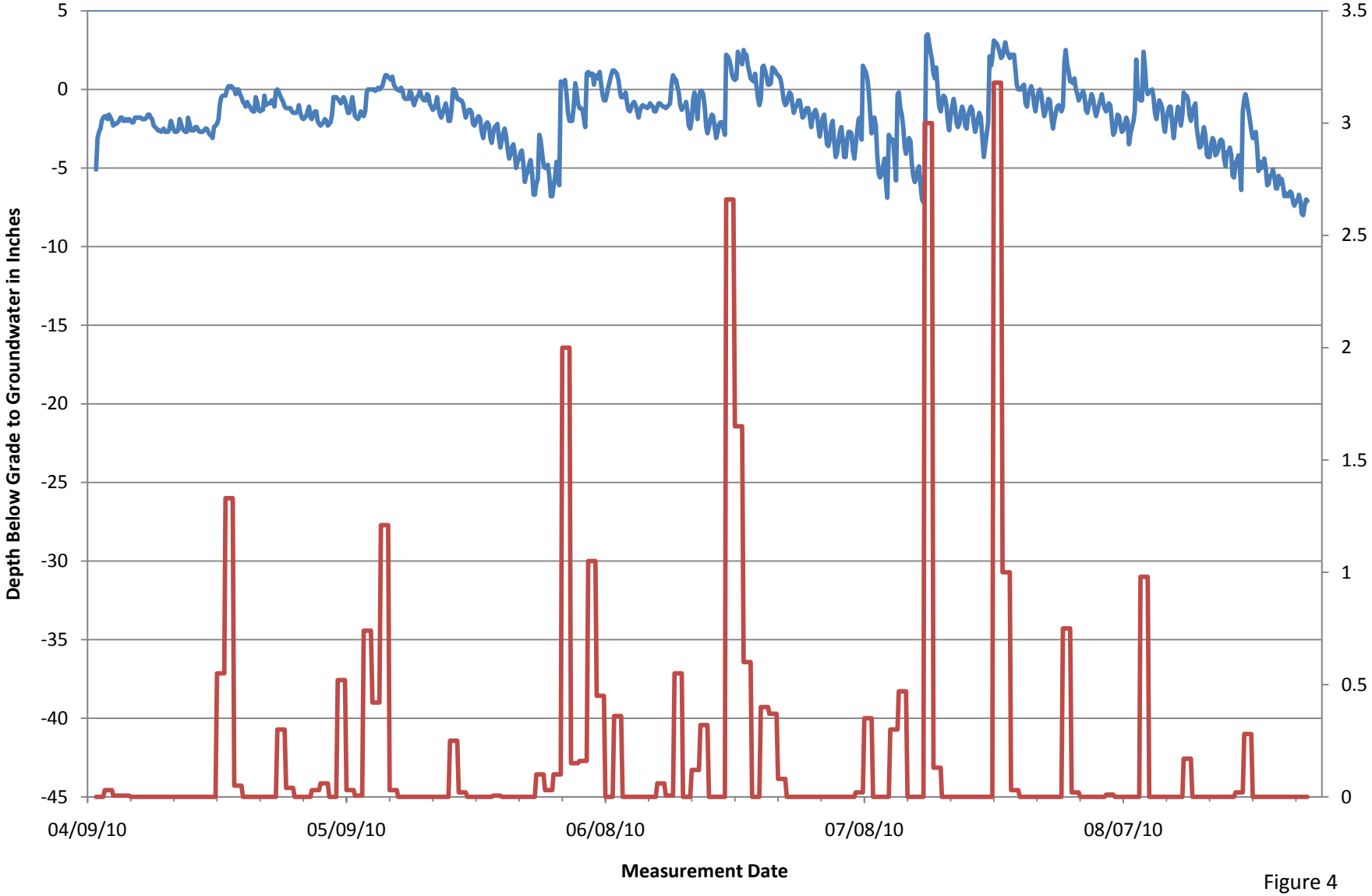



Figure 4

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-2 Data

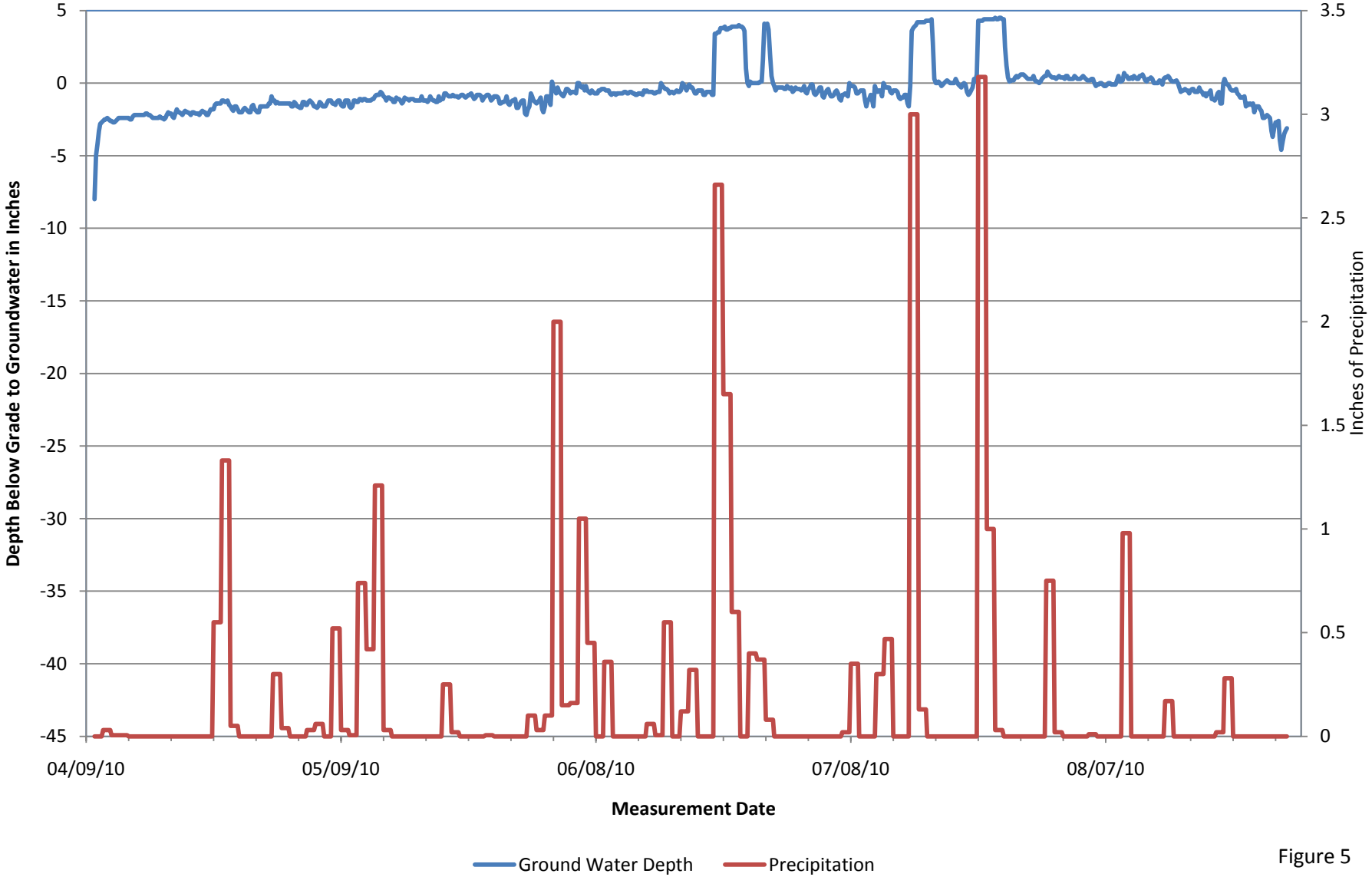



Figure 5

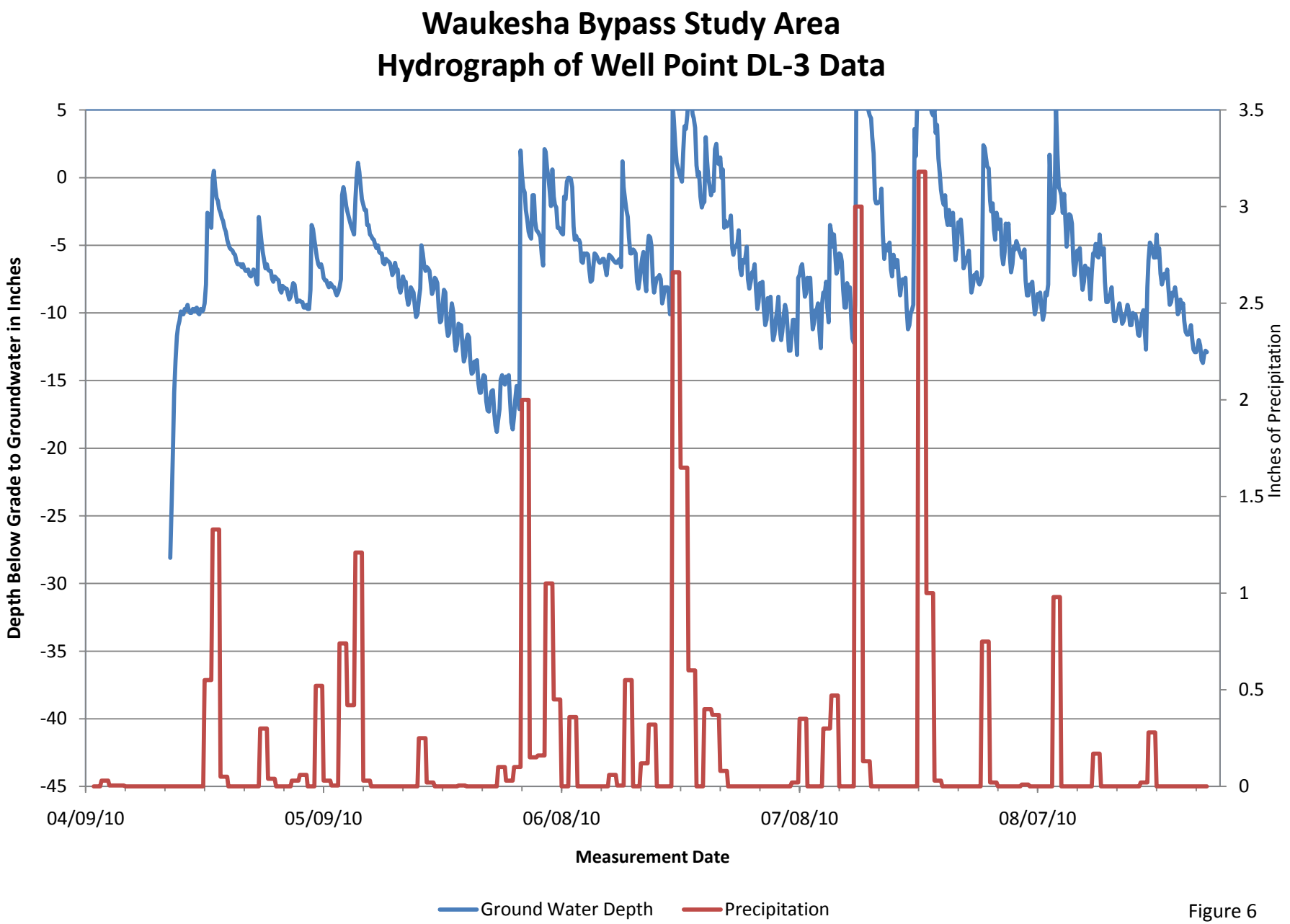

Waukesha Bypass Study Area
Hydrograph of Well Point DL-3 Data
Depth Below Grade to Groundwater in Inches
Inches of Precipitation
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
3.5
3
2.5
2
1.5
1
0.5
0
04/09/10
05/09/10
06/08/10
07/08/10
08/07/10
Measurement Date
Ground Water Depth
Precipitation

Figure 6

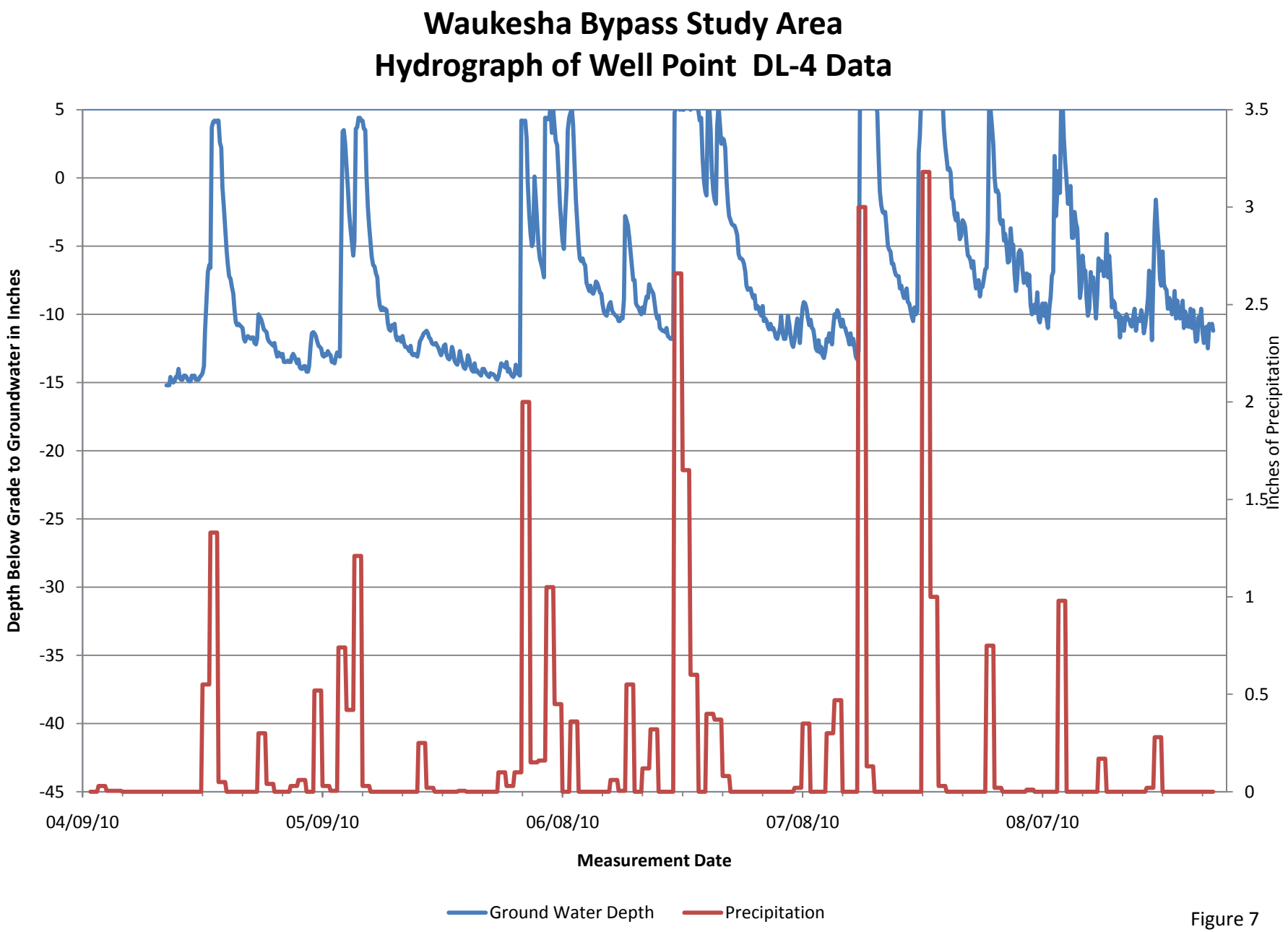

Waukesha Bypass Study Area
Hydrograph of Well Point DL-4 Data
Depth Below Grade to Groundwater in Inches
Inches of Precipitation
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
3.5
3
2.5
2
1.5
1
0.5
0
04/09/10
05/09/10
06/08/10
07/08/10
08/07/10
Measurement Date
Ground Water Depth
Precipitation

Figure 7

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-6 Data

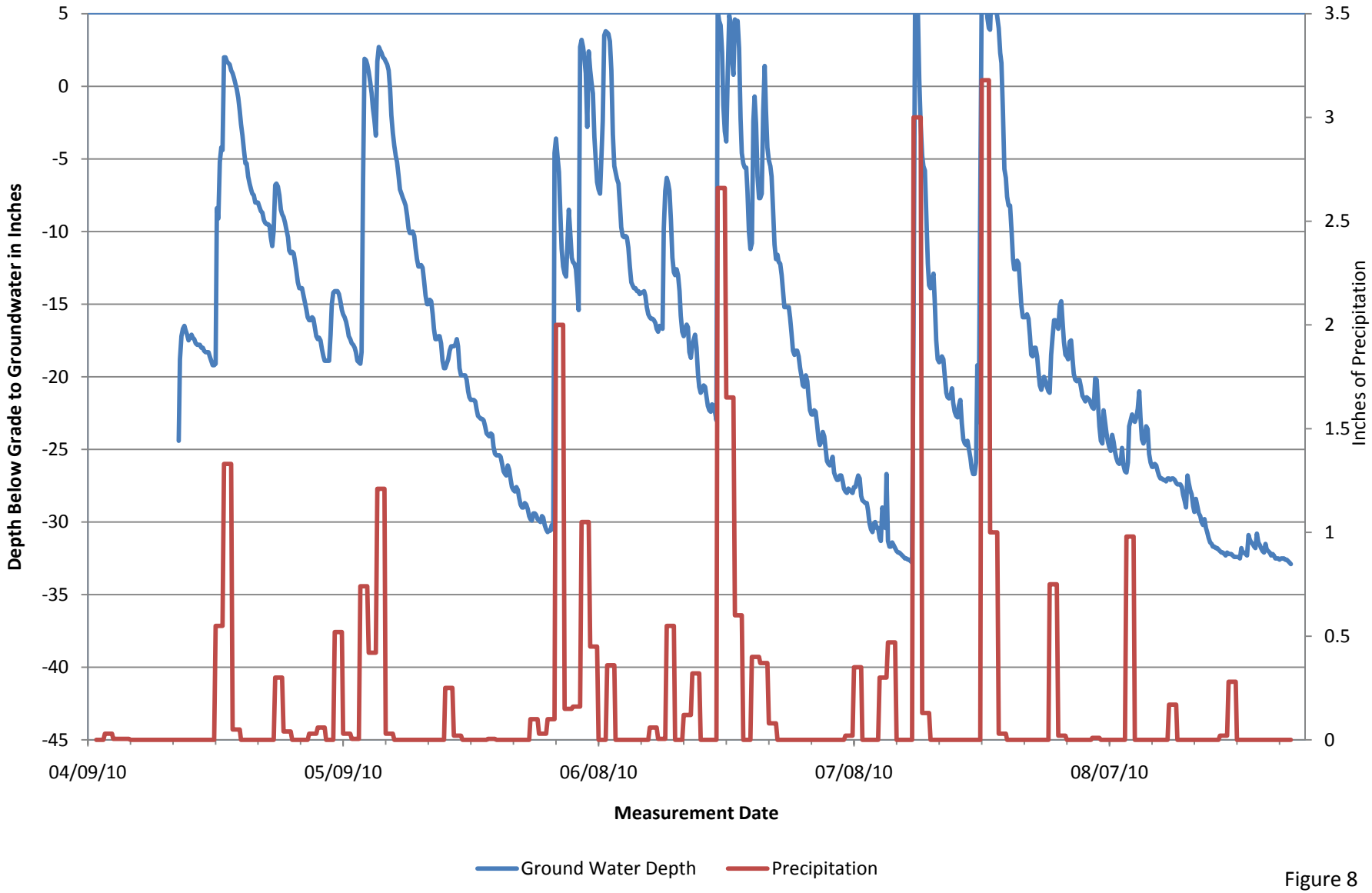



Figure 8

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-7 Data

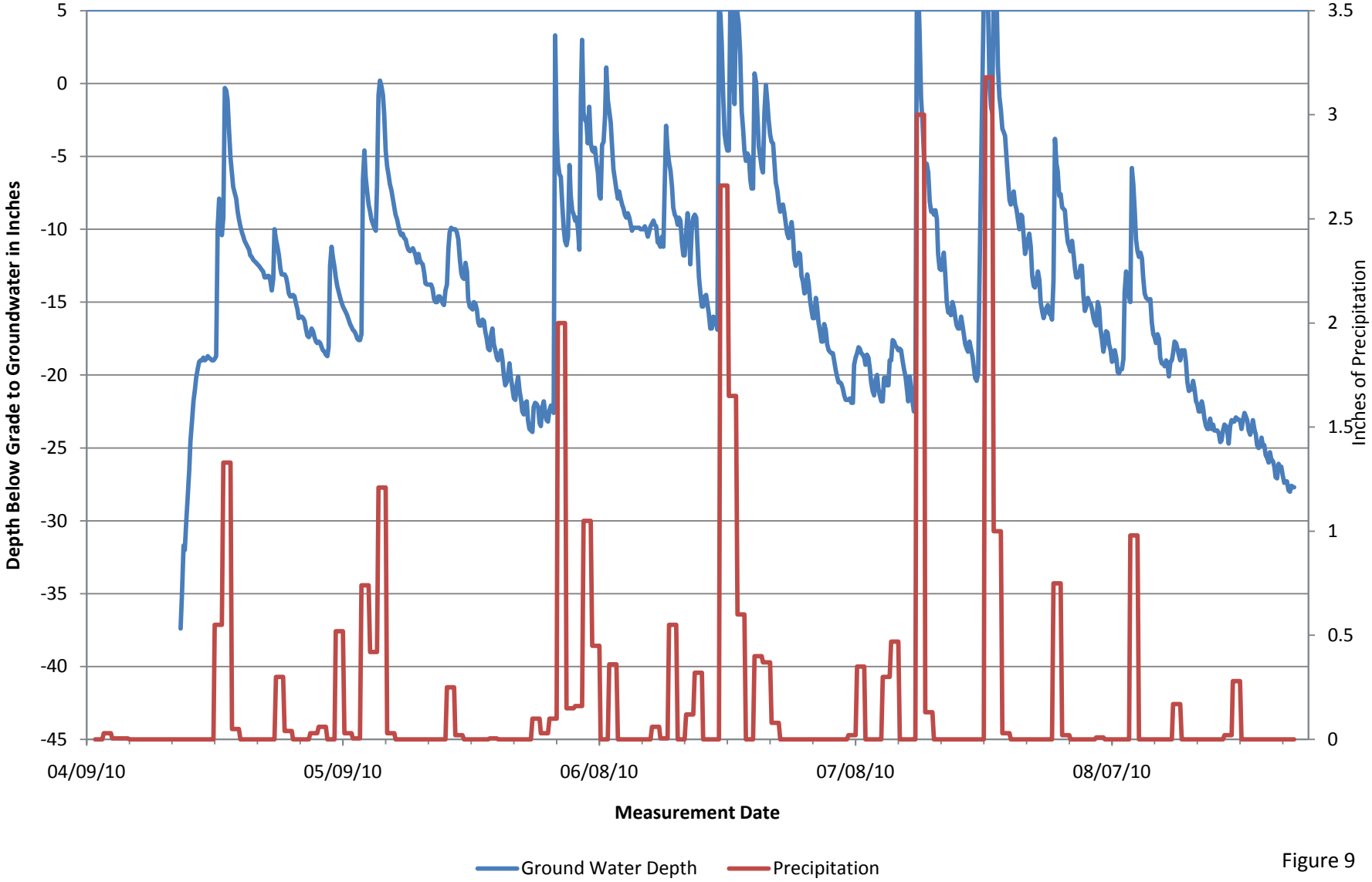



Figure 9

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-8 Data

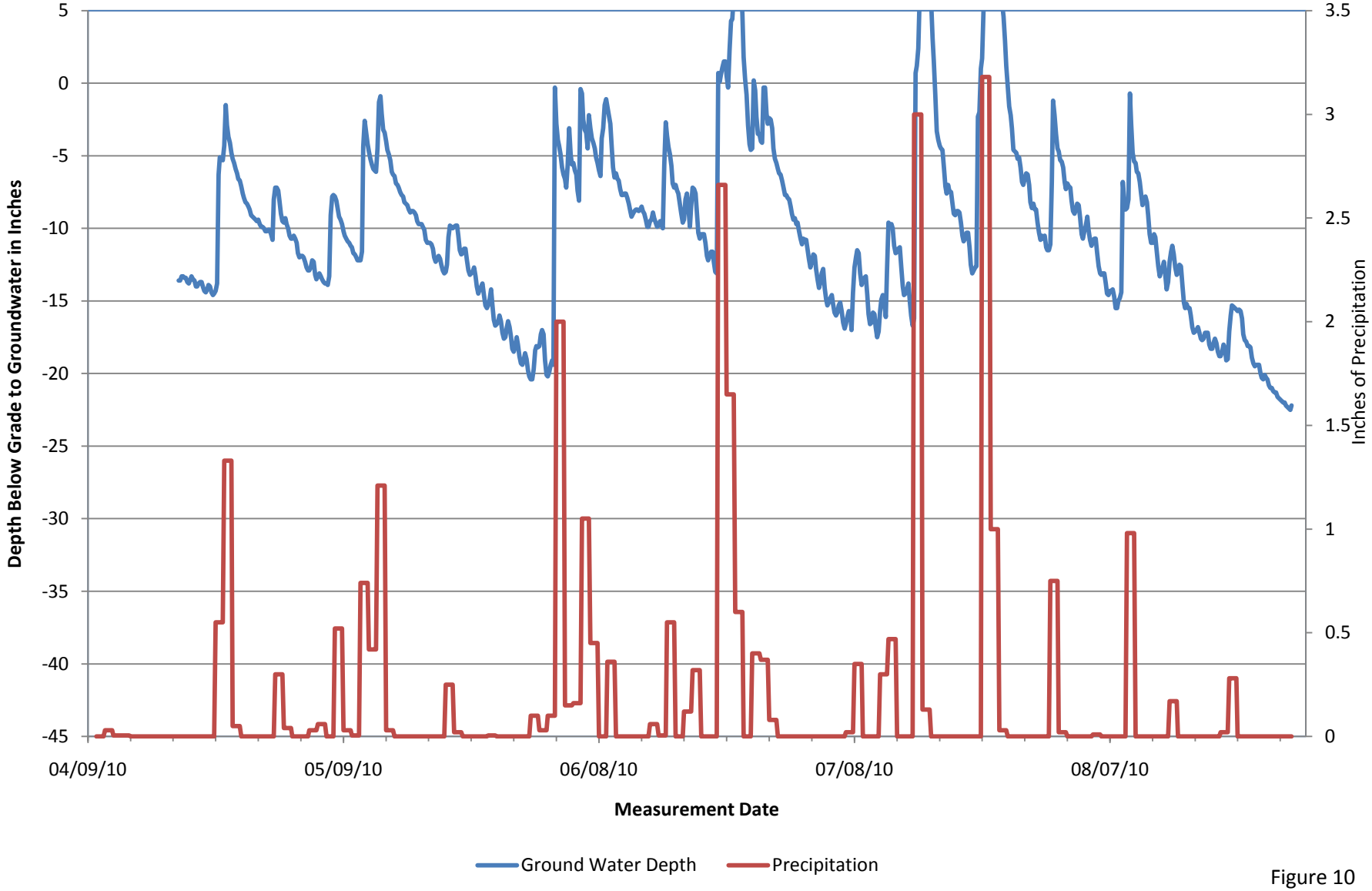



Figure 10

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-9 Data

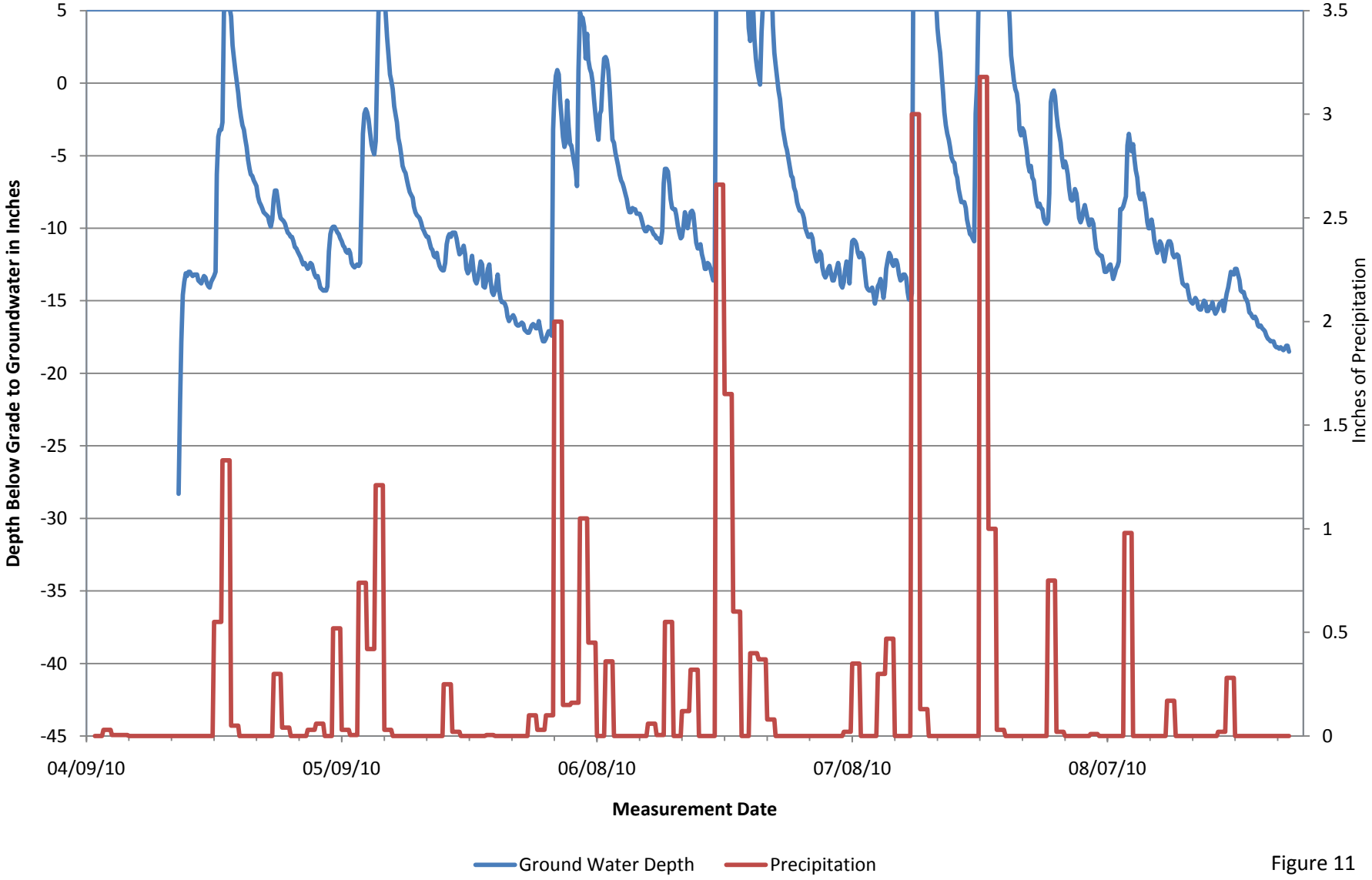



Figure 11

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-10 Data

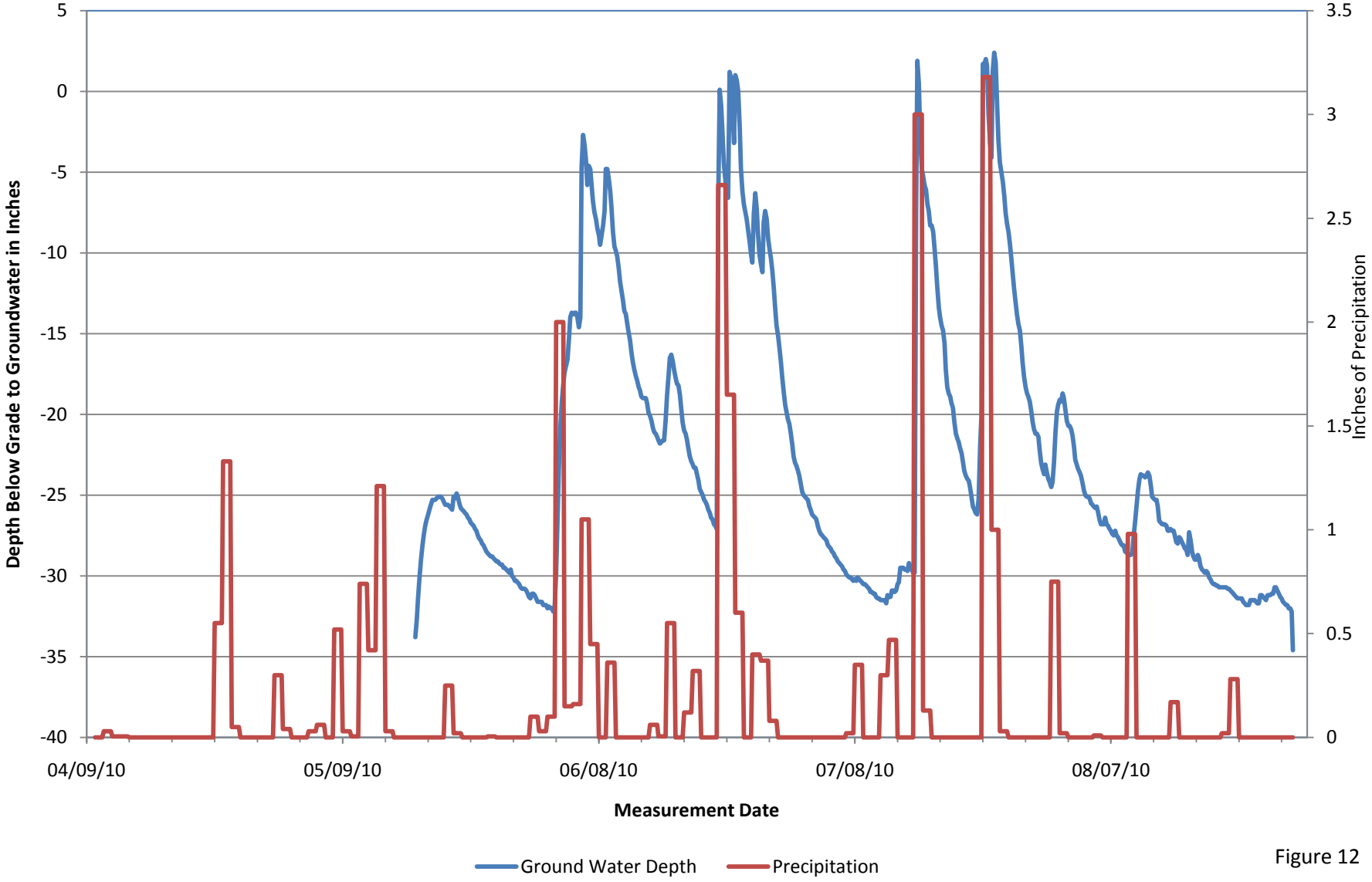



Figure 12

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-11 Data

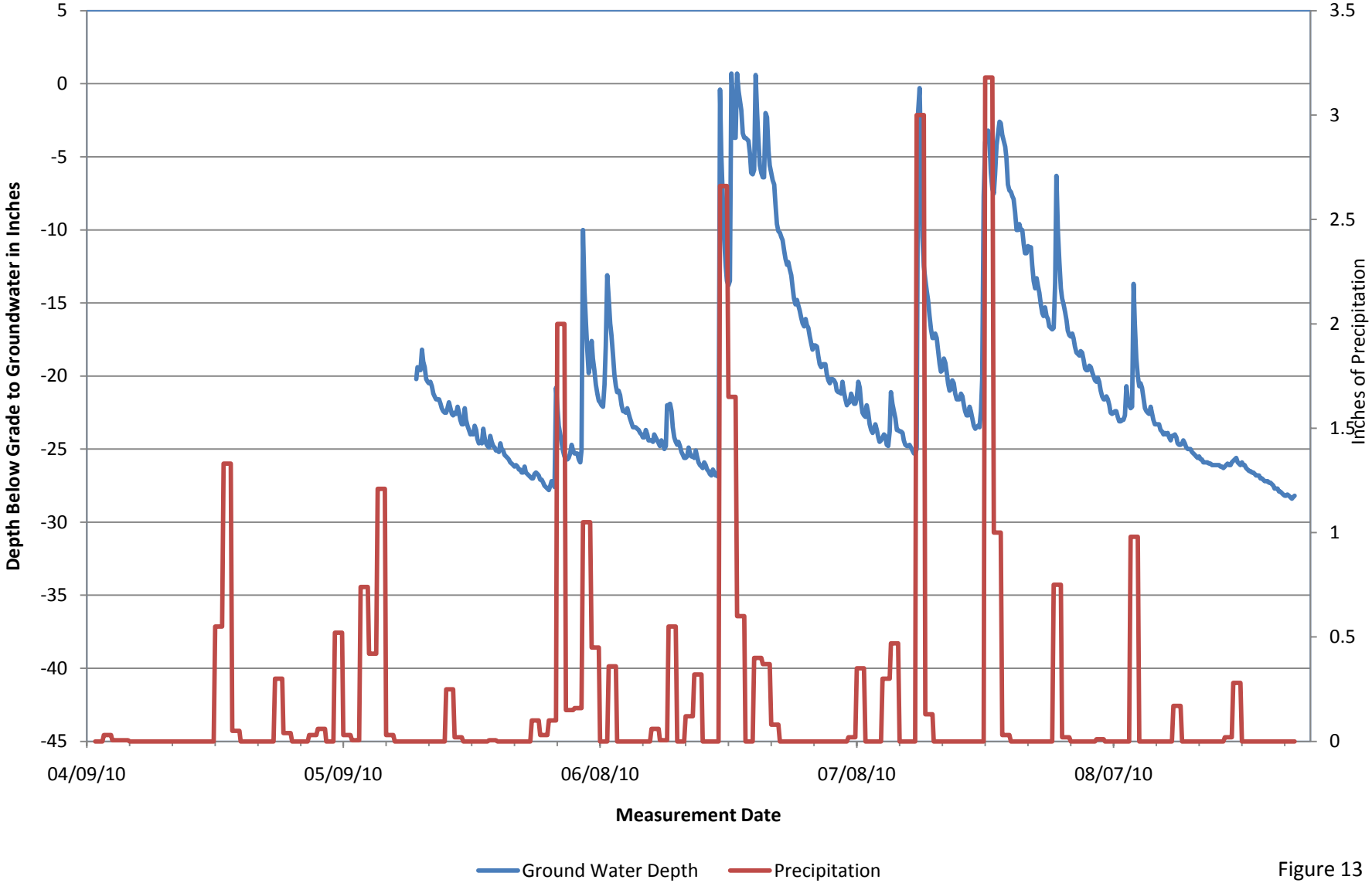



Figure 13

# Waukesha Bypass Study Area
# Hydrograph of Well Point DL-12 Data

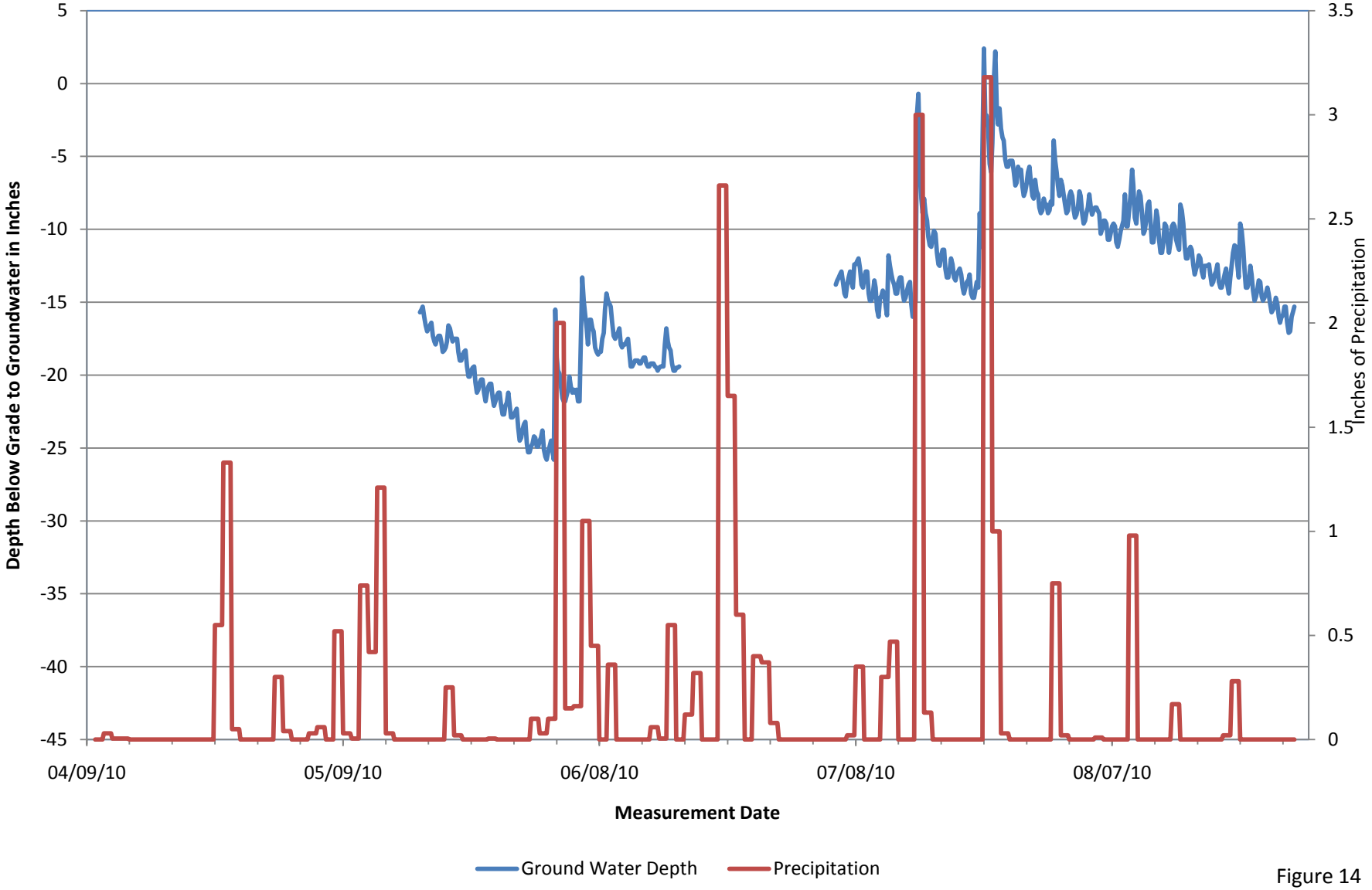


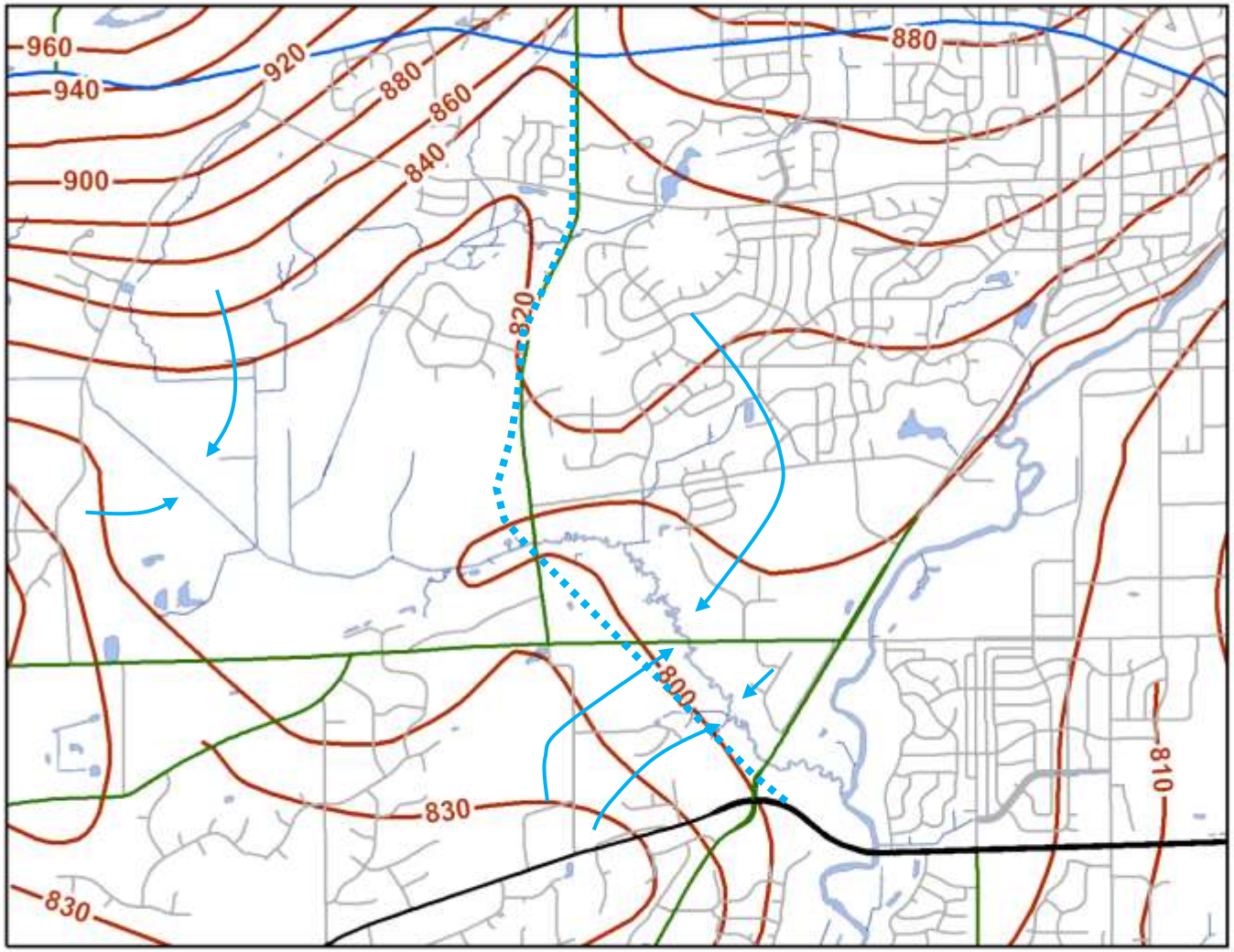

Figure 14

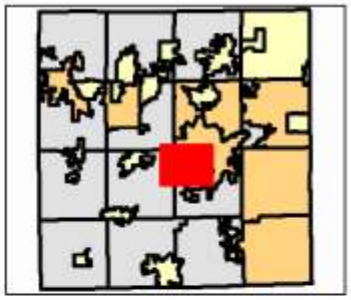
# APPENDICES

# APPENDIX A
# Ground Water Flow Map

WAUKESHA COUNTY
Internet Mapping Site

# Water Table Contours Waukesha Bypass



## Legend

Ground Water Flow Direction

Bypass Corridor

0 3250 6500 9750 ft.

The information and depictions found on this site are for informational purposes only and Waukesha County specifically disclaims accuracy in the reproduction and specifically admonishes and advises that if specific and precise accuracy is required, the same should be determined by procurement of certified maps, surveys, plats, Flood Insurance Studies, or other official means. Waukesha County will not be responsible for any damages which result from third party use of the information and depictions herein or for use which ignores this warning.

Map Generated: May 19, 2010

# APPENDIX B
# Hand Auger Logs

Project Waukesha Bypass

Project Location Pebble Creek

Date 4/9/2010

HA-1 DL-1

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-12 | 10YR 3/1 | | siL | | |
| 2 | 12-30 | 10YR 5/1 | | siC | | |
| 3 | 30-40 | 10YR 6/1 & 6/6 | | siC | | 50% -50% mix of 6/1 and 6/6 |
| 4 | 40-44+ | 5GY 5/1 | | siC | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

HA-2 DL-2

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-7 | 10YR 2/1 | | muck | | sapric |
| 2 | 7-15 | 10YR 2/1 | | siC | | |
| 3 | 15-30 | 10YR 3/1 | | siC | | |
| 4 | 30-44 | 10YR 7/1 & 6/6 | | sicL | | 50% -50% mix of 7/1 and 6/6 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

HA-3

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-30 | 10YR 2/1 | | hemic | | Peat |
| 2 | 30-36+ | 10YR 6/1 | | siC | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

HA-3A (four feet north of HA-3)

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-24 | 10YR 2/1 | | hemic | | |
| 2 | 24-48+ | | | | | no recovery - auger dropped to handle |
| | | | | | | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| | | | | | | |
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Project Waukesha Bypass

Project Location Pebble Creek

Date 4/19/2010

HA-4 DL-3

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-8 | 10YR 2/1 | | sicL | | |
| 2 | 8-13 | 10YR 2/1 | c2d 10YR 4/6 | scL | | |
| 3 | 13-18 | 10YR 2/1 | | siL | | |
| 4 | 18-27 | 10YR 2/1 | | siC | | |
| 5 | 27-33 | 10YR 6/1 & 6/6 | | siC | | 50%-50% 10YR 6/1 & 10YR 6/6 |
| 6 | 33-44+ | 5Y 4/1 | | siC | | |
| | | | | | | |

HA-5 DL-4

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-8 | 10YR 2/1 | | scL | | |
| 2 | 8-17 | 10YR 2/1 | | sC | | |
| 3 | 17-27 | 10YR 6/1 & 5/6 | | sC | | 30%-70% 10YR 6/1 & 10YR 5/6 |
| 4 | 27-36 | 10YR 6/1 | | C | | |
| 5 | 36-47+ | 10YR 4/2 | | siS | | 10-20% fine gravel |
| | | | | | | |
| | | | | | | |

HA-6

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-8 | 10YR 2/1 | | sicL | | |
| 2 | 8-17 | 10YR 2/1 | | sicL | | moist |
| 3 | 17-20 | 2.5YR 4/2 | f2d 10YR 4/4 | sC | | |
| 4 | 20-32 | | | Sand | | little clay, some gravel |
| | | | | | | Auger refusal on rocks |
| | | | | | | WT @ 24" |
| | | | | | | |

HA-7 DL-5

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-40 | 10YR 2/1 | | Peat | | Fibrus, very soft |
| 2 | 40-44+ | 10YR 5/1 | | C | | |
| | | | | | | Five feet SE of HA-3 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

HA-8 DL-7

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-10 | 10YR 2/1 | | sicL | | |
| 2 | 10-20 | 10YR 2/1 | | siC | | |
| 3 | 20-28 | 10YR 4/1 | c2d 10YR 5/1 | sC | | |
| 4 | 28-33 | 5Y 5/1 | m2d 10YR 6/8 | siC | | |
| 5 | 33-46 | 5G 5/1 & 5Y 5/1 | | sC | | 50-50 mix |
| | | | | | | |
| | | | | | | |

Project Waukesha Bypass

Project Location Pebble Creek

Date 4/19/2010

HA-9 DL-6 (CP +2")

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-12 | 10YR 2/1 | | sicL | | |
| 2 | 12-24 | 10YR 3/2 | f2d 10YR 5/4 | siC | | |
| 3 | 24-40 | | | G & S | | medium sand, fine gravel (4-20mm) |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

HA-10 DL-8 (CP +1.5")

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-8 | 10YR 2/1 | | sicL | | |
| 2 | 8-22 | 10YR 2/1 | | scL | | |
| 3 | 22-32 | 7.5YR 5/3 | f1f 7.5 YR 6/1 | siS | | |
| 4 | 32-46+ | 10YR 5/1 | f1f 7.5 YR 6/2 | C | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

HA-11 DL-9 (CP +1.75")

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-11 | 10YR 2/1 | | sicL | | |
| 2 | 11-21 | 10YR 2/1 | f2d 5Y4/4 | scL | | |
| 3 | 21-35 | 10YR 3/2 | m2d 10YR 5/6 | sL | | |
| | | | | | | |
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| | | | | | | |
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
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Project Waukesha Bypass

Project Location Pebble Creek

Date 4/29/2010

HA-12

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-10 | 10YR 2/1 | | sC | | |
| 2 | 10-15 | 10YR 4/1 & 2/1 | | sC | | 50%-50% 4/1 & 2/1 |
| 3 | 15-23 | 2.5Y 4/1 | m1d 10YR 6/6 | sC | | |
| 4 | 23-36 | 2.5Y 6/2 | m2d 10YR 5/6 | sicL | | |
| 5 | 36-50 | 2.5Y 6/2 | m3d 10YR 5/6 | sicL | | |
| | | | | | | Hole dry until dug to 48" |
| | | | | | | WT finished at 10" |

HA-13

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-8 | 10YR 2/1 | | siL | | |
| 2 | 8-16 | 10YR 4/1 | f1f 10YR 5/6 | sC | | |
| 3 | 16-23 | 10YR 5/1 | m2d 10YR 5/6 | siC | | |
| 4 | 23-35 | 5Y 6/1 | m1p 10YR 5/6 | siC | | |
| 5 | 35-38 | 5G 5/1 | c2d 10YR 5/6 | siC | | |
| 6 | 38-80 | 5Y 5/1 | | scL | | |
| 7 | 40-50+ | 5Y 5/1 | | S & fn Gvl | | WT at 10" |

HA-14

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-8 | 10YR 2/1 | | scL | | |
| 2 | 8-21 | 10YR 2/1 & 4/1 | f1d 10YR 4/6 | scL | | 50%-50%10YR 2/1 & 4/1 |
| 3 | 21-44 | 5Y 5/2 | c2p 10YR 5/6 | sicL | | |
| 4 | 44-50+ | 5Y 5/2 | c3p 10YR 6/6 | scL | | |
| | | | | | | WT at 5" |
| | | | | | | |
| | | | | | | |

HA-15

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-15 | 10YR 2/1 | | sicL | | sapric |
| 2 | 15-26 | 5Y 2.5/1 | | sC | | |
| 3 | 26-34 | 5Y 5/1 | c2d 10YR 5/6 | sC | | |
| 4 | 34-42 | 5Y 6/1 | c2d 10YR 5/6 | sC | | |
| 5 | 42-52+ | 5Y 4/2 | | S | | Medium sand and gravel (1 cm) |
| | | | | | | |
| | | | | | | |

HA-16

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-14 | 10YR 2/1 | | Muck | | |
| 2 | 14-19 | 10YR 2/1 | | siC | | |
| 3 | 19-29 | 10YR 6/1 | m1f 10YR 5/6 | siC | | |
| 4 | 29-41 | 2.5Y 6/2 | f1f 10YR 5/6 | siL | | |
| 5 | 41-50+ | 2.5Y 6/2 | f1f 10YR 5/6 | S | | Fine sand and some silt |
| | | | | | | |
| | | | | | | |

Project Waukesha Bypass

Project Location Pebble Creek

Date 4/29/2010

HA-17

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-10 | 10YR 2/1 | | Muck | | |
| 2 | 10-27 | 5Y 2.1/1 | | Muck | | |
| 3 | 27-42 | 5Y 5/2 | c1d 10YR 6/4 | sC | | |
| 4 | 42-48 | 10YR 6/1 | c2d 10YR 6/8 | S | | Medium sand and 20% fine gravel |
| 5 | 48-50+ | 2.5Y 5/2 | m2d 10YR 5/6 | scL | | |
| | | | | | | |
| | | | | | | |

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
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Project Waukesha Bypass

Project Location Pebble Creek

Date 5/17/2010

HA-18 DL-10

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-15 | 10YR 2/1 | | siL | | |
| 2 | 15-19 | 10YR 3/2 | f1f 10YR 5/6 | siL | | |
| 3 | 19-25 | 10YR 4/3 | c2p 10YR5/6 | scL | | |
| 4 | 25-31 | 10YR 4/2 | | sC | | |
| 5 | 31-52+ | 10YR 6/2 | m2p 10YR 5/6 | sL | | Twenty-five percent gravel |
| | | | | | | |
| | | | | | | |

HA-19 DL-11

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-8 | 10YR 3/3 | | | | |
| 2 | 8-14 | 10YR 3/3 & 3/6 | | | | |
| 3 | 14-21 | 7.5Y 3/4 | | | | |
| 4 | 21-30 | 10YR 5/3 | c2f 10YR 5/6 | | | |
| 5 | 30-40 | 10YR 6/2 | m2d 10YR 6/6 | | | |
| 6 | 40-48+ | 10YR 7/1 | c2d 10YR 6/1 & c2d 10YR 6/8 | | | |
| | | | | | | |

HA-20

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-11 | 10YR 3/3 | | sicL | | |
| 2 | 11-21 | 10YR 4/4 | f1f 10YR 4/2 | sC | | |
| 3 | 21-28 | 10YR 4/3 | | sC | | Fine gravel - 30 percent |
| 4 | 28-38 | 10YR 4/4 | c2d 7.5YR 5/6 | sL | | |
| 5 | 38-42 | 10YR 6/4 | | sL | | |
| | | | | | | Auger refusal on gravel |
| | | | | | | |

HA-21 DL-12

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-11 | 10YR 2/1 | | siL | | |
| 2 | 11-18 | 10YR 3/1 | | siC | | |
| 3 | 18-24 | 10YR 5/2 | m2d 10YR 5/6 | sC | | |
| 4 | 24-28 | 10YR 5/2 | f1d 10YR 4/6 | sC | | |
| 5 | 28-42+ | 10YR 5/3 | | S | | Fine gravel - 50 percent |
| | | | | | | |
| | | | | | | |

HA-22

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-10 | 10YR 2/1 | | sL | | |
| 2 | 10-17 | 10YR 5/1 | f2d 10YR 6/8 | scL | | |
| 3 | 17-35 | 10YR 5/1 | c2d 10YR 5/6 | sL | | |
| 4 | 35-42+ | 10YR 6/1 | f3d 10YR 5/6 | sL | | |
| | | | | | | |
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Project Waukesha Bypass

Project Location Pebble Creek

Date 5/17/2010

HA-23

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-9 | 10YR 3/1 | | siL | | |
| 2 | 9-14 | 5y 2.5/1 | F1F 10YR 4/6 | sC | | |
| 3 | 14-27 | 10YR 2/1 | | sC | | |
| 4 | 27-42+ | 5Y 4/1 | | siC | | |
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
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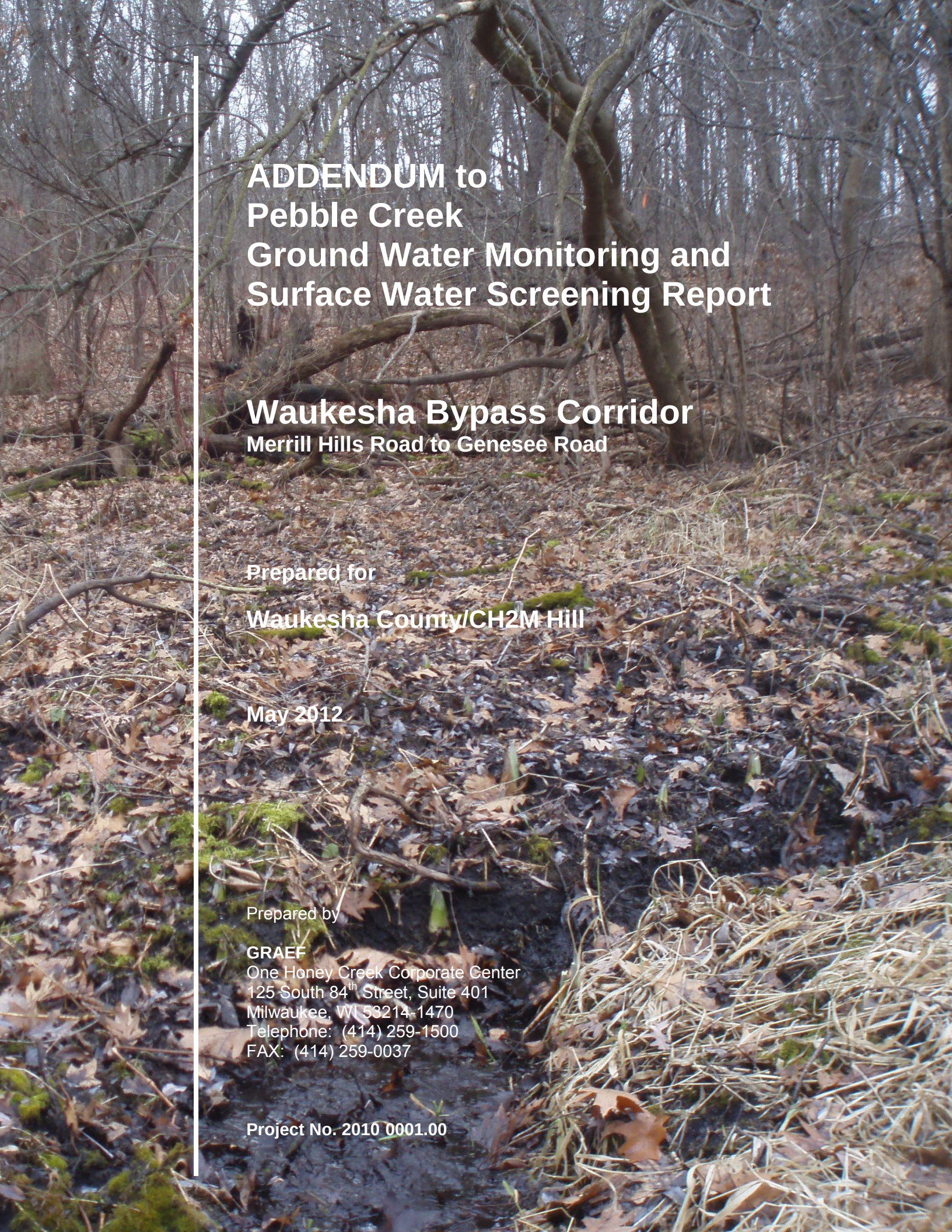

# ADDENDUM to Pebble Creek Ground Water Monitoring and Surface Water Screening Report

## Waukesha Bypass Corridor

**Merrill Hills Road to Genesee Road**

**Prepared for**

**Waukesha County/CH2M Hill**

**May 2012**

Prepared by

**GRAEF**
One Honey Creek Corporate Center
125 South 84th Street, Suite 401
Milwaukee, WI 53214-1470
Telephone: (414) 259-1500
FAX: (414) 259-0037

**Project No. 2010 0001.00**

**Pebble Creek Ground Water Monitoring and Surface Water Screening**
**Waukesha County/CH2M Hill**

**2010-0001.00**

Prepared for: Waukesha County/CH2M Hill

Site Address: Waukesha Bypass Corridor
Merrill Hills Road to Genesee Road

Prepared By: GRAEF
One Honey Creek Corporate Center
125 South 84th Street, Suite 401
Milwaukee, WI 53214-1470
(414) 259-1500

Prepared by:

Tina Myer, PWS
Geoffrey B. Parish P.G., P.H.
Brian W. Schneider, P.E.

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## APPENDIX

Appendix A Pebble Creek Alignment Alternatives
Appendix B Ground Water Discharge Mapping by SEWRPC
Appendix C Boring Location Map and Geotechnical Soil Boring Logs – 2011
Appendix D Site Map and Hand Auger Logs

## 1. EXECUTIVE SUMMARY

The purpose of this investigation was to evaluate potential impacts to shallow ground water associated with a possible alignment, which is referred to in this text as the Pebble Creek Far West Alternative. The location of the Pebble Creek Far West Alternative is shown in Appendix A. In fall 2011 the Southeastern Wisconsin Regional Planning Commission (SEWRPC) delineated wetlands and mapped areas of ground water discharge and ground water supported plant communities on the hill slopes west of Pebble Creek, north of WIS 59 and east of Merrill Hills Road. The SEWRPC mapping of groundwater discharge areas and ground water supported plant communities is shown in Appendix B. GRAEF was asked by CH2M Hill and Waukesha County to evaluate the possible impacts to the shallow ground water system east of Merrill Hills Road and north of WIS 59 from the Pebble Creek Far West Alternative. The centerline of the

As part of this evaluation, GRAEF reviewed the following information:

- Revised bypass location, referred to in this report as the Pebble Creek Far West Alternative,
- Local glacial geology and topography,
- Soils encountered in eleven CH2M Hill geotechnical borings drilled in 2011,
- The soils encountered in the 23 hand auger holes dug in 2010,
- The plant communities observed in the field,
- The mapped ground water discharge areas,
- The wetland mapping by SEWRPC, and
- The soils encountered in six additional hand auger holes dug in December 2011.

Based on the reviewed information GRAEF has the following interpretations:

- Sandy sediments in the uplands west of the creek occur in discontinuous layers that are generally on the order of five feet thick.
- Sandy sediments appear to be in approximately horizontal plainer discontinuous beds in the uplands.
- Ground water sensitive plant communities appear to be located where layers of sandy sediments intersect the hill slope.
- Sandy sediments make up the base of the Pebble Creek valley south of Sunset Drive.
- The approximate ground water flow direction south of Sunset Drive is from southwest to northeast toward the hill slope wetlands and Pebble Creek.
- The area of ground water contribution to Pebble Creek and the hill slope wetlands south of Sunset Drive extends approximately 4,000 feet to the southwest.
- The approximate footprint of the Pebble Creek Far West Alternative location overlaps approximately five percent of the ground water contribution area.
- Evaluating an area to the north of the area of groundwater contribution to Pebble Creek south of Sunset Drive, a 425 foot wide ground water flow path ending at the creek north of Sunset Drive was also evaluated. The Sunset-to-County X Alternative intercepts approximately 2.2 percent of the recharge area within this 425 foot wide ground water flow path compared to the Pebble Creek Far West Alternative that intercepts approximately 1.7 percent of the surface area within the flow path.

- Based on the distance between the proposed pavement locations and Pebble Creek, the Sunset-to-County X Alternative is more likely to result in pavement runoff with elevated temperatures reaching the creek than the Pebble Creek Far West Alternative.
- The Pebble Creek Far West Alternative will intersect one out of four areas mapped by SEWRPC as wetlands supported by ground water, and will intersect one out of four SEWRPC mapped areas of ground water discharge. The Pebble Creek Mapped Route intersected approximately three out of the four mapped areas of wetlands supported by ground water, and two ground water discharge areas mapped by GRAEF depending, however, on the exact alignment.

Areas of ground water discharge on the hill slopes west of the creek appear to be connected to layers of sandy materials that extend beneath the uplands to the west. The areas of ground water discharge are likely recharged by an area of contribution that extends up to approximately 4,000 feet to the southwest. Due to the discontinuous nature of the sandy soil layers and the plant communities, possible impacts from grading, filling and or paving are likely to be non-uniform along the alignment. Appropriate mitigative measure will depend on the nature of the soils, ground water and plant communities beneath and adjacent to the alignment.

## 2. INTRODUCTION

A possible alternative alignment for the proposed West Waukesha Bypass between WIS 59 and Sunset Drive was located farther west than the corridor previously evaluated. This alternative, referred to as the Pebble Creek Far West Alternative in this report, was proposed for an area farther upslope than previous Pebble Creek alternatives (Appendix A). Areas of ground water dependant plant communities were identified and mapped by the SEWRPC on the hill slopes west of Pebble Creek south of Sunset Drive (SEWRPC, 2011 in Appendix B) adding to the zone outlined by GRAEF as ground water discharge areas. GRAEF was then asked to evaluate the possible impacts from the Pebble Creek Far West Alternative to the shallow ground water system and these plant communities.

## 3. BACKGROUND

Pebble Creek is classified as a Class II Trout Stream north of Sunset Drive. Trout streams generally are sensitive to changes in water temperature and water quality. During the initial round of investigations, the nature of surface water / ground water interactions and wetland hydrology in an initially proposed highway corridor along Pebble Creek were investigated. The nature of stream base flow is a critical component of maintaining the quality of stream habitat. Twenty-three hand auger holes were dug, logged and evaluated for hydrogeological significance. Twelve data logging well points were installed and programmed to monitor water levels every four hours. Water

samples were obtained from the creek at three locations along the corridor and screened for water quality parameters.

Within the investigated area south of Sunset Drive ground water discharges were observed at the land surface on the upland slopes west of Pebble Creek. The discharges were in extensive zones and seeps that drained toward the creek. A similar pattern of discharge on the slopes uphill from the creek was not observed north of Sunset Drive, except immediately north of that road. The hill slopes north of Sunset Drive are actively farmed and are drained by agricultural tile lines.

Variations were noted between and among the areas investigated with the hand augers and well points. The well point hydrographs reflect the nature of the water budgets and the relative importance of the various additions to and subtractions from the local budgets. In general, areas dominated by ground water discharge appeared to have comparably less variation in ground water level than areas supplied by local infiltration. Areas on the uplands appeared to be both recharge areas and flow through areas supplying water to down slope ground water discharge at the ground surface and ground water discharges to the creek. Recharge and ground water flow also supplied root zone waters to plants farther down slope, as evidenced by the evapotranspiration patterns in the hydrographs of wells lower on the slopes.

Based on the initial findings, it was decided to evaluate for potential impacts to shallow ground water from the Pebble Creek Far West Alternative.

## 4. METHODS

### 4.1. Existing Data Review and Evaluation

Eleven geotechnical borings were drilled in the vicinity of the proposed alternative alignment during February 2011 (Appendix C). A report documenting these geotechnical borings was supplied to GRAEF by CH2M Hill. Geological cross sections were prepared from the soils encountered in the geotechnical borings. The Wisconsin State geological and Natural History Survey report on the Pleistocene geology of Waukesha County (Clayton, 2001) was also reviewed for evaluation and interpretation of the geotechnical borings.

### 4.2. Hand Augers

Six hand auger holes were dug within the proposed corridor to evaluate the soils in the upper four feet. The locations of the hand augers are shown on Figure D1 in Appendix D. The holes were logged for soil texture, Munsell color, redox and apparent moisture content

(Appendix D). The encountered soils were used to prepare the interpretations of the geotechnical borings and the geological cross sections.

### 4.3. Ground Water Flow Evaluation

The water table contours for the project area were obtained from the Waukesha County internet mapping site (2012). The contours were assumed to be representative of the general local ground water flow pattern. For the purposes of estimating the approximate direction of ground water flow, the material properties of the surface soils were assumed to be uniform in all direction. This generalization allows for the ground water flow direction evaluation referred to as flow net analysis to be applied to the data. Under approximately uniform conditions, the direction of ground water flow is perpendicular to the equipotential lines in the direction of high to low potential (elevation). The area of ground water contribution defines the area in which water infiltrating into the ground has the best potential for supplying water in the form surface discharges, seeps and shallow ground water.

## 5. FINDINGS

### 5.1. Glacial Geology

The Wisconsin Geological and Natural History Survey (WGNHS) mapped the Pleistocene age geology (glacial) of Waukesha County (Clayton, 2001). The sediments in the project corridor south of Sunset Drive along Pebble Creek and to the west were mapped as modern stream sediments, which were described as a few meters of overbank silt and clay over a few meters of channel sands and gravelly sands. Along the axes of the Pebble Creek drainage, sands and gravels originating as glacial fluvial channel deposits occur beneath the stream deposits. The soils logged in the geotechnical borings were plotted using a solids modeling application to allow for visual inspection of the distribution of sandy soils that likely account for movement of the majority of the ground water within the local flow system. The sandy soils anticipated based on the mapping by the WGNHS can be noted in the bases of the geotechnical borings 2001-2, 2011-4, 2011-5 and 2011-7, as shown in Figure 1.

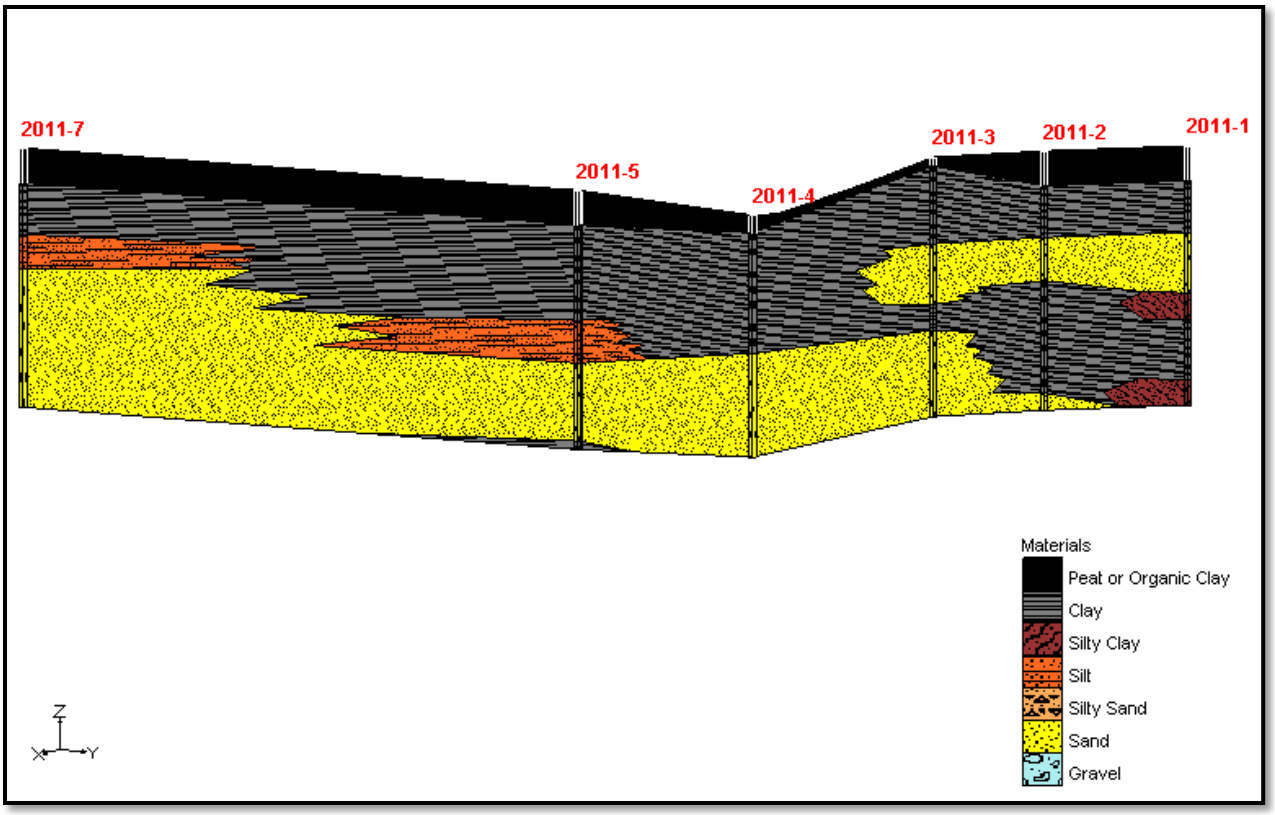


Figure 1 Geological cross section between borings 2011-7on the southeast end of the section and 2011-1 on the northwest end of the section.

To the west of these sediments the WGNHS mapped glacial lake sediments described as offshore sediments deposited on a solid substrate (not deposited on ice that later melted) having flat topography. The nature of the deposits depends on the proximity of the depositional environment to the former shore line. Sands were deposited in the near shore environment, and silts and clays were deposited farther off shore. Figure 2 shows a west to east cross section through geotechnical borings 2011-8 to 2011-4. The off shore glacial lake sands and clays are encountered at boring 2011-8 and the glacial river sands blanketed by modern stream sediments are encountered at 2011-4.

The point on the cross section where the off shore sands are close to outcropping at the ground is consistent with sandy soils encountered in had auger holes, which bolsters this geological interpretation.

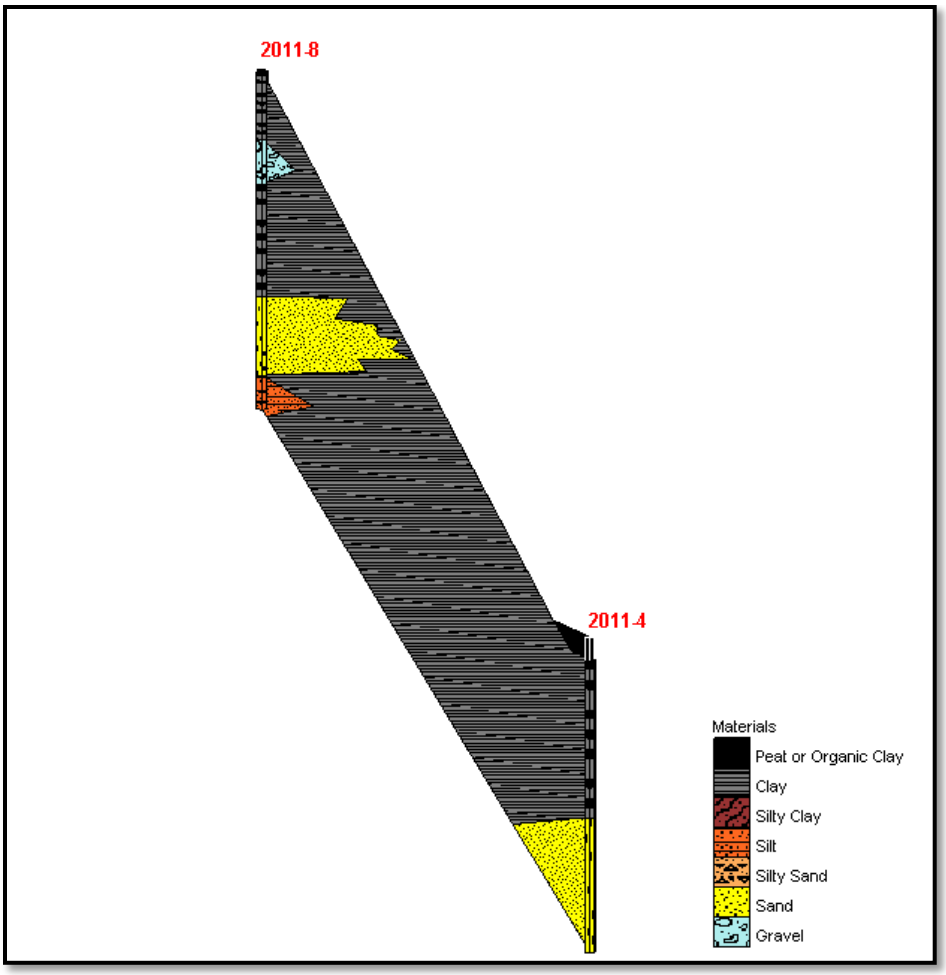


Figure 2 Geological cross section between borings 2011-8 on the west end of the section and 2011-4 on the east end of the section.

The sandy soils logged in the borings tended to be in layers on the order of five feet thick, which is consistent with the WGNHS mapping of the glacial deposits in the area as offshore glacial lake deposits. The sands appear to be thicker in the southeast end of corridor near WIS 59 as noted at borings 2011-7 and 2011-11 (Appendix C). The glacial lake deposits were interpreted as having discontinuous, approximately horizontal layers of sandy materials interbedded with silty and clayey soils (Figure 2).

### 5.2. Soils

Hand auger HA-24 (Appendix D) was located adjacent to an area flagged as wetland by SEWRPC. Sandy loam soils were noted beneath sandy clay at the root zone. The soils in this area were gravelly at depth. Located farther to the northwest than HA-24 and up slope in a wooded upland, hand auger HA-25 encountered soils that were not as sandy as at HA-24. The soils at the base of the hole were described as a clay loam. Located to the southeast of hand auger HA-24, hand auger HA-26 encountered sandy soils as well. These

soils were also gravelly at depth. Hand auger HA-27 was located in an upland woods southeast of hand auger HA-26. The soils at HA-27 were logged as loamy sand at the base of the borehole.

The section of the current alignment immediately south of Sunset Drive would impact wetlands in an area mapped by SEWRPC as “Field Identified Ground Water Discharge Areas,” as shown in Appendix B. A hand auger hole was dug in this area and it was found that there were organic materials over relatively coarser grained sandy soils. There was a wetland flagged in the field by SEWRPC along a drainage that trends down the hill slope in this area. Hand auger HA-28 was located along this drainage. Sandy soils were found beneath the drainage.

Hand auger HA-29 was located in an area mapped by SEWRPC as “Field Identified Wetland Supported by Root Zone Ground water.” This auger hole was logged as organic soils over sandy clay loam soils, and appeared to be developed in a sandy parent material.

### 5.3 Ground Water

Based on the water table contours presented on the Waukesha County internet GIS site, an area of ground water contribution was estimated for the section of Pebble Creek between Sunset Drive and WIS 59 using flow net analysis as described above. A ground water contribution area attempts to map the area where precipitation that recharges ground water eventually flows to some destination, such as a stream, wetland or well where ground water exits the flow system. Ground water flow paths to the area of concern can be estimated from water table elevation contours. Possible impacts to the quantity of ground water flow reaching an area of interest can be estimated by evaluating the change in the area supplying recharge to the area of ground water contribution.

Figure 3  Approximate area of ground water contribution south of Sunset Drive.

The ground water contribution area supplying recharge to the shallow ground water that flows toward Pebble Creek south of Sunset Drive is approximately 280 acres in extent.  The footprint of the bypass within the ground water contribution area is approximately 15 acres, which is approximately 5 percent of the contribution area.  Assuming approximately uniform recharge within the area of contribution, the bypass pavement could intercept approximately 5 percent of the recharge within this area.

A similar evaluation was performed on a flow path extending through the area mapped by SEWRPC as “Field Identified Wetland Supported by Root Zone Ground Water” immediately north of Sunset Drive (Figure 4).  This flow path is equivalent to an area of ground water contribution for a section of Pebble Creek and adjacent wetlands immediately north of the ground water contribution zone shown in Figure 3, and extending approximately 400 feet northwest from Sunset Drive.  The area of ground water contribution is bounded by the two blue lines in Figure 4.  It was estimated that the Sunset-to-County X Alternative accounted for approximately 2.2 percent of the surface area of the flow path and the Pebble Creek Far West Alternative accounted for approximately 1.7 percent of the area.

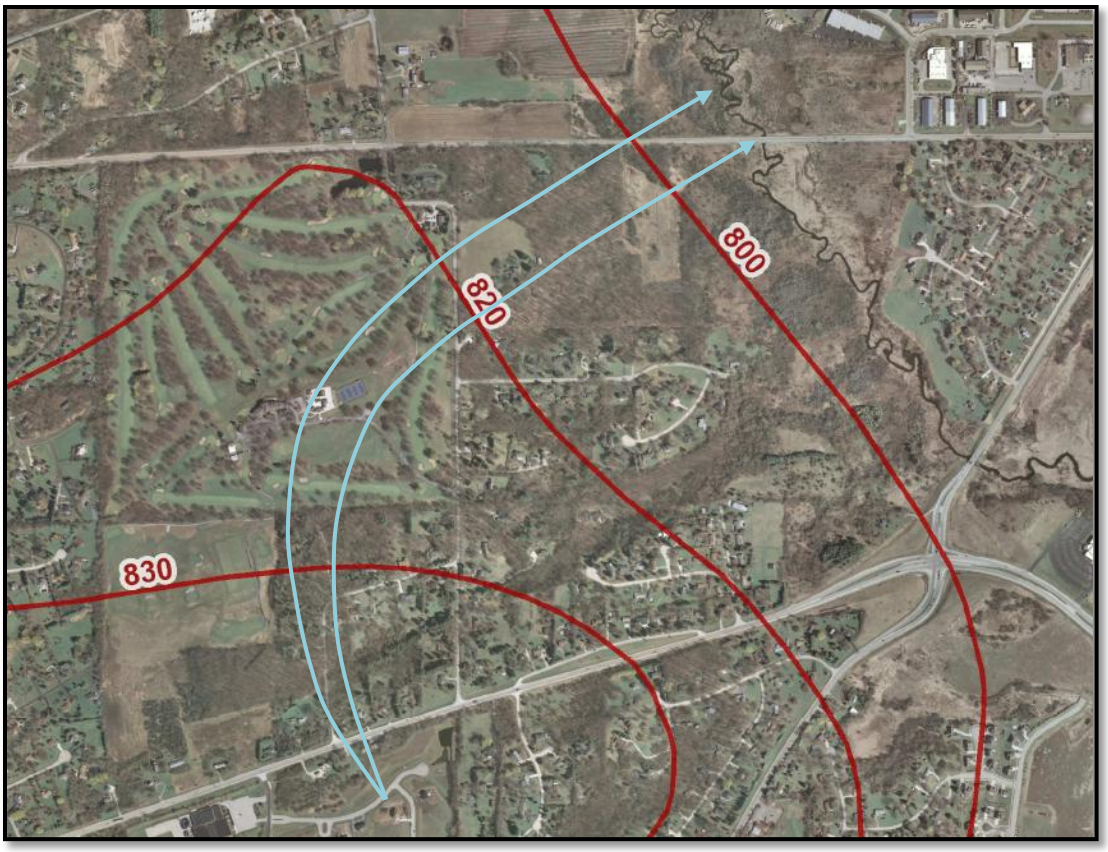


Figure 4  Ground Water Flow path north of Sunset Drive..

To the northwest of the area bounded by the flow paths mapped in Figure 4, the geometry of two evaluated alternatives (Pebble Creek West and Sunset Drive) result in approximately similar percentage of paved ground water contribution areas, and can be assumed to have similar impacts on percentage of recharge intercepted by impervious surface.

## 6. Anticipated Impacts

Impacts to wetland quality from urbanization as documented in over 100 studies were summarized in a report by the Center for watershed Protection (Wright and et al, 2006) under contract from the US EPA.  Hydrologic impacts were generalized into five categories, and were listed as follows:

1. Increased ponding
2. Increased water level fluctuation
3. Flow constrictions
4. Decreased groundwater discharge, and
5. Hydrologic drought in riparian wetlands

There could, of course, be other impacts, such as changing the timing of the wetland hydroperiod- when the wetland is inundated or saturated during the growing season, or

shortening duration of inundation and saturation. Minimizing alterations of wetland hydrology reduces the likelihood of colonization by invasive species. Maintaining wetland hydroperiods, maintaining the magnitude and frequency of water level fluctuations and the depth of inundation or saturation should reduce stresses on existing natural communities adapted to specific hydrologic regimes.

In addition to changes in the water supply, impacts to wetland hydrology include changes in water quality, and these were summarized as:

1. Sediment deposition
2. Accumulation of pollutants
3. Additions of nutrients, and
4. Chloride discharges

Pollutant loadings in runoff from highways are typified by particulates from road wear, petroleum from fuels, oils and greases; metals from wear on parts, oxidation of guard rails and bridges; deicing compounds; asbestos from brake lining; and nutrients, pesticides and herbicides from maintenance from right-of-ways. Water quality impacts also include potential changes to thermal regimes.

### 6.1 Pebble Creek Far West Alternative

Immediately south of Sunset Drive, there are two areas mapped by SEWRPC as ground water discharge areas located down slope and to the east of the Pebble Creek Far West Alternative (Appendix B). Both of these areas are avoided by the footprint of this alternative. The current plans are to span the area mapped as wetland supported by root zone ground water with a land bridge. Bridging over this area would likely reduce the potential impacts to the wetlands up slope resulting from increased ponding, and reduce the impacts to the down slope wetlands from flow constrictions and decreased ground water discharge.

Water discharged from the ground water discharge area north of Hawthorne Hollow Drive west of the footprint would need to be conveyed beneath the roadway to the east to maintain the hydrology of the wetlands between the roadway and Pebble Creek, and the contribution of discharged ground water to creek base flow. If the water was retained on the west side of the footprint, there would likely be increased ponding to the west, altered wetland hydrology to the east and locally altered base flow in the creek downstream of that area. Restricting the water discharged on the west side of the footprint would likely increase water level fluctuations east of the footprint.

The footprint of the Pebble Creek Far West accounts for approximately five percent of the area of ground water contribution to Pebble Creek and the adjacent wetlands. In general, increases in impervious surface within a wetland watershed resulted in increasing water level fluctuations within the wetland. For example, wetlands with less than 5.5% impervious surface in the area of contribution had comparatively lower levels of water level fluctuations (Wright and et al, 2006). Wetlands with greater than 21% impervious surface in the area of contribution had comparatively greater levels of water level fluctuations. The footprint of the Pebble Creek Far West Alternative is at the lower end of the range for evaluated wetland systems.

Paving of approximately 5% of the area of ground water contribution to Pebble Creek and the adjacent wetlands is anticipated to intercept approximately 5% of the recharge to ground water. Evaluated in simplest terms of a mass balance, decreasing the water input to a system could results in a similar magnitude decrease in the water output from the ground water system. In other words, the ground water discharged from the area between Sunset Drive and WIS 59 could be anticipated to decrease by approximately 5% if mitigative measures were not included in the design.

The area of the impervious surface added to the Pebble Creek watershed resulting from this alternative is small in comparison to the total area of the watershed, and is not anticipated to result in down cutting of the bed of the creek due to flashy flows. As such, dewatering of the wetlands adjacent to the stream (hydrologic drought) resulting from lowered creek water surfaces elevations is not an anticipated impact.

Adding impervious surfaces on the slopes that drain to the wetlands immediately west of Pebble Creek south of Sunset Drive has the potential to increase erosion of the hill slopes that drain into these wetlands and to the Creek. Runoff from paved surfaces tends to be flashier and move at higher velocities than runoff on vegetated surfaces. Higher velocity runoff can lead to soil erosion on the up slope areas and sediment deposition in the down slope wetlands and the Creek if mitigative measures were not included in the design.

Other possible impacts could result from grading involving excavation to depths that encounter sand and gravel layers that transmit ground water from the west toward the slope wetlands. If grading is too deep, there is the potential to divert ground water flow from the granular layers into the granular backfill beneath the pavement, diverting ground water away

from the down slope wetlands. Grading plans should address the potential for intercepting granular layers that convey ground water from the area of contribution to the wetland systems to the east.

The northern half of the Pebble Creek West Far Alternative is located higher on the slope than the Pebble Creek West Alternative (Appendix A and B), and would likely require deeper cuts than the West Alternative. Deeper cuts are more likely to intersect ground water and the granular layers supplying the hill slope wetlands and discharge areas than shallower cuts.

Untreated stormwater runoff from pavement, particularly first flushes, has the potential to transport petroleum and metals from paved surfaces into the wetlands adjacent to the alignment. The runoff from the pavement also can transport sediment from road wear and rubber from tire wear into the downstream wetlands. Runoff from the roadway adjacent to the wetlands potentially could impact on the water quality in the wetlands as a result of deicing compounds.

Nutrient additions to the adjacent wetlands are not anticipated to be significant impacts from the Pebble Creek Far West Alternative unless landscaping within the alignment is managed with fertilizers, pesticides or herbicides.

### 6.2 Pebble Creek West Alternative

The impacts from the Pebble Creek West Alternative on the ground water system are similar to those of the Pebble Creek Far West Alternative because of the similarity of the locations of the two alternatives (Appendix A and B). However, there is an area mapped as ground water discharge area immediately south of Sunset Drive that is beneath the foot of the Pebble Creek West Alternative. This wetland would be lost under this alternative. The impacts to the ground water system supplying this wetland would depend on the depth of the cutting or filling. Interception of the ground water discharge at the location of the wetland could result in ponding on the upslope side of the alignment and a loss of water on the downslope side.

The northern half of the Pebble Creek West Alternative is located lower on the slope than the Pebble Creek Far West Alternative, and would likely require shallower cuts than the Far

West Alternative, and shallower cuts are less likely to intersect ground water and the granular layers supplying the hill slope wetlands and discharge areas.

### 6.3 Sunset-to-County X Alternative

Given that the Sunset Drive Alternative begins at Sunset Drive and proceeds to the northwest, this alternative is not anticipated to directly impact the Pebble Creek Area of Ground Water Contribution south of Sunset Drive nor would it impact the ground water supply to the wetlands and ground water discharge areas immediately west of the creek south of Sunset Drive. Widening of Sunset Drive could have an impact on the water quality in the wetlands immediately to the south of the roadway resulting from runoff. Impacts to wetland water quality are anticipated to include sediment from road wear and rubber from tire wear, petroleum, metals and deicing compounds. It is also possible that there would be an increased thermal impact to the creek resulting from the increase in area of paved surface immediately adjacent to the creek.

The wetland area mapped as supported by root zone ground water (SEWRPC mapping Appendix B) immediately north of Sunset Drive approximately 1,000 feet west of the bridge over Pebble Creek is located upslope of a section of the Sunset Drive Alternative alignment. There is a risk to this area of potential impacts from increased ponding resulting from interception of overland flow through the wetland toward the creek. The increase in ponding would occur if the roadway functioned to restrict or impede flow from the areas to the west. Increased ponding has the potential to alter the hydroperiod of the wetland, which in turn has the potential to change the nature of the plants stable in the wetland. Flow constrictions and increased ponding also have the potential to increase deposition of sediments in the wetlands due to decreases in the velocity of water moving through the wetland.

Paving north of Sunset Drive in this alternative and the Pebble Creek Far West Alternative were evaluated to cover similar percentages of the area contributing ground water to Pebble Creek and the adjacent wetlands. Intercepting sheet flow on the hill slopes that drain to the wetlands adjacent to the creek could alter the hydrology of these wetlands. Consideration to the existing flow paths should be given in designing highway drainage.

Adding impervious surfaces on the slopes that drain to the wetlands immediately west of Pebble Creek north of Sunset Drive has the potential to increase erosion of the hill slopes that drain into these wetlands and to the Creek. Runoff from paved surfaces tends to be

flashier and move at higher velocities than runoff on vegetated surfaces. Higher velocity runoff can lead to soil erosion on the up slope areas and sediment deposition in the down slope wetlands and the Creek if mitigative measures were not included in the design.

Runoff from the roadway has the potential to impact water quality in the wetlands adjacent to the roadway and to impact the thermal regime of the creek immediately. Runoff from the roadway adjacent to the wetlands could potentially impact on the water quality in the wetlands as a result of metals, petroleum, and deicing compounds.

Nutrient additions to the adjacent wetlands are not anticipated to be significant impacts from the Sunset Drive Alternative unless landscaping within the alignment is managed with fertilizers, pesticides or herbicides.

## 7. Summary and Conclusions

The surface distribution of sandy soils based on the hand auger holes was interpreted to be discontinuous. If the distribution of the sand layers encountered in the geotechnical borings were laterally continuous, the surface expression would likely be laterally continuous areas of sandy soils, not spatially discontinuous areas as were found. The layers of sandy soils were generally on the order of five feet thick. Thicker intervals were less common. The areas of ground water discharge or ground water dependant plant communities were associated with areas where sandy soils were found at or close to the ground surface.

Areas of ground water discharge on the hill slopes west of the creek appear to be connected to layers of sandy materials that extend beneath the uplands to the west. The areas of ground water discharge are likely recharged by an area of contribution that extends approximately 4,000 feet to the southwest.

Assuming approximately uniform recharge, the Pebble Creek Far West Alternative pavement within the ground water contribution area south of Sunset Drive could intercept recharge on the order of five percent of the total recharge in the contribution area. Evaluation of the biological impact of decreasing water supply on the order of five percent is beyond the scope of this evaluation.

Impacts to ground water dependent communities are more likely to result from excavation through and blocking of the sandy layers supplying the ground water dependent communities than filling above the sandy layers. If the flow paths to the communities are blocked or significantly

diminished, supplying paths for the continuation of flow past the blocked areas could minimize such impacts.

The general ground water flow direction south of Sunset Drive is from southwest to northeast toward the hill slope wetlands and Pebble Creek. The area of ground water contribution to Pebble Creek and the hill slope wetlands south of Sunset Drive extends approximately 4,000 feet to the southwest. The approximate foot print of the Pebble Creek Far West Alternative location within the ground water contribution area represents approximately five percent of the contribution area.

Evaluating a 425 foot wide ground water flow path that ends at the creek north of Sunset Drive, the Sunset Drive Alternative (shown on the SEWRPC map in Appendix B) intercepts approximately 2.2 percent of the recharge area compared to the Pebble Creek Far West Alternative that intercepts approximately 1.7 percent of the flow path. Based on the distance between the proposed pavement locations and Pebble Creek, the Sunset-to-County X Alternative is more likely to result in pavement runoff with elevated temperatures reaching the creek than the Pebble Creek Far West Alternative unless measures are employed to ameliorate impacts.

The possible impacts from grading, filling and or paving are likely to be non-uniform along the alignment. Different measures to minimize impacts may be appropriate depending on the nature of the soils, ground water and plant communities adjacent to the alignment.

## 8. REFERENCE MATERIALS


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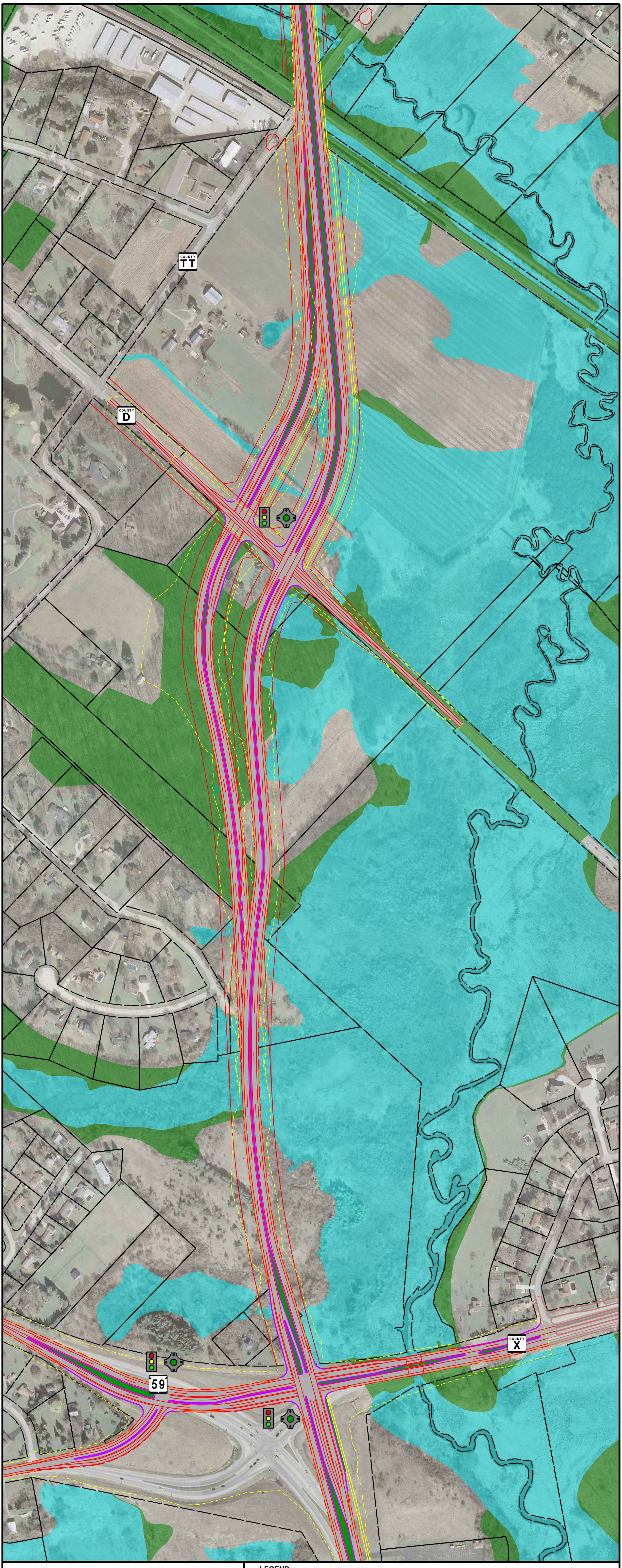
# APPENDICES

# APPENDIX A

Pebble Creek Alignment Alternatives




# WAUKESHA BYPASS
# 4 LN PEBBLE CREEK

**LEGEND**

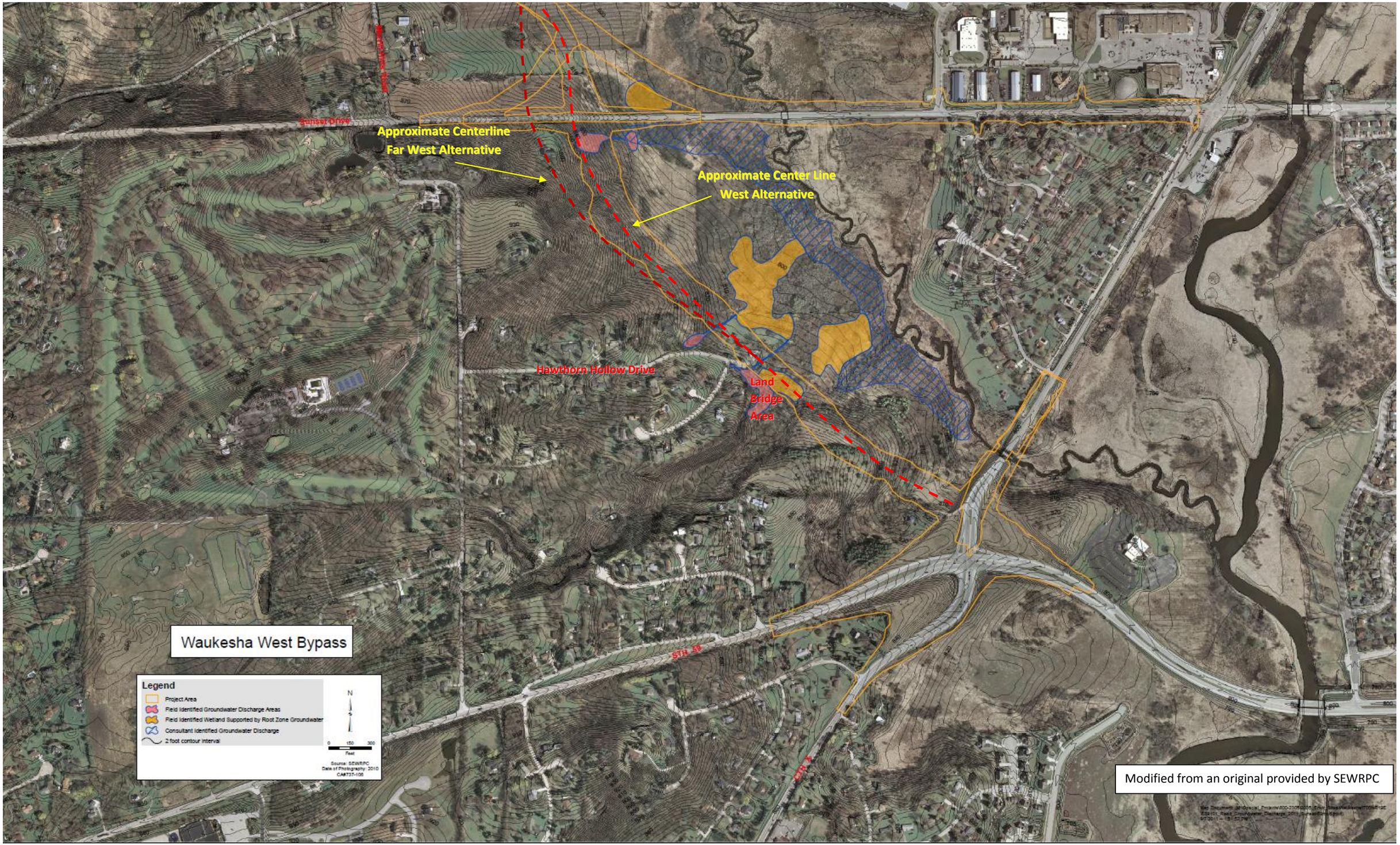
- Wetland
- Primary Environmental Corridor
- New Pavement Area
- New Grass Median
- Parcel Line
- Proposed Right of Way
- Slope Intercept

Scale, Feet 0 100 200

Traffic Signal or Roundabout Required

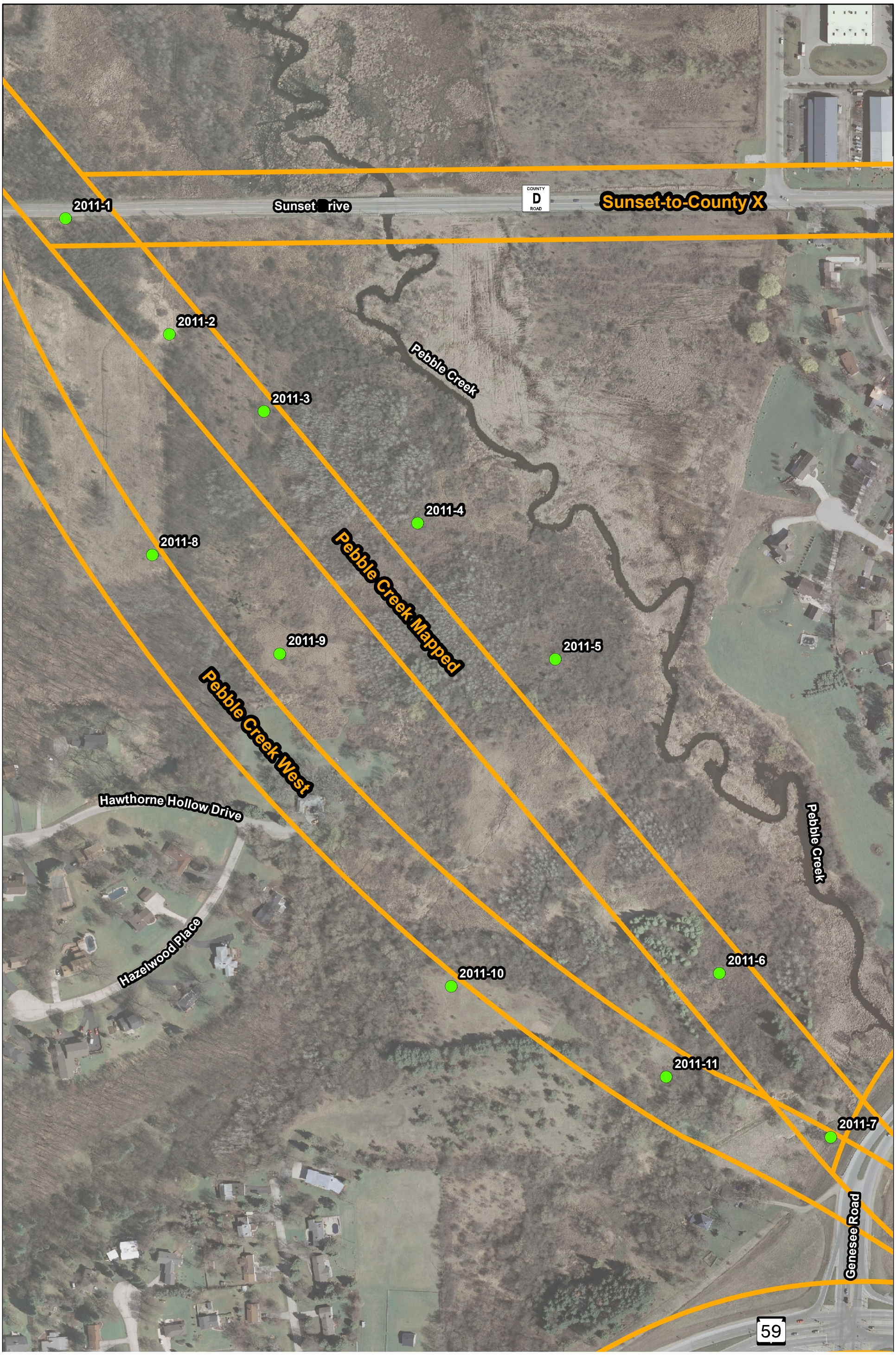
# APPENDIX B

Ground Water Discharge Mapping by SEWRPC


Sunset Drive
Approximate Centerline
Far West Alternative
Approximate Center Line
West Alternative
Hawthorn Hollow Drive
Land
Bridge
Area
STH 59
STH 18
Waukesha West Bypass
Legend
Project Area
Field Identified Groundwater Discharge Areas
Field Identified Wetland Supported by Root Zone Groundwater
Consultant Identified Groundwater Discharge
2 foot contour interval
N
0 150 300
Feet
Source: SEWRPC
Date of Photography: 2010
CA#737-106
Modified from an original provided by SEWRPC

# APPENDIX C

Geotechnical Boring Logs - 2011




Legend

Soil Boring Location

Proposed Alternatives

0 250 Feet

**Figure 3 – Soil Boring Location Diagram**
Summit Road to Genesee Road Alternative Alignments
Waukesha West Bypass
*July 2011*

CH2MHILL

I:\WISDOT\144825 - WISDOT BD\COUNTIES\WAUKESHA COUNTY BD\WAUKESHA CO BYPASS\GIS\MAPFILES\2011\BORINGDIAGRAM_072211\FIGURE 3 – SOIL BORING LOCATION DIAGRAM.MXD JHANSEN1 7/27/2011 2:03:14 PM

# Boring Logs 2011-01 through 2011-11

# SOIL BORING LOG

GESTRA
Gestra Engineering Inc.
7600 75th Street, Suite206
Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/24/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/24/2011 |
| BORING NUMBER | 2011-1 |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 365000 |
| EASTING | 459731 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 799.6 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index | Moisture Content (%) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 18 | 6 1 1 | 2 | | | PEAT, black, wet | | | | | | | 45.7 | LOI = 5.1%<br>Sample SS-1 is frozen |
| SH - 2 | 16 | | | | | LEAN CLAY, gray to green with yellow mottling, wet | CL | | | 0.79 | | | 228.1 25 | LOI = 21.9%<br>$\gamma_d$ = 102.4 pcf<br>$\gamma_T$ = 126.8 pcf |
| | | | | 5 | 794.6 | | | | | | | | | |
| SS - 3 | 18 | 5 6 8 | 14 | | | fine to coarse SAND, with silt, brown, wet, medium dense | SP-SM | | | | | | | Gravel = 4.6%<br>Sand = 80.5%<br>P200 =14.9% |
| SS - 4 | 18 | 4 6 7 | 13 | | | SILT, gray, wet | ML | | | | | | 14.9 | |
| | | | | | | SILTY CLAY, gray, wet, stiff | CL-ML | | | | | | | |
| | | | | 10 | 789.6 | | | | | | | | | |
| SS - 5 | 18 | 2 3 4 | 7 | | | LEAN CLAY, gray, wet, medium stiff to stiff | CL | | | 0.75-1.50 | | | 20.7 | |
| SS - 6 | 18 | 1 2 3 | 5 | | | SILTY CLAY, with sand and silt lamination, gray, wet, medium stiff to stiff | CL-ML | | | 0.75-1.00 | | | 18.7 | |
| | | | | 15 | 784.6 | | | | | | | | | |
| | | | | | | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 779.6 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 0 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 3 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

GESTRA
Gestra Engineering Inc.
7600 75th Street, Suite206
Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/23/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/23/2011 |
| BORING NUMBER | **2011-2** |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 364675 |
| EASTING | 460023 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 800.2 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index | Moisture Content (%) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 12 | 2 2 2 | 4 | | | ORGANIC CLAY, with vegetation, black, moist to very moist, very soft | OH | | | 0.00 | | | 48.7 | LOI = 9.2% |
| SH - 2 | 9 | | | | | LEAN CLAY, gray to green with yellow mottling, wet | CL | | | **0.85** | | | 36.7 | $\gamma_d$ = 91.1 pcf<br>$\gamma_T$ = 124.5 pcf<br>LOI = 2.1% |
| | | | | **5** | **795.2** | | | | | | | | | |
| SS - 3 | 14 | 2 2 2 | 4 | | | SANDY SILT, fine grained sand, brown and gray mottled, wet, loose | ML | | | | | | 19.8 | |
| SS - 4 | 18 | 1 2 3 | 5 | | | LEAN CLAY, with thin sand seams and lamination, brownish gray, wet, stiff to very stiff | CL | | | 1.00-1.25 | | | 22.7 | |
| | | | | **10** | **790.2** | | | | | | | | | |
| SS - 5 | 15 | 3 5 6 | 11 | | | | CL | | | 2.25-3.00 | | | 26.3 | |
| SS - 6 | 16 | 5 7 11 | 18 | | | fine to coarse SAND, little gravel, brown, wet, medium dense | SP | | | | | | | |
| | | | | **15** | **785.2** | End of Boring at 15.0' | | | | | | | | |
| | | | | **20** | **780.2** | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 5 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 2 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

Gestra Engineering Inc.
7600 75th Street, Suite206
Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/23/2011 |
| BORING NUMBER | 2011-3 |
| PROJECT NUMBER | 10031-10 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/23/2011 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| NORTHING | 364459 |
| DRILLING METHOD | 3¼" HSA |
| LAB LOG / QC | E. Jeske |
| EASTING | 460288 |
| SURFACE ELEVATION | 799.9 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation - | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index - | Moisture Content (%) - | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ORGANIC CLAY, with vegetation, black, moist to very moist (TOPSOIL) | | | | | | | | LOI = 2.9% |
| SS - 1 | 9 | 1<br>1<br>2 | 3 | | | LEAN CLAY, with peaty layers, olive gray, moist, medium stiff | CL | | | 0.50-0.75 | | | 32 | |
| SH - 2 | 20½ | | | | | LEAN CLAY, with silty and sand pockets, blueish gray with brown mottling, moist, soft to medium stiff | CL | | | 0.25-0.75<br>**0.47** | | | 18.4 | $\gamma_d$ = 114.5 pcf<br>$\gamma_T$ = 135.8 pcf |
| | | | | **5** | **794.9** | | | | | | | | | |
| SS - 3 | 15 | 3<br>3<br>5 | 8 | | | SILTY fine to medium SAND, brownish gray with rust color mottling, wet, loose | SM | | | | | | 19.3 | Gravel = 0.0%<br>Sand = 40.3%<br>P200 =59.7% |
| SS - 4 | 18 | 4<br>5<br>7 | 12 | | | | | | | | | | 26.2 | |
| | | | | | | LEAN CLAY, brownish gray and gray, wet, very stiff | CL | | | | | | | |
| | | | | **10** | **789.9** | | | | | | | | | |
| SS - 5 | 18 | 7<br>5<br>12 | 17 | | | fine to coarse SAND, with silt and silt layers, little gravel, brown and gray, wet, medium dense | SP-SM | | | | | | | |
| SS - 6 | 18 | 6<br>7<br>11 | 18 | | | | | | | | | | | No sample retained |
| | | | | **15** | **784.9** | | | | | | | | | |
| | | | | | | End of Boring at 15.0' | | | | | | | | |
| | | | | **20** | **779.9** | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 7.5 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 2.5 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

Gestra Engineering Inc.
7600 75th Street, Suite206
Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/24/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/24/2011 |
| BORING NUMBER | **2011-4** |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 364145 |
| EASTING | 460720 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 797.4 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation - | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index - | Moisture Content (%) - | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 15 | 1 2 2 | 4 | | | ORGANIC CLAY, with vegetation, black, wet (TOPSOIL) | | | | | | | 31.3 | |
| | | | | | | LEAN CLAY, with sand, olive gray, very moist, medium stiff to stiff | | | | | | | | |
| | | | | | | Color change to blueish gray at 2.0' | | | | | | | | |
| SH - 2 | 17 | | | | | 5" thick pocket of medium to coarse grained sand at 2.5' | | | | 0.5-0.75 | | | 28.6 | |
| | | | | 5 | 792.4 | | CL | | | | | | | |
| SS - 3 | 18 | 2 3 3 | 6 | | | Color change to gray in sample SS-3 | | | | 1.50 | | | 26.7 | |
| SS - 4 | 16 | 3 6 2 | 8 | | | | | | | | | | 23.1 | |
| | | | | | | ALTERNATING CLAY and SAND layers, gray, wet | CL/ SC | | | | | | | |
| | | | | 10 | 787.4 | fine to coarse SAND, with gravel, brown, wet, medium dense | | | | | | | | |
| SS - 5 | 18 | 6 4 7 | 11 | | | | SP | | | | | | | |
| SS - 6 | 18 | 5 5 7 | 12 | | | | | | | | | | | |
| | | | | 15 | 782.4 | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 777.4 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 0 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 2 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

Gestra Engineering Inc.
7600 75th Street, Suite206
Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/24/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/24/2011 |
| BORING NUMBER | **2011-5** |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 363763 |
| EASTING | 461106 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 798.3 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index | Moisture Content (%) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 7 | 1 1 3 | 4 | | | ORGANIC CLAY, with sand and vegetation, black, moist, stiff | OL | | | 1.00 | | | 55.4 | LOI = 12.2% |
| SH - 2 | 19½ | | | | | LEAN CLAY, interbedded layers of fine to medium grained gravel, gray, moist | CL | | | | | | | $\gamma_d$ = 111.9 pcf<br>$\gamma_T$ = 134.2 pcf |
| | | | | | | LEAN CLAY, gray to reddish brown/ rusty brown, moist, medium stiff to stiff | CL | | | 0.5-1.0<br>**1.04** | | | 19.9 | |
| | | | | 5 | 793.3 | | | | | | | | | |
| SS - 3 | 18 | 4 4 5 | 9 | | | LEAN CLAY, gray, moist, stiff to very stiff | CL | | | 1.75-2.50 | | | 24.7 | |
| SS - 4 | 18 | 4 2 6 | 8 | | | SILT, with clay seams, brown, moist, loose | ML | | | | | | 22.2 | |
| | | | | 10 | 788.3 | | | | | | | | | |
| SS - 5 | 18 | 3 4 7 | 11 | | | SILTY fine to coarse SAND, with gravel and clay seam in sample SS-5, brown, wet, medium dense | SM | | | | | | | |
| SS - 6 | 18 | 4 7 9 | 16 | | | | | | | 1.00 | | | 19.6 | |
| | | | | 15 | 783.3 | LEAN CLAY, with sand, gray, wet, stiff | CL | | | | | | | |
| | | | | | | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 778.3 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 10 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 7 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

Gestra Engineering Inc.
7600 75th Street, Suite206
Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/25/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/25/2011 |
| BORING NUMBER | 2011-6 |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 362882 |
| EASTING | 461567 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 812 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index | Moisture Content (%) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 5 | 2 1 1 | 2 | | | PEAT, black, wet | | | | | | | 432.2 | LOI = 68% |
| SH - 2 | 18 | | | | | With layers of blueish gray clay below 2.0' | | | | | | | 403.7 | Clay portion of the samle is disturbed unable to get Qp value<br>LOI = 55.1% |
| | | | | 5 | 807.0 | LEAN CLAY, blueish gray, moist | CL | | | | | | 63.8 | LOI = 4% |
| SS - 3 | 18 | 11 8 13 | 21 | | | fine to coarse SAND, with silt and gravel, brown, wet, medium dense | SP-SM | | | | | | | Gravel = 31.4%<br>Sand = 57.7%<br>P200 =10.9% |
| SS - 4 | 13 | 2 2 6 | 8 | 10 | 802.0 | LEAN CLAY, with sand, brown, moist, medium stiff to stiff | CL | | | 0.75-1.00 | | | 19.2 | |
| SS - 5 | 6 | 3 3 7 | 10 | | | SANDY CLAY, fine to coarse grained sand, with gravel, brown, wet, medium dense to dense | CL | | | | | | 20.7 | |
| SS - 6 | 9 | 10 20 23 | 43 | 15 | 797.0 | | | | | | | | 8.3 | |
| | | | | | | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 792.0 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 0 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 6 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

Gestra Engineering Inc.
7600 75th Street, Suite206
Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/24/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/24/2011 |
| BORING NUMBER | 2011-7 |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 362422 |
| EASTING | 461880 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 800.6 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index | Moisture Content (%) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 4 | 2<br>1<br>1 | 2 | | | PEAT, black, wet (TOPSOIL) | | | | | | | 150.2 | LOI = 19.4% |
| SH - 2 | 16 | | | | | LEAN CLAY, blueish gray, wet, stiff<br>3"-4" sand and gravel layer<br>Color change to brownish gray at 3.0' | CL | | | 1.25 | | | 21.7 | |
| | | | | 5 | 795.6 | | | | | | | | | |
| SS - 3 | 18 | 2<br>4<br>4 | 8 | | | SILT, with clayey layers, brown, moist, loose | ML | | | | | | 18.1 | |
| SS - 4 | 18 | 2<br>3<br>6 | 9 | | | SANDY SILT, ½" thick clay layer in SS-4, fine to medium grained sand, brown, very moist, loose | ML | | | | | | 31.1 | |
| | | | | 10 | 790.6 | | | | | | | | | |
| SS - 5 | 12 | 12<br>8<br>10 | 18 | | | fine to coarse SAND, with gravel (large fractured gravel pieces in sample SS-5) and silt, brown, wet, medium dense | SP-SM | | | | | | | |
| SS - 6 | 18 | 4<br>3<br>7 | 10 | | | fine to medium SAND, brown, wet, medium dense | SP | | | | | | | |
| | | | | 15 | 785.6 | | | | | | | | | |
| | | | | | | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 780.6 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 0 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 2 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

Gestra Engineering Inc.
7600 75th Street, Suite206
Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/23/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/23/2011 |
| BORING NUMBER | 2011-8 |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 364056 |
| EASTING | 459974 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 821.9 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index | Moisture Content (%) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 7 | 3<br>3<br>4 | 7 | | | LEAN CLAY, trace gravel, dark brown, moist, soft to stiff | CL | | | 0.50-1.00 | | | 22 | |
| SH - 2 | 7 | | | | | Color change to tan/ light brown at 2.0' | | | | 0.25 | | | 14.8 | Pushed tube 12", Driller notes possible gravel layer from 3.0' to 5.0' |
| | | | | 5 | 816.9 | GRAVEL | GP | | | | | | | Driller noted hard drilling at 3.0' |
| SS - 3 | 16 | 8<br>6<br>8 | 14 | | | LEAN CLAY, little gravel, tan with gray mottling, moist, very stiff | CL | | | 3.25 | | | 18 | |
| SS - 4 | 6 | 16<br>26<br>28 | 54 | | | With silty sand seams in sample SS-4 | | | | | | | 18.5 | Pushed stone while sampling |
| | | | | 10 | 811.9 | | | | | | | | | |
| SS - 5 | 15 | 16<br>20<br>23 | 43 | | | SANDY SILT, fine grained sand, with gravel, tan, wet, dense (GLACIAL TILL) | ML | | | | | | 9.2 | |
| SS - 6 | 15 | 18<br>23<br>22 | 45 | | | SANDY SILT, fine grained sand, gray, wet, dense (GLACIAL TILL) | ML | | | | | | 10.6 | |
| | | | | 15 | 806.9 | | | | | | | | | |
| | | | | | | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 801.9 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 10 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 8 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

Gestra Engineering Inc.
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Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | | | |
|---|---|---|---|
| PROJECT NAME: Waukesha By-Pass | DATE DRILLING STARTED: 2/23/2011 | BORING NUMBER: **2011-9** | |
| PROJECT LOCATION: Waukesha, WI | DATE DRILLING ENDED: 2/23/2011 | PROJECT NUMBER: 10031-10 | |
| | | DRILLING RIG: Diedrich D50 | |
| BORING DRILLED BY: FIRM: Gestra, CREW CHIEF: A. Woerpel | FIELD LOG: B. Sargent | NORTHING: 363778 | DRILLING METHOD: 3¼" HSA |
| | LAB LOG / QC: E. Jeske | EASTING: 460333 | SURFACE ELEVATION: 809 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index | Moisture Content (%) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 15 | 1 1 3 | 4 | | | LEAN CLAY, with organics, black/ dark brown and blueish gray, moist, medium stiff to stiff | CL | | | 0.75-1.0 | 0 | | 34.8 | LOI = 4.9% |
| SH - 2 | 11 | | | | | 2" Peat layer at 2.0' | | | | 0.5-1.0 **0.77** | 29 | 7 | 6361 | $\gamma_d$ = 96.8 pcf, $\gamma_T$ = 125.6 pcf |
| | | | | 5 | 804.0 | | | | | | | | | |
| SS - 3 | 10 | 3 4 5 | 9 | | | LEAN CLAY, with sand, gravel and roots in sample SS-3, gray, moist, stiff to very stiff | CL | | | 1.25 | | | 21.5 | |
| SS - 4 | 18 | 3 7 9 | 16 | | | 3" thick silty sand and gravel seam | | | | 2.50 | | | 20.3 | |
| | | | | 10 | ▽799.0 | | | | | | | | | |
| SS - 5 | 12 | 7 9 6 | 15 | | | SILTY fine to coarse SAND and subrounded to sub fractured GRAVEL, gray with brown, wet, medium dense | SM | | | | | | | |
| SS - 6 | 18 | 5 2 4 | 6 | | | SILTY CLAY, with silt seams, gray, wet, stiff | CL-ML | | | 1.00 | | | 18.1 | |
| | | | | 15 | 794.0 | | | | | | | | | |
| | | | | | | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 789.0 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 10 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): N/A | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

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Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/25/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/25/2011 |
| BORING NUMBER | 2011-10 |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 362845 |
| EASTING | 460814 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 849.6 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation - | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index - | Moisture Content (%) - | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 15 | 4 1 4 | 5 | | | LEAN CLAY, brown to dark brown, moist, meidum stiff to stiff | CL | | | 1.00 | | | 20.4 | |
| SH - 2 | 8 | | | | | Layers of loosely consolidated weather silt | CL | | | 0.5-1.5 | | | 28.5 | |
| | | | | 5 | 844.6 | | | | | | | | | |
| SS - 3 | 17 | 3 3 3 | 6 | | | SILTY fine to medium SAND, dark brown, moist, loose | SM | | | | | | 10.7 | |
| SS - 4 | 15 | 2 4 4 | 8 | | | fine SAND, light brown, moist, loose | SP | | | | | | | |
| | | | | 10 | 839.6 | | | | | | | | | |
| SS - 5 | 11 | 4 12 20 | 32 | | | fine to coarse SAND, with gravel and silt, brown, moist, dense | SP-SM | | | | | | | |
| SS - 6 | 12 | 18 27 20 | 47 | | | subrounded to angular GRAVEL, with sand, brown, moist, dense | GP | | | | | | | |
| | | | | 15 | 834.6 | | | | | | | | | |
| | | | | | | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 829.6 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): N/A | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# SOIL BORING LOG

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Kenosha, WI 53142
phone: (262) 925-1885; fax (262) 925-1888



| | |
|---|---|
| PROJECT NAME | Waukesha By-Pass |
| DATE DRILLING STARTED | 2/25/2011 |
| PROJECT LOCATION | Waukesha, WI |
| DATE DRILLING ENDED | 2/25/2011 |
| BORING NUMBER | 2011-11 |
| PROJECT NUMBER | 10031-10 |
| DRILLING RIG | Diedrich D50 |
| BORING DRILLED BY | FIRM: Gestra<br>CREW CHIEF: A. Woerpel |
| FIELD LOG | B. Sargent |
| LAB LOG / QC | E. Jeske |
| NORTHING | 362591 |
| EASTING | 461417 |
| DRILLING METHOD | 3¼" HSA |
| SURFACE ELEVATION | 823 ft |

| Number and Type | Recovery (in) | Blow Counts | N - Value | Depth (ft) | Elevation - | Soil Description and Geological Origin for Each Major Unit | USCS Classification | Graphic | Well Diagram | Unconfined Comp. Strength ($Q_u$ or $Q_p$) (tsf) | Liquid Limit | Plasticity Index - | Moisture Content (%) - | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS - 1 | 12 | 3 5 7 | 12 | | | LEAN CLAY, with roots, little gravel, dark brown, moist (TOPSOIL) | | | | 1.00 | | | 22.5 | |
| | | | | | | Increase in gravel content | | | | | | | | |
| SS - 2 | 6 | 3 6 7 4 | 13 | | | SANDY CLAY, fine to coarse grained sand, with gravel, brown, moist | CL | | | | | | 12.9 | Driller pushed split spoon due to encounter high gravel content from 1.5' to 2.0' |
| | | | | 5 | 818.0 | | | | | | | | | |
| SS - 3 | 4 | 3 6 8 | 14 | | | CLAYEY fine to coarse SAND, tan, wet, loose | SC | | | | | | | Pushed stone, recovery seemed to be mostly cave-in material (lean clay, with roots, dark brown, moist) |
| SS - 4 | 16 | 3 4 5 | 9 | | | | | | | | | | 10.4 | |
| | | | | 10 | 813.0 | | | | | | | | | |
| SS - 5 | 16 | 3 3 4 | 7 | | | | | | | | | | 9.2 | |
| SS - 6 | 17 | 7 19 23 | 42 | | | fine to coarse SAND, with gravel, brown, wet, dense | SP | | | | | | | |
| | | | | 15 | 808.0 | End of Boring at 15.0' | | | | | | | | |
| | | | | 20 | 803.0 | | | | | | | | | |

## WATER & CAVE-IN OBSERVATION DATA

| | | | |
|---|---|---|---|
| WATER ENCOUNTERED DURING DRILLING (FT): 6.5 | | CAVE DEPTH AT COMPLETION (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AT COMPLETION (FT): 11 | | CAVE DEPTH AFTER HOURS (FT): N/A | WET ☐ DRY ☐ |
| WATER LEVEL AFTER (FT): N/A | | | |

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

# APPENDIX D

Boring Location Map and Hand Auger Logs

TEN FOOT CONTOURS

TWO FOOT CONTOURS

WELL POINT LOCATION

SOIL BORING LOCATION

PROJ. NUMBER: 2010-0001
DATE: 11-10-2010
PROJECT MGR: GP
DRAWN BY: KMJ
SCALE: 1" = 300'
REVISED:

**SOIL BORING AND WELL POINT LOCATION MAP**

**WAUKESHA, WISCONSIN**

**FIGURE 1**

L:\Jobs\2010\2010\0001\GIS\Arcd\SoilBorings.mxd

Project Waukesha Bypass

Project Location Pebble Creek

Date 12/22/2011

HA-24D

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-5 | 10YR 4/2 | | sC | | |
| 2 | 5-14 | 10YR 5/4 | | scL | | 10% gvl |
| 3 | 14-25 | 10YR 6/4 | 10YR 6/1 1 cm 10% | sL | | 15% gvl |
| 4 | 25-50 | 10YR 6/4 | 7.5YR 5/8 1 cm 10% | sL | | 20% gvl |
| | | | | | | |
| | | | | | | |
| | | | | | | |

HA-25

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-7 | 10YR 2/2 | | siL | | |
| 2 | 7-16 | 10YR 4/3 | | scL | | |
| 3 | 16-27 | 10YR 3/3 | | scL | | |
| 4 | 27-35 | 10YR 3/4 | | siC | | |
| 5 | 35-50 | 10YR 5/4 | 7.5YR 5/8 0.3 cm 10% | cL | | 5% gvl |
| | | | | | | |
| | | | | | | |

HA-26

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-9 | 10YR 3/4 | | sC | | |
| 2 | 9-14 | 10YR 3/4 | | scL | | |
| 3 | 14-30 | 10YR5/4 | 7.5YR 5/8 20% | lS | | 20% gvl |
| | | | | | | Auger refusal at 30" |
| | | | | | | |
| | | | | | | |
| | | | | | | |

HA-27

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-8 | 10YR 2/2 | | sicL | | |
| 2 | 8-16 | 10YR 4/4 | | sC | | |
| 3 | 16-27 | 10YR 3/6 | 7.5YR 6/8 1-2 mm 10% | sicL | | |
| 4 | 27-45 | 10YR 4/3 | | lS | | 10% gvl |
| | | | | | | Auger refusal at 45" |
| | | | | | | |
| | | | | | | |

HA-28

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-10 | 10YR 2/1 | | scL | | |
| 2 | 10-17 | 10YR 3/1 | | scL | | |
| 3 | 17-30 | 10YR 5/2 | | lS | | |
| 4 | 30-48 | 5GY 7/1 | 10YR 9/9 1mm 5% | sC | | 10YR 4/6 40% |
| | | | | | | |
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Project Waukesha Bypass

Project Location Pebble Creek

Date 12/22/2011

HA-29

| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
| 1 | 0-6 | 10YR 2/1 | | organic C | | oxidized root channels |
| 2 | 6-23 | N2/0 | 5YR 4/6 20% | organic C | | |
| 3 | 23-32 | 10YR 5/1 | | scL | | 10% gvl |
| 4 | 32-34 | 10YR 5/1 | | scL | | 20% gvl |
| | | | | | | |
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
|---|---|---|---|---|---|---|
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
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| Horizon | Depth In. | Dominant Color Munsell | Redox Description | Texture | Structure | Comments |
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# Waukesha Bypass
# Indirect and Cumulative Effects Update, September 2013

1. Reason for Update
    a. Two years since ICE expert panel workshop, and residential developers under-represented on the expert panel
    b. Waukesha water service area has been modified since ICE report was completed in fall 2012
    c. Confirm ICE boundary
2. Summary of Interviews
    a. Towns of Genesee and Delafield
    b. Three developers (Siepmann Realty, Smart Realty, Thomson Companies)
3. Results of interviews
    a. Consistent with expert panel and City/County/Town Waukesha planner input
    b. Extending Waukesha water service area would not have a dramatic impact on residential development
    c. Confirmed ICE study area is accurate

**Reason for Update**

The Waukesha Bypass study team began its cumulative effects analysis in 2011. One of three key components of the ICE analysis was a one-day expert panel meeting in May 2011. Two-plus years have passed since the expert panel workshop occurred. Since the expert panel workshop, the boundaries of the City of Waukesha water service area have changed in the ICE study area as the Town of Waukesha debated, and then acted on, changes to the areas of the Town that are in the City of Waukesha's water service area. Also, there were no residential developers on the expert panel as a result of a last-minute cancellation. This is notable because of the residential development that has occurred in the ICE study area over the last 20 years and the City and Town plans for more residential development in the study area.

Lastly, this update served as an opportunity to vet the ICE study area boundary developed by the study team after the May 2011 expert panel workshop. The key aspect of the ICE study area boundary is its west limit, which was established as the east boundary line of the Town of Delafield and Town of Genesee, for reasons documented in the fall 2012 ICE report.

**Summary of Interviews**

This update to the 2012 ICE analysis consisted of interviews with five entities:

- Town of Delafield planning staff and plan commission member
- Town of Genesee Planner-Administrator

- Siepmann Realty, a Pewaukee-based residential developer
- Smart Realty, a Waukesha-based commercial and residential developer and realtor
- Thomson Companies, a Pewaukee-based developer and property owner that focuses primarily on single-family residential development

Notes from each of the five interviews are attached to this report.

*Town of Delafield*

The Town Engineer and a member of the Town Plan Commission and Town Board said the Town is primarily residential. The eastern part of the town would remain residential; they saw no commercial development along US 18 or other arterials in the eastern part of the town. The Town's land use plan calls for residential in this area and the Town Board has historically held true to its plan. Septic and private wells have performed well in the Town, so they did not expect the eastern portion of the Town that is in the City of Waukesha water service area to develop more quickly. They see the potential for office development along the I-94 frontage roads, particularly near the County SS interchange with I-94. Neither think the Waukesha Bypass project would affect development in the Town. There may be some pressure to develop areas along US 18 but this would occur with or without the Waukesha Bypass project.

*Town of Genesee*

The Town Planner-Administrator said the development pressures in the Town, if the West Waukesha Bypass is built, would be the same as they are now. He sees no new development if the West Waukesha Bypass is built. The Town lacks infrastructure for more development. The Town's land plan calls for minimum 5-acre lots. The Town has a good track record of sticking with its land use plan. The West Waukesha Bypass would not affect the Town and the Town has no opinion on the project.

*Residential Developers*

All the residential developers said the area north of Summit is a prime area for development regardless of whether the Waukesha Bypass is built.

One developer thought that further south the Waukesha Bypass could spur some development. He gave an example of a parcel on WIS 59 near the Town of Waukesha/Town of Genesee line. The other developers did not think there would be an impact on development south and west of the project or if there was, it would be a small impact. Two of the developers said that large-lot residential development has occurred and will continue in the Town of Genesee. The two developers, in separate meetings, noted that the people who built in this are not attracted to the area by its easy access to the freeway or other major arterials but rather a desire to live in a semi-rural area.

None of the developers thought the extension of City of Waukesha water into the indirect and cumulative effects study area would affect residential development. Residential wells and septic perform well in this part of Waukesha County.

One of the developers noted that the City of Waukesha has a good track record of sticking with their land use plan.

*Results of Interviews*

*Consistent with 2011 interviews*. The results of the five interviews conducted in summer 2013 for this update were consistent with the 2011 interviews with the City of Waukesha and Waukesha County planning staff and three members of the Town of Waukesha Board. They were also consistent with the input received from the expert panel in May 2011. The general theme of all the interviews was that the west side of the City of Waukesha has been and will continue to be a prime area for development.

*Impact of potential City of Waukesha water service area extension*. The consensus of the town of Delafield and the Town of Genesee and the residential developers was that extending the City of Waukesha water service area further into the ICE study area would not have a big impact on residential development because private wells and septic systems operate well in this part of Waukesha County. Some businesses that need larger amounts of water would base their location decisions on availability of City water, but the ICE study area is not likely to support businesses in areas not already identified as commercial area in the respective land use plans.

*ICE study area boundary*. The interviews with the Town of Delafield and Genesee planning staff and plan commission member indicate that they do not think the Waukesha Bypass project will affect development in their respective towns. Two of the three developers also felt that the Waukesha Bypass project would not affect development in the Towns of Delafield and Genesee. The third developer felt that a developable parcel near the Town of Waukesha/Town of Genesee that the property owner has wanted to develop could become an attractive parcel if the Waukesha Bypass project is built. The consensus was that the east boundary of the Town of Genesee and Town of Delafield are the appropriate ICE study area boundaries and the lone dissenting view noted a parcel very close to this boundary that could be affected. Therefore the study team decided that the ICE study area boundary developed in 2011 is appropriate and need not be moved west.

Waukesha Bypass Project 9/20/2013

Indirect and Cumulative Effects meeting with Smart Realty

Attendees: Dave Smart, Eric _____, and Paul Smart, Charlie Webb/CH2M HILL

Charlie opened the meeting by giving an update on the project and explaining the NEPA process and the issue of indirect and cumulative effects. Smart Realty bought land in the area years ago with an eye toward the Waukesha Bypass eventually being built.

Dave Smart said development patterns on the west side of Waukesha are pretty well established. Some intersections will be attractive to end users who find traffic desirable.

Eric: City of Waukesha has a good handle on development in the area and is a big guiding force; they are the first key step in having land serve its highest and best use. The City has a strong track record in sticking with its land use plan. Eric thinks some commercial development could occur along the Bypass but predicts the City will stick with its plan for residential development in this area. Intersections could be an exception. However, TT/Summit intersection and TT/Madison intersections are already developed (wetland in SW corner of TT/Madison likely will not develop). But there could be some commercial development on Summit east of TT (east of Meadowbrook Shopping Center/Sentry).

Eric: have not seen City water issue stop a project. If a site is in the City it will get water service.

Water service is a factor for some land uses. For instance, Dave works with a health care provider that must have municipal water service. But for residential and many types of retail can use wells, municipal water service is not a big issue. Certain types of manufacturing need municipal water.

Eric: the north side of Sunset Drive west of the Waukesha Bypass could see retail development.

The Hardy parcel has been annexed into the City. Dave does not see this as an indication that property owners are seeking to develop their parcel, but rather they are seeking protection in case their own well system fails. Dave cited the example of the Town of Jackson where a pipeline break contaminated private residential wells and forced people onto municipal water.

There is potential for development at the WIS 59/County X/Waukesha Bypass intersection at the project's south terminus. Dave said the intersection is already demonstrated to be desirable for development though, even without the Waukesha Bypass. As evidence he said that his father, who bought property adjacent to this intersection many years ago, was approached by a developer about selling part of his land to accommodate a retail development at the WIS 59/County X intersection. Mr. Smart declined to sell, and the retail development instead bought land on Sunset Drive east of County X and became the Shoppes at Fox River. Dave also said the Jewel Osco had all the necessary approvals to build in the SE corner of this intersection but dropped the plan because they decided to exit the SE Wis market.

**Will the Waukesha Bypass project change development patterns south and west of the project corridor?**

Dave said it could change development patterns a little bit but not much. Previous residential developments on Sayeslville Road near Waukesha West High School and the area west of there were very successful without the Waukesha Bypass project in place. Eric noted that they were close to the school, and the timing (1994-2004) of its construction were factors in its success.

Paul Smart referred to a "pie shape" existing southwest from the City of Waukesha bounded by Saylesville Road on the east and the Wisconsin & Southern Railroad on the west. There is not a lot of developable land in this area. Eric said there are some 1- to 10-acre parcels, the desirability of which is generally tied to boom/bust cycles in the real estate market more than roadway access. Paul Smart gave an example of a 10-lot residential subdivision west of Green Lane that has not developed despite a steep reduction in lot prices.

Eric said that people who buy 1- to 3-acre lots in semi-rural areas, for example the Town of Genesee and Town of Delafield south and west of the Waukesha Bypass corridor do not live there because they want good road access or convenient access to the freeway. Eric said that even prior to 2006 housing market collapse there was interest in developing the Kings Way property in the east side of the Town of Genesee but lack of water and lack of fire protection (fire department more than 12 minutes away, he recalled) the development did not occur. He said these limiting factors would still be at play even if the Waukesha Bypass is built; its not road access that is holding up development in that area.

Dave said that "town style" development (1-acre minimum lot size, well and septic) is occurring in the area south and west of the Waukesha Bypass corridor despite economic downturn. Dave's sense, confirmed by Eric, is that private wells and septic work fine in the Towns of Waukesha, Delafield and Genesee which is part of the reason this town style development continues to occur. The Waukesha Bypass has nothing to do with transportation access in this area, WIS 59, 83 and County G provide good enough access. This type of development will continue to occur in this area west of the Waukesha Bypass with or without the Bypass; the project would not affect it.

Eric said the Waukesha Bypass would make the southern Christoph parcel less desirable for development by cutting across it diagonally. Because the parcel is in the Town of Waukesha, outside the City's water service area it will limit the types of development that occur there.

Dave said the implication of the road is higher immediately adjacent to the road. There has already been grocery, gas station, church and residential development along County TT, but on the southern section could support other land use besides residential if the City was so inclined, but Dave and Eric both thought the City would not deviate from its plan for residential south of Summit unless a "dream client" (a highly desirable company) based on the City's past track record of sticking with its land use plan. Dave thought the Waukesha Bypass could make the area more desirable for that type of non-residential development.

Dave thinks the “wind is already in the sails” for residential development along County TT north of Summit. Smart Realty has sold 40 lots in the last 18 months in the two residential subdivisions east of County TT north of Summit. Eric said the Waukesha Bypass will not cause new residential subdivisions to develop but it may make them more desirable. Eric gave the example of two friends who live in the Oakmont subdivision on Summit west of County TT that feel they already have great access to I-94.

Eric and Dave said some projects planned for areas immediately adjacent to the Waukesha Bypass may be on hold pending the outcome of the study. They may occur soon after the project is built.

Waukesha Bypass Study 9/20/13

Indirect and Cumulative Effects Meeting with Dean Frederick/Thomson Companies

Charlie gave an overview of the project and explained the NEPA process and the indirect and cumulative effects.

Dean said that Thomson Companies focuses mostly on single-family residential developments. They have some apartments (about 1,500-1,700 units in WI) as well as some retail and industrial development. Their apartments and single-family home developments are all around the Milwaukee suburbs including Waukesha County.

Dean said the Waukesha Bypass corridor is desirable for development today. Thomson is actively planning to begin work on a residential subdivision on the south side of Madison just west of County TT. An existing Thomson residential development is on the north side of Madison (Welsh and Oakmont). The ease of access from these subdivisions to I-94 via Summit and County TT is a reason Thomson developed Welsh and Oakmont.

South of Madison Street there are fewer areas to develop because of environmental constraints and existing development. There are some redevelopment opportunities.

Extending water service would make some areas more attractive for development.

Development patterns to the south and west of the Waukesha Bypass corridor would not be affected by the project. But the Waukesha Bypass would provide a little better access (more direct, faster) between WIS 59 and Sunset Drive so therefore could increase attractiveness of development.

The Waukesha Bypass would not change development patterns in the Town of Genesee. People who live in the Town of Genesee are not living there because of convenient access to major roads and the freeway.

The Waukesha Bypass project would not hurt development at Summit but there is pretty good access to I-94 already, so it would not make a big difference.

The WIS 59/County X/Waukesha Bypass intersection at the project's southern terminus would be attractive for development but there is not a lot of land available.

New DNR rules for private development on filling wetland may open up marginal areas for development. The new rules allow mitigation as an option for the first time. And there is a general permit that covers wetland impacts up to 0.1 acre.

The large lots in the Town of Delafield and Town of Genesee reduce traffic generation and dampen the effect of the Waukesha Bypass on development.

Dean doesn't see much potential for office development in the Waukesha Bypass corridor, perhaps some demand north of Summit.

Waukesha Bypass study July 2, 2013

Indirect and cumulative effects interview with town of Delafield

Attendees:

Tim Barbeau/RA Smith National, Town Engineer Charlie Webb/CH2M HILL
Clare Dundon/Town Supervisor and Plan Commission member

Charlie gave an overview of the project and its status, and explained the NEPA process and indirect and cumulative effects. Charlie asked Tim and Claire eight questions:

1. What would you consider to be some "notable features" within this study area (natural, cultural, transportation-related, or built).

Terrain, topography, Pewaukee Lake, Lapham Peak, agricultural land between I-94 and US 18 (Summit Avenue) in southeast corner of the town, restored wetland on the former Demilco property that was formerly a peat mine (in Sections 27 and 34)

2. To your knowledge, where is the study area in relation to your agency's regional growth centers (employment, residential), identified projects, protected natural areas, etc.?

The Town is primarily residential. Could see some pressure to develop ag land on the north side of 18, which is not a planned growth area. Development is anticipated on the north side of Pewaukee Lake that was recently sewered. There has not been much development in the last few years. Some large farm areas in the southeast corner of the town (between US 18 and I-94) that don't have plans to develop as far as Tim and Barb know. The frontage roads on both sides of I-94 could see office development from CTH SS interchange to the west about 1.5 miles on both sides of I-94. Claire noted that proximity to CTH SS interchange is a factor. Claire and Tim agreed that the frontage road locations are likely development areas, and the closer to the CTH SS interchange the sites are the more attractive they are.

Claire noted that the Schoenstatt Sisters, who have a several-hundred-acre retreat center in the east side of the town, sold some of their land which has been developed as residential.

3. Do you expect major demographic changes within your jurisdiction within the planning horizon? This could include a trend of young families, for example, or retirees. What type of employment trends are you seeing – is your employment base changing over time? How?

The Town is becoming more affluent. Some huge houses have been built. Some farms have been converted to residential, almost all high end (large homes). There are not a lot of young people in the town because there are few starter homes. The town demographics are getting older because the housing stock is getting older. Claire noted that St. Anthony's parish on the town's east border north of I-94 is getting younger, and Tim noted that may be because of the parish's proximity to the City of

Pewaukee. Claire noted that the town is losing some historic lake houses; they are being torn down and being replaced by larger lake houses.

4. Eventually, when the economy turns around, are there thoughts or indications regarding where employment growth would occur in the region?

Tim said office development along I-94 is an area where employment growth could occur, specifically in the northwest quadrant of the I-94/CTH SS interchange. There is a potential for commercial along US 18 but the Town is not planning for commercial development in this area (see discussion of Town's history of sticking with its plan, #7 below). The Town looked at commercial development on US 18 in the east end of the Town when they thought the City of Waukesha's commercial development on US 18 would continue west. When the City developed single-family residential on US 18 west of CTH TT the Town dropped consideration of commercial along US 18 in the Town. The Town does not see any need for commercial development except along I-94.

5. What are the factors, in your opinion, that contribute to growth? Is transportation access a factor? If so, how important is it?

Along I-94 transportation access is a factor. Proximity to a freeway interchange. Other locations along the frontage roads could also develop but more pressure to develop those parcels closer to the CTH SS interchange.

Sewer and water availability are also factors that contribute to growth. The only areas in the Town that have sewer are around Pewaukee Lake. All development in the town relies upon private wells. Tim added that private wells and septic systems perform pretty well in the Town.

Tim and Claire said that the Town's affluent demographics potentially attract certain types of commercial development and repel others.

6. What other reasonably foreseeable plans and projects will you be completing? Reasonably foreseeable typically means likely to happen within the planning horizon for this project (roughly 20 years).

Foreseeable projects are

- a new fire station,
- a new residential subdivision between I-94 and Northview Road, in the far east end of the Town,
- office development along I-94 west of the I-94/CTH SS interchange, and
- a new worship center on the Schoenstatt Sisters property (around 400-450 person capacity)

7. Please discuss qualitatively how this project fits in with overall planning goals for your jurisdiction. The project has been considered for a long time in the area – do future projects and

growth depend on the construction of the project? In your opinion what would construction of the project do or not do to help meet and further other planning goals?

Where the Waukesha Bypass is planned now (along the CTH TT corridor, as opposed to early alternatives that considered using a corridor along the City/Town line [the SS corridor]) the project would not affect development in the Town. Claire thought the Waukesha Bypass project could alleviate some traffic on the west end of Northview Road, but she is not sure.

If agricultural areas (white areas on the Town's land use map, along US 18 in eastern part of the Town) get developed its going to be residential. This area is planned for agriculture or minimum 5-acre parcels for residences, on average. But Lapham Peak State Park is included in the area to determine the average lot size, so density could go as low as 3 acres per parcel. Tim felt that the Town Board will stick to its plan in terms of type of development. In response to a question, Tim said the Board has "historically held true" to its plan.

8. Has the planned Waukesha Bypass already had an effect on development in the Town?

Tim said that it had not. He noted that Sections 25 and 36 in the SE corner of the Town are in the City of Waukesha's water service area. If the City's application for water is successful the Town could extend water service to these areas if needed; it would not be forced on the Town (as noted above, there are no issues with drinking water wells in the Town). Tim said the Town does not force things on people.

Annexation by the City of Waukesha is a concern of the Town. However Tim does not think the City would be motivated to annex the eastern part of the Town because there is no commercial land in this area. If water service is extended to Sections 25 and 36 it could affect development in those sections. As noted above, septic systems operate well in the Town.

Tim said the one-mile area between the proposed Waukesha Bypass and the Town's eastern border suggests to him that there will be no pressure to develop in the eastern part of the Town. Claire thought except perhaps in Section 36 but even there she does not see demand for commercial/retail development along US 18. Tim said that there would be some pressure development along US 18 in the eastern part of the Town with or without the Waukesha Bypass.

Waukesha Bypass Study 7/25/2013

Meeting with Jeff Hermann/Town of Genesee to discuss Indirect and Cumulative Effects

Jeff is the Town Planner-Administrator. Charlie gave an overview of the project and its status, and explained the NEPA process and indirect and cumulative effects. Charlie asked Jeff seven questions:

1. What would you consider to be some "notable features" within this study area (natural, cultural, transportation-related, or built).

Retzer Nature Center is an important resource, its education programs are good for schools and the Center should be preserved as much as possible. Sunset Park is also an important resource, Jeff said. He said the West Waukesha Bypass project would not have an adverse impact on Sunset Park.

Jeff said the development pressures in the Town, if the West Waukesha Bypass is built, would be the same as they are now. Jeff thought traffic volumes on County DT would go down if the project is built because people currently use County DT as a cut-through. Jeff sees no new development if the West Waukesha Bypass is built. The Town lacks infrastructure for more development. The Town's land plan calls for minimum 5-acre lots. In response to my question, Jeff said the Town has a good track record of sticking with its land use plan (Generac expansion is an exception).

2. To your knowledge, where is the study area in relation to your agency's regional growth centers (employment, residential), identified projects, protected natural areas, etc.?

Areas of the Town that are easy to develop have already been developed. Some in-fill development in harder-to-develop areas will likely occur, but its relatively small scale. The area along Hillside Drive south of County DE (Wern Farms) has not given an indication that they want to develop their property. Not a lot of new areas to develop in the Town, and those areas that do see development will be low-density.

3. Do you expect major demographic changes within your jurisdiction within the planning horizon? This could include a trend of young families, for example, or retirees. What type of employment trends are you seeing – is your employment base changing over time? How?

No demographic changes seen or anticipated. Population has remained steady.

4. Eventually, when the economy turns around, are there thoughts or indications regarding where employment growth would occur in the region? Do you see it staying in the central city, moving outwards in one direction over another (jurisdiction or other), or a bit of both? Is this different for housing?

Generac on Highway 59 is the Town's biggest employer (about 900 employees). There is no industrial employment in the Town, Jeff said (other than Generac, presumably). Town residents drive an average of 27 miles to work, Jeff said.

5. What are the factors, in your opinion, that contribute to growth? Is transportation access a factor? If so, how important is it?

Transportation is a factor; the ease of getting from Point A to Point B is important. Availability of sewer and water is also an important factor. Everyone in the Town is on wells and private septic. A portion of the east part of the Town is in the City of Waukesha's water service area.

6. What other reasonably foreseeable plans and projects will you be completing? Reasonably foreseeable typically means likely to happen within the planning horizon for this project (roughly 20 years).

Generac owns 60 acres adjacent to their existing plant. Jeff thinks it will be built on within in the next 20 years. According to Jeff, Generac has preliminary plans for a plant that would employ 1,200 people. Jeff said he was not sure whether the new plant would be in addition to the existing plant to replace the existing plant. Carroll University owns 60 acres at the intersection of Highways 59/83, Jeff thought they may build a lab or labs on this property.

7. Please discuss qualitatively how this project fits in with overall planning goals for your jurisdiction. The project has been considered for a long time in the area – do future projects and growth depend on the construction of the project? In your opinion what would construction of the project do or not do to help meet and further other planning goals?

Jeff said the West Waukesha Bypass would not affect the Town. The Town has no opinion on the project.

Waukesha Bypass Study 8/14/2013

Indirect and Cumulative Meeting with Jim Siepmann/Siepmann Realty

Charlie gave Jim an update on the project status and the NEPA process, including a description of indirect and cumulative effects.

Jim said the area north of Summit is hot for development regardless of whether the Waukesha Bypass is built or not.

As you go further south the Waukesha Bypass could spur some development. Jim gave an example of a parcel on WIS 59 near the Town of Waukesha/Town of Genesee line.

Jim said shopping and schools are already in place.

I asked Jim about the potential effect on development of the Waukesha Bypass and potential extension of City of Waukesha water out to, and west of, County TT. Jim said sanitary sewer extension is a bigger deal than municipal water extension, so sending Lake Michigan water to Waukesha and extending the water service area is not a big deal.

# Indirect and Cumulative Effects Report

# West Waukesha Bypass

Prepared for

Waukesha County
Department of Public Works

September 2012

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A West Waukesha Bypass Indirect and Cumulative Effect Stakeholder Meeting Notes
B Local Government Stakeholder Interview Questions
C Summary of Expert Panel Input

# Introduction

Waukesha County, WisDOT and the Federal Highway Administration are studying the implementation of the West Waukesha Bypass project. These agencies are preparing an environmental impact statement (EIS) on the West Waukesha Bypass to comply with the National Environmental Policy Act and Wisconsin Environmental Policy Act. The EIS will document the purpose of the project, the need for the project, alternatives considered, the impacts of those alternatives, and the public outreach that occurred during preparation of the EIS.

This indirect and cumulative effects report is one of several analyses undertaken by these agencies to assess the impacts of the project on the human and natural environment. Some of these analyses are documented in stand-alone reports like this one while others are documented in the EIS itself.

This report will be placed on a CD at the back of the EIS and a summary of this analysis will be placed in Section 3 of the EIS.

The cumulative impact summary relies on many of these other analyses because in order to discuss the cumulative impacts of the project an understanding of the direct effects is required. The expert panel was briefed on the direct impact of the project at the expert panel meeting.

# Indirect Impact Analysis

## Introduction

The purpose of the indirect impact analysis is to distinguish whether development patterns in the vicinity of the proposed West Waukesha Bypass would differ between the Build and No Build Alternatives, and whether the Build Alternative could be expected to induce growth in the study area. The goal of this analysis is to assess the potential for currently undeveloped areas to develop and affect natural resources.

According to the Code of Federal Regulations (CFR), indirect effects are defined as being "caused by the action and are occurring later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8).

Case law has defined reasonably foreseeable as "meaning that the impact is sufficiently likely to occur that a person of ordinary prudence would take it into account in making a decision" (Sierra Club v. Marsh, 976 F. 2d (1st Cir. 1992)).

The National Cooperative Highway Research Program (NCHRP) Report 466: *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*, a seminal guidance document for indirect impact analysis, provides three broad categories of indirect effects:

1. Alteration of the behavior and functioning of the affected environment caused by project encroachment (physical, chemical, biological) on the environment;
2. Project-influenced development effects (e.g., the land use effect); and
3. Effects related to project-influenced development effects (i.e., effects of the change in land use on the human and natural environment).

## Data Collection and Methodology

The indirect impact analysis follows the guidance provided in NCHRP Report 466, specifically addressing eight steps. These steps are outlined in Table 1 below. Table 1 also identifies the section of this report which addresses the step.

TABLE 1
NCHRP Report 466 Indirect Effect Analysis Steps

| # | Step | Description | Section of Memo which Addresses Step |
|---|---|---|---|
| 1 | Scoping | Determine the basic approach, effort required, and geographical boundaries | Introduction, Methodology, Indirect Effects Study Area |

TABLE 1
NCHRP Report 466 Indirect Effect Analysis Steps

| # | Step | Description | Section of Memo which Addresses Step |
|---|---|---|---|
| 2 | Identify the study area's direction and goals | Compile information regarding the study area to help define the context for the assessment | Methodology, Indirect Effects Study Area |
| 3 | Inventory the study area's notable features | Gather and synthesize additional data on environmental features. Identify specific environmental features to be used to assess the project. | Indirect Effects Study Area, Land Use, Population and Employment Trends |
| 4 | Identify impact-causing activities of proposed action and alternatives | Determine how the proposed alternatives may cause impacts to the resources identified in prior steps. | Indirect Effects Study Area |
| 5 | Identify potentially significant indirect effects for analysis | Catalog the indirect effects associated with project activities and alternatives; identify whether any have potentially significant effects meriting further analysis. | Literature Review, Expert Panel, Summary of Findings |
| 6 | Analyze indirect effects | Estimate the magnitude of the potentially significant effects using qualitative and quantitative techniques. Describe future conditions with and without the proposed action. | Literature Review, Expert Panel, Summary of Findings |
| 7 | Evaluate analysis results | Evaluate the uncertainty of the results of the indirect effects analysis for its ramification on the overall assessment | Summary of Findings, Conclusions |
| 8 | Assess consequences and develop mitigation | Evaluate the consequences of the indirect effects in the context of the full range of project impacts | Conclusions, Areas of Potential Mitigation |

The NCHRP Report 466 methodology is largely echoed in other federal and state guidance documents on indirect impact analysis, including but not limited to NCHRP Project 25-25 (Task 11) *Indirect and Cumulative Impact Analysis*, NCHRP Web Document 43 *Guidance for Estimating the Indirect Effects of Proposed Transportation Projects*, and Wisconsin Department of Transportation's (WisDOT) *Guidance for Conducting an Indirect Effects Analysis* (2007). A full list of resources employed for this analysis is provided in the References section.

Several approaches from NCHRP Report 466 were considered by the project team, including literature reviews, case studies, expert panel surveys and trend analysis. The selected analysis is based on a combination of qualitative and quantitative data sources. The selected approaches are accepted, state-of-the-practice techniques based on NCHRP Report 466. The Impact Analysis Methodology developed in 2010 and updated in February 2012 noted the expert panel approach as a key element of the indirect and cumulative effects methodology. Participating and cooperating agencies concurred in the Impact Analysis Methodology and the public had the opportunity to comment on the methodology. The selected approaches are described in the following paragraphs.

- *Literature Review* – The body of literature developed on the impacts of transportation on land use and natural resources was reviewed, both to establish a framework for the study

and to glean findings from the literature that could be applicable to the project. Local and regional plans, including but not limited to SEWRPC's 2035 Regional Land Use Plan and Regional Transportation Plan (2006) and Pebble Creek Watershed Protection Plan (2008) Waukesha County Comprehensive Development Plan; the City of Waukesha Land Use Plan, and the Town of Waukesha Smart Growth Plan (2009), and the 1990 West Waukesha Bypass Plan prepared by Waukesha County, were reviewed to understand development trends and plans in the vicinity of the project. Land development procedures were also reviewed. See *Literature Review*. A full listing of resources consulted for this analysis is provided in the References section.

- *Interviews with Town, City and County Planning Staff* – the study team interviewed planning staff from the Town of Waukesha, City of Waukesha, City of Pewaukee and Waukesha County between January and March 2011 to get their input on the potential indirect and cumulative impacts of the project. These communities were selected because they are directly adjacent to the proposed roadway. See *Results of Interviews*.
- *Expert Panel* – The study team convened a one-day expert panel discussion on May 10, 2011. The panel consisted of a commercial developer, financial lender, community development director from another SE Wisconsin community, DNR's Fox River Basin Team leader, SEWRPC principal planner (and author of the Pebble Creek Watershed Protection Plan), retired civil engineering professor, adjunct lecturer in ecology and land use planning, and the director of supply chain and logistics at a Waukesha-area manufacturer. See *Expert Panel Input*.
- *Trend Analysis* – the study team reviewed population and household data for 1990, 2000 and 2010 for the City, Town and County as well as projected 2030 and 2035 population and households for the same communities.

# Indirect Effects Study Area

The project termini are the Meadowbrook Road/Rolling Ridge Drive intersection (just south of I-94) on the north and the intersection of WIS 59 and County X on the south, a distance of about 5 miles.

Waukesha County, the Wisconsin Department of Transportation (WisDOT) and the Federal Highway Administration (FHWA), is proposing to improve the safety and efficiency of the arterial connection between the WIS 59/County X intersection and I-94 on Waukesha's west side, the last piece of the long-planned circumferential route around Waukesha. Because of development on the west side of the city, and in west and south central Waukesha County, improving the arterial connection between the project termini would no longer serve as a bypass. Rather, the proposed improvements would fill a gap in the transportation system by providing an efficient north-south roadway on the city's west side. The proposed action is the next step in implementing future highway improvements recommended in regional, county, and city transportation system plans.

The indirect effects study area is the part of the City of Waukesha west of County TT, the City of Pewaukee and Town of Delafield east of County SS (extended), and the Town of Waukesha west of the Fox River and north of County H (see Exhibit 1). County TT is used as the east boundary because city staff and a review of existing land use indicate the area east of County

TT is almost fully developed already, leaving little opportunity for new development. The line extending south from the I-94/County SS interchange is the west boundary of the indirect effects study area because it is the first I-94 interchange west of County TT and because it is one mile west of County TT, which the study team believes is a reasonable limit beyond which indirect effects of improving County TT would not be likely based on input from the expert panel and local planning staff. County H is the southern boundary of the indirect effects study area because it is nearly 1 mile south of the County X/WIS 59 study limit and because south of County H there are extensive primary environmental corridor and wetlands, including the Vernon Marsh, which would limit development. The Fox River is the east boundary of the indirect effects study area in the Town of Waukesha because east of the Fox River, there is already extensive development (at least north of County H) and the Town of Waukesha did not anticipate indirect effects east of the study area as a result of the project.

### Impact Causing Activities of the Project Alternatives

Waukesha County reviewed the two Pebble Creek Alternatives and the Sunset-to-County X Alternative to determine which elements have the potential to cause indirect effects. The aspect of the project most likely to cause indirect effects is construction of a new roadway through the Pebble Creek corridor near the south terminus of the project. All three Build Alternatives that remain under consideration would affect the Pebble Creek corridor, although their direct impacts would differ.

A potential impact-causing aspect of the project alternatives is residential development spurred by improving and widening County TT. Another impact-causing aspect of the project, related to residential development, is the indirect impact on the remaining farms in the study area. There is also a potential indirect effect on existing residential areas adjacent to County TT. Natural environment impacts that are outside the footprint of the roadway, but would be caused by the roadway (water quality, for example) are considered direct impacts of the project.

## Population and Employment Trend Analysis

For the West Waukesha Bypass Study, demographic information was collected for the three municipalities the between the project termini (City of Waukesha, City of Pewaukee, and Town of Waukesha) and Waukesha County. In addition to data for local municipalities, data was collected for the census blocks and tracts in and around the study area. For this analysis, the *project area* contains the census tracts that capture the populations located within 1-mile of the alternatives. A census tract is a small, relatively permanent statistical subdivision of a county that is used to delineate census data. Data were also collected for the census blocks adjacent to the Build Alternatives. In this section, that data is named the *direct impact area*. A census block is a subset of a census tract and is the smallest geographic unit for which economic data are collected.

### Current Population and Employment

#### Population

Population grew 8.1 percent in Waukesha County, 9.1 percent in the City of Waukesha, 12 percent in the City of Pewaukee, and 6.2 percent in the Town of Waukesha between 2000 and 2010. Table 2 presents population data for municipalities within the project area.

TABLE 2
Project Area Population: 1990–2010

| Area | Population 1990 | Population 2000 | Population 2010 | Annual Growth Rate (2000–2010) |
|---|---|---|---|---|
| City of Waukesha | 56,958 | 64,825 | 70,718 | 0.9% |
| City of Pewaukee | n/a | 11,783 | 13,195 | 1.1% |
| Town of Waukesha | 7,566 | 8,596 | 9,133 | 0.6% |
| Waukesha County | 304,715 | 360,767 | 389,891 | 0.8% |
| Project area | 32,738 | 33,190 | 37,209 | 1.1% |
| Direct impact area | n/a | 2,926 | 4,045 | 3.8% |

*Note:* The project area consists of census tracts 2021.01, 2021.02, 2021.03, 2022.01, 2030, 2031.01, 2031.02, 2031.03. The City of Pewaukee incorporated in 1999.

All communities along the project corridor experienced a population increase between 2000 and 2010. Recent growth trends in both the project area and the direct impact area are greater than in the surrounding communities. For the direct impact area, the annual growth rate between 2000 and 2010 is three to six times greater than that in the three municipalities and Waukesha County as a whole. This is an indicator of increased suburban housing development. Based on 2010 census data, the project area and local municipalities experienced annual growth rates that are equal to or higher than the state of Wisconsin in general (0.6 percent) (Census Bureau, 2010).

### Employment

Waukesha County's total employment is at 211,726 employees in the 2005-2009 American Community Survey Estimates (Census, 2009), with the "educational services and health care" combined sector having the highest percentage at 20.9 percent (42,444 employees) followed by manufacturing at 18.1 percent (36,783 employees). According to the Metropolitan Milwaukee Association of Commerce the top two employers in the City of Waukesha are ProHealth Care, Inc., and GE Healthcare at 5,000 and 6,500 employees respectively. GE Healthcare is located north of the I-94/County T interchange, outside the project area. The only major employer within the project area, Cooper Power Systems at 2300 Badger Drive, has 1,900 employees (not all are at this location). Other employers within the project area include educational institutions, commercial retail, and health care facilities.

## Future Population and Employment Trends

### Population

The Wisconsin Department of Administration projects population growth in all study-area communities (Table 3). The Department of Administration projections are for 2030 for the local municipalities and for 2035 for Waukesha County and the State of Wisconsin. The City of Pewaukee is expected to experience the most growth with a 0.9 percent annual growth rate for a 19.3 percent increase in population between 2010 and 2030. The population of Waukesha County is projected to grow by more than 16 percent between 2010 and 2035. Statewide annual growth rate is projected to be 0.6 percent. Communities in the project area are expected to grow at rates similar to that for the state as a whole.

TABLE 3
Project Area 2030/2035 Projected Population

| Community | Population 2010 | 2030/2035 Projected Population | Increase | % Change | Annual Anticipated Growth Rate |
|---|---|---|---|---|---|
| City of Waukesha | 70,718 | 78,172[a] | 7,454 | 10.5 | 0.5% |
| City of Pewaukee | 13,195 | 15,741[a] | 2,546 | 19.3 | 0.9% |
| Town of Waukesha | 9,133 | 9,901[a] | 768 | 8.4 | 0.4% |
| Waukesha County | 389,891 | 454,467[b] | 64,576 | 16.6 | 0.6% |
| Wisconsin | 5,686,986 | 6,653,970[b] | 966,984 | 17.0 | 0.6% |

*Source:* U.S. Census Bureau 2010, Wisconsin DOA

[a]WDOA. 2008. 2030 Population Projection.

[b]WDOA. 2008. 2035 Population Projection.

### Employment

The demand for health services may be expected to continue to increase with population growth and the aging of the baby boomers. Under the intermediate employment projection for Waukesha County, demand for health care services is expected to increase by 35 percent between 2000 and 2025 (SEWRPC, 2004). Total employment within Waukesha County is projected to grow to 347,200 in 2035, an increase of 28.2 percent.

### Conclusion

In response to population growth on the west side of the City of Waukesha the project area is expected to evolve and transition to primarily suburban residential development. Based on the comprehensive plans of local jurisdictions in the project area, this urbanization trend is projected to continue through the SEWRPC 2035 planning horizon. Because of this continued trend, the project area largely will be urbanized by 2035 according to the county land use plan.

The annual anticipated growth rate for the project area municipalities between 2010 and 2030/2035 is expected to be less than the actual growth rates for the areas between 2000 and 2010. The annual anticipated growth rate for the cities of Waukesha and Pewaukee, Town of Waukesha, and Waukesha County are all anticipated to be at least 0.2% less than the actual 2000 to 2010 growth rates.

## Staff Analysis

### Land use

Existing land use in the study area is a mix of residential, commercial, open space and agriculture. The study area has been an attractive area for residential development over the last 20-30 years. City and County land use plans indicate that residential development will continue to occur in the indirect effects study area. The City of Waukesha Land Use Plan for the city and the surrounding urban service area (which includes the entire indirect effects study area) indicates continued residential development to the point that there is no agricultural land called for in the plan. Most of the new residential development is planned to be low density. Notable exceptions are an area of “medium-high” density residential in the existing farm field north of

Sunset Drive and east of County TT (Christoph parcel) and a commercial node in the southeast quadrant of the County TT/WIS 59 intersection.

Agricultural land provides some level of habitat for wildlife, especially as wildlife movement corridors. Some agricultural land is also wetland and/or floodplain. Converting these areas to residential development or roadways reduces or eliminates the habitat value of these areas and can involve filling floodplain and/or wetland.

Three farm operations would be directly affected by the proposed action. One of the three is owned by the Waukesha School District as a future school site. The school district estimated that an elementary school would be built on the site by the project's 2035 design year.

The Christoph farm would experience approximately 22 to 28 acres of direct impact from right-of-way acquisition and two separate parcels would be severed (one on the north side of Sunset Drive and the other on the east side of County TT across from Kame Terrace). This farm operation on County TT may no longer be viable if the proposed action is implemented. The City of Waukesha land use plan calls for this farm to be converted to medium-high density residential. Severing the relatively small farm field would decrease its utility for crop production. That, coupled with its relatively attractive location for development, may be the impetus for its conversion to residential.

The third farm operation would be severed but would retain enough acreage to continue farming, albeit with the added operational complexity associated with being severed by the proposed new roadway.

The expert panel thought that implementing the proposed action would make farming harder and less lucrative and it would have an adverse effect on farm suppliers.

Farms have converted to residential development throughout the indirect effects study area. Because there is so little farming in the study area today, and the direct impacts of the project only affect three farm operations, the indirect effects on the farmland are not expected to be significant.

The study team does not concur with the expert panel's comment that there could be an adverse effect on farm suppliers as a result of the project. The team's position is based on the limited amount of farming in the study area, the small number of farms (two, not including the school district parcel) that would be directly affected and the difficulty in accurately quantifying the current and future revenues spent on agricultural supplies and whether the difference has any meaningful impact on the viability of agricultural suppliers in Waukesha County.

Given the level of residential development that has already taken place in the study area in the absence of the proposed action and the planned continuation of the residential development, the extent to which the proposed action would change broad land use patterns in the study area would not be significant. This conclusion is supported by city, county and town land use plans that are in place that call for the study area to be largely residential. Another key factor in reaching this conclusion is that there is an existing county trunk highway in place for about 4 miles of the proposed action's 5-mile length. Two of the three Build Alternatives include about ¾-mile of roadway on new alignment. But it is in an area that would be difficult to develop; so the roadway would not be providing access to new areas for development.

Yet there are some parcels that will become more attractive for residential development. The plan shows the Christoph parcel, noted above, as low-density residential west of the planned bypass route and medium- to high-density east of the planned bypass route. This would indicate that the plan's authors see the proposed action having some effect on the future development of this parcel. It should be noted that the recent passing of the property owner may also influence in the decision whether to continue farming as the proposed project.

The entire indirect effects study area is in the planned sewer service area, which is an indication that residential development is expected. City and county planning staff did not predict a significantly different residential development pattern if the proposed project is built or not; nor did the Waukesha Town Board or the expert panel. The proposed action may change the timing of the development of farmland to residential.

Areas already developed, or designated as primary environmental corridor or in public ownership would likely not change land use as an indirect result of the project.

## Residential (visual and noise impacts to existing residences)

Some residents adjacent to County TT have raised concern over potential increase in noise levels and visual impacts of a wider roadway that is closer to their homes. Another concern at the north end of the study area is the safety of those crossing the wider roadway. Their concern is that these direct impacts will reduce their property value and their quality of life. The direct noise impacts and visual impacts are documented in the Draft EIS.

The City and County's long-standing requirement of imposing setbacks for residential subdivisions along County TT has reduced the potential indirect noise and visual impacts of the proposed action by not only prohibiting new residential construction in the path of the proposed roadway but also not allowing residential driveways onto County TT. Only a handful of older homes south of Summit Avenue have driveways onto County TT.

Anecdotally, many residents adjacent to County TT have said that they were aware of the proposed action at the time they purchased their home. Nonetheless, it's possible some residents may decide to sell their home if the proposed action is implemented. Based on other similar projects the study team has been involved in southeast Wisconsin, there has not been a widespread effort by homeowners to sell homes near recently widened roadways.

The safety of those crossing the new wider road at the north end of the project would be maintained by providing a median to act as a safe refuge for pedestrians, bicyclists and drivers crossing the roadway. The existing signal at Rolling Ridge Drive would remain in place under the proposed action to further maintain safety for Meadowbrook School students.

## Floodplain

Between 6 and 11 acres of floodplain would be directly affected by the project. Historic and ongoing urban development in floodplains has reduced flood storage capacity. Furthermore, past filling has reduced the ability of floodplains to provide beneficial functions such as water quality, flood control, wildlife habitat, and aesthetic appeal.

Floodplains are present in the south end of the study area along Pebble Creek. The Pebble Creek West and Far West Alternatives would have less direct impact on floodplain than the Sunset-to-County X Alternative and therefore less indirect impact. All structures over the floodplain will

be sized to not raise flood flows. Under the Pebble Creek West and Far West Alternatives the fill placed in floodplain will be in floodfringe, or areas that typically see standing water during a 100-year flood. The fill would not be placed in the floodway, the area that sees flowing water during a flood. Under the Sunset-to-County X Alternative, depending on the length of the Sunset Drive bridge over Pebble Creek some fill may be placed into the floodway.

Under all Build Alternatives, a hydraulic analysis will ensure that the structures do not increase flood flows by more than the permissible 0.01 foot.

### Natural Resources

The EIS documents the project's impacts on natural resources. Because the study team has determined that this project will not create a level of development/land use change significantly different than the No-Build Alternative, there would not be an anticipated impact on natural resources as a result of indirect land use changes brought about by the project.

Impacts on natural resources outside the footprint of the roadway such as thermal impacts to Pebble Creek and sedimentation of remaining wetlands are considered direct impacts of the project and are documented in Section 3 of the EIS (most notably Surface Water, Groundwater, and Wetlands subsections).

The Cumulative Impacts section (page 34 of this report) discusses the project's direct effects on natural resources combined with the impacts of other past, present and foreseeable future development.

## Literature Review

The objective of the literature review is to analyze findings from the literature as it relates to indirect impacts of transportation investments, and call out findings that might be applicable to the project. This review, when coupled with empirical data, interviews with planning staff, and expert panel input, aids in the development of findings for this indirect impacts analysis study.

Metropolitan areas differ greatly in historical development patterns, geography, population mix, political traditions, and economic vitality, which may lead to significant differences in the specific outcome of a particular policy initiative or transportation investment project. However, it is assumed that general trends exist among different cities and regions and therefore findings from one region can be germane to another. The three subject areas below reflect current thinking and case study evidence of the effects of transportation investments on land use and the effectiveness of land use planning tools. Findings from the literature review were taken from a number of peer-reviewed academic journals as well as agency studies. While specific sources are not listed next to the descriptions below, they are cited in the references section at the end of this report.

### Impact of Transportation Investment on Household and Business Location Decisions

#### Key Findings

- Transportation has historically played an important role in shaping modern US metropolitan urban form.
- Improved transportation access (and reduced travel times) can improve an area's attractiveness for development, though with diminishing returns.

- Accessibility can increase land values and densities.
- Transportation is not the only influence on development, and many times is not the most important influence on development.
- Transportation supports the new economy in attracting and retaining a skilled workforce.

**Summary:** Transportation investment affects accessibility. Accessibility changes are reflected in travel behavior. Changes in travel behavior have the potential to alter land use.

Land supply, land cost, and limited congestion historically invited population and business to the urban fringe. Recent growth trends show increasing suburban co-location of housing and jobs, and concentrations of suburban employment centers, dispersed across most major metropolitan areas.

Businesses that value proximity to other businesses will tend to locate in concentrated nodes. In less urbanized areas, such development concentrations will likely follow a life-cycle development process, beginning with "urban villages" currently located near major freeway interchanges. As these areas become built out, development expands between interchanges and away from the freeway.

Studies looking at early highway investments identified large land price increases near highway improvements. Highway development and regional access points have become more prevalent and more recent studies showed smaller and sometimes statistically insignificant land price differences from a highway project, inferring an incremental (smaller) effect on accessibility from new or improved highways.

Residential development (without check) will tend to develop in a more decentralized fashion. However, if land values increase, there may be motivation for higher density land uses, including compact housing and mixed land uses. Both results are also naturally supported near transit stations.

The negligible change in commuting times and overall travel budgets in the last 20 years, suggests that jobs and housing have co-located in suburbs. Additionally, the ability to reach further locations in a shorter time may disperse residential location decisions and result in longer shopping and services trips, as local businesses are bypassed for competitors made more accessible.

However, if a corridor already exhibits reasonable levels of accessibility, it may be less affected by additional highway investment than by other local circumstances.

Factors other than transportation play an equally significant role including existing economic activity patterns, local agency land use controls (e.g., zoning and comprehensive plan designations) and the availability of urban services such as sewer and water, topography, presence of environmental constraints, development costs and incentives (e.g., targeted land development and minimum densities), pro-business attitudes, and topography.

## Role of Land Use and Public Policy in Shaping Regional Growth Following Transportation Investments

### Key Findings

- Land use planning methods and policies affect development patterns and travel behavior.
- Governments play an important role in determining the type, location, and amount of development that occurs.
- Developers will look at a number of factors (e.g., market feasibility, absorption rates, site suitability) apart from transportation access before making a site development decision.
- Metropolitan political systems affect land use outcomes.

**Summary:** The land use effects of transportation investment are often small compared to the effect of local land use plans, policies and political structures. A recent study conducted in Oregon found that road widening in suburban or exurban areas posed little change to local land use plans developed prior to the transport investment. Effective policies are able to control growth resulting from transport investment, effectively disconnecting the land use response from the transport network.

Governments harness a host of available land use planning and policy tools in order to develop the type of communities desired. Tools include: (A) managing long-term growth through long-term plans (e.g., concurrency, targeted land development, phased transport and focused public service investments); (B) the investment in water, sewer, and stormwater management systems to support development; (C) influencing site plans as development occurs (e.g., traditional neighborhood design, minimum density requirements); (D) preserving rural/open space from development (e.g., urban growth boundaries, public land acquisition, urban reserve zoning); (E) transportation design standards to effectively integrate land uses (e.g., access management); (F) demand management to preserve available transport capacity for its highest use (e.g., parking pricing, transportation choices, HOV or truck-only lanes); and (G) cost recovery of development-induced public infrastructure investments (e.g., impact fees, taxation). Regional cooperation (through MPOs) fostering a strong business climate, and working with neighborhoods will also be important to corridor development.

Developers can be a risk-averse group, and will consider a variety of factors before making a final business decision. Market studies will determine a proposed project's feasibility at a certain location, and the developer will consider the size, location, environmental constraints, and access of a site. Existing and programmed transportation improvements play a role in the decision-making process, though are not the driving force itself. The jurisdiction's willingness to work with developers, and the predictability of their development permit and exactions process is also important.

## Impact of Roadways on Natural Resources

### Key Findings

- Indirect impacts to wetlands include increased ponding, greater water level fluctuation, and/or hydrologic drought in urban wetlands.

- Indirect effects on wildlife include reduced access to habitat due to road avoidance and human exploitation.
- The changes in hydrology indicators caused by watershed urbanization include increased run-off volume, increased peak discharge, increased magnitude, duration and frequency and bankfull flows, flashier, less predictable flows, and decreased base flow.
- Watershed development and the associated increase in impervious cover have been found to significantly degrade the physical habitat of urban streams.
- In general, stream habitat diminishes at about 10percent watershed impervious cover, and becomes severely degraded beyond 25percent watershed impervious cover.
- Impervious cover collects and accumulates pollutants deposited from the atmosphere, leaked from vehicles, or derived from other sources. The pollutants build up over time but are washed off quickly during storms and are often delivered to downstream waters. This can create water quality problems for downstream water bodies.
- The direct effects of stormwater pollutants on aquatic systems appear to be a function of the size of the receiving water and the initial health of the aquatic community. For example, a small urban stream receiving high stormwater pollutant concentrations would be more likely to experience impacts than a large river, which is diluted by other land uses. Likewise, organisms in sensitive streams should be more susceptible to stormwater pollutants than pollution-tolerant organisms found in non-supporting streams.
- Transportation activities contribute significant amounts of pollutants to surface waters as goods and people are moved by rail, air, bus, truck, or car. The terminals, transportation routes, and service and maintenance areas are all sites of pollutant buildup and potential release. Motor vehicle pollutants accumulate on freeways and expressways, highways, streets, and parking lots. Motor vehicles deposit fuel, oil and grease, hydraulic fluids, coolants, exhaust emissions—particulates and gases, tire rubber, litter, metals, asbestos, and nutrients on streets. Deicing salts, pavement debris, vegetation debris, animal wastes, litter, fertilizers, pesticides, chemicals, and material from adjacent land also accumulate on streets. Because the transportation-related urban surfaces are impervious and designed to drain very quickly, they play a particularly important role in the transport of pollutants.
- The environmental impact of roadway construction or roadway widening projects extends beyond the footprint of the roadway. The same is true for any man-made development that creates impervious areas like rooftops, driveways, parking lots, or runways. Roadway run-off affects both water quality and water quantity.
- Water drains off of impervious areas and into surrounding receiving waters faster during rain fall. Run-off from roadways also carries sand, dirt, deicing salt, and grit as well as small amounts of fuel, oil and heavy metals that come off of vehicles. These pollutants are carried swiftly to receiving waters and typically are not treated.
- Run-off from roadways decrease base flow in receiving waters and increase peak flows during rain events. This results in a greater variation in stream flow which affects habitat for fish, wildlife and insects.

For this study these impacts are treated as direct impacts of the project and are discussed in Section 3 of the EIS, most notably in the wetland, surface water and groundwater subsections. The impacts above do not meet the CFR definition of indirect effects as noted in the introduction. One could argue whether the impacts above are direct and indirect, but ultimately the important point is that the impacts are documented.

# Results of Interviews

The study team met with three Town of Waukesha Board supervisors, the City of Waukesha Planning Director and City Engineer, City of Pewaukee Planning Director and the Waukesha County Planning Director between January and March 2011.

The purpose of the meetings was to get input on the potential indirect effects of the proposed West Waukesha bypass from the perspective of local and county planning staff[1]. The study team asked the same eight questions at each of the four meetings.

Input from the Waukesha County Planning Director was more broad, while input from the two cities and the town was more focused on their jurisdiction.

Common themes from the interviews are:

- The west side of Waukesha provides the only area for the City to experience new growth since there is vacant land on the City's west side.
- There are environmental areas in and near the study area that are a barrier to development either because they are publically owned or they are wetland, or both. These include the Retzer Nature Center, a wetland south of Retzer, the Vernon Marsh. The Waukesha School District property on the west side of County TT (Merrill Hills Road) is also a barrier to residential development.
- The construction of County TT (Meadowbrook Road) between Northview Road and Summit Avenue in the 1990s helped spur development in the County TT corridor (mostly between Northview Road and Madison Street) by enhancing access to I-94.
- Employment growth is not anticipated in the indirect effects study area because it is primarily residential or farmland today and land use plans envision primarily continued residential development. An area that could see employment growth through commercial redevelopment is on the east side of the City and Town of Waukesha along WIS 59/164 near Arcadian/Greenfield Avenue (outside the indirect effects study area).
- Most of the development in the study area occurred after the Waukesha bypass was mapped. The residential development north of Northview Road occurred with the understanding that the road would become the Waukesha Bypass. The large setbacks, having the rear of the properties face County TT, and no driveways onto County TT are examples of this. Some development south of Madison Street is older and predates active land use planning to accommodate the bypass. The newer development south of Madison Street, like Kame Terrace was developed planning for the Bypass.

[1] The study team met with three Town of Waukesha Supervisors because the Town does not have in-house planning staff.

- The Waukesha Bypass would not affect residential development, but would improve regional connectivity because there currently are not a lot of good north-south roadways on Waukesha's west side. It may improve viability of businesses in Waukesha by enhancing access to I-94, especially westbound.
- The availability of sewer and water will have a greater effect on land use patterns in the study area than the Waukesha Bypass. The bypass will accommodate planned development and most likely not spur unplanned development.
- Additional points made by each of the communities are noted below. A summary of each meeting is located in Appendix A.

## City of Waukesha

In the study area additional residential growth is anticipated to occur on both sides of Madison Street, west of County TT. Residential lots in this area have already been platted and this land has been annexed into the city. Outside of the study area residential growth is planned in both the south and southeast sections of the city.

The planning director did not think the alternatives at the south end of the project will have a different impact on regional development because the two alternatives are relatively close to each other.

The Waukesha Bypass will fit in well with the city's planning goals.

## Waukesha County

The County TT/US 18 intersection has been a center of growth over the past 5 years. A medical facility, condominiums, and residential growth has occurred along US 18 west of County TT and a large apartment complex (The Lodge) was constructed along the east side of County TT. A senior housing development has also been proposed along the west side of County TT. The planning director believes that the prospect of the bypass is fueling the plans along County TT and US 18.

The planning director does not see a shift in the location of regional growth centers as a result of this project. He believes people would use the bypass to access existing employment centers. He also noted that there is not a lot of planned commercial development in this corridor.

The planning director noted that demographic data show that household size is declining. In the year 2035 the average household is expected to contain 2.5 persons. The population is also aging. In 2000 the average age was 38.1. This average is expected to increase as the baby boom generation ages.

The Retzer Nature Center is expected to expand as well. As part of potential development along Madison Street, a developer is providing the county with some environmental corridor land.

He also noted the entire project area is within the sewer service boundary.

The planning director believes development patterns will be the same whether the Bypass is 2 or 4 lanes. He also noted that it was difficult to imagine any development in the Pebble Creek area because of the surrounding wetlands. He noted the Golf Course East Alternative area is already developed.

The planning director said that SEWRPC is planning on updating its Critical Species Plan and that could be a good resource. He said NR 115, which focuses on impervious surfaces, is being updated as well. The County Farmland Preservation Plan was recently completed and will be considered as an amendment to the county's development plan. None of the farmland along the project corridor was proposed as a preservation area.

## Town of Waukesha

The group of three Town Board supervisors interviewed noted that the entire town could be impacted, especially as it relates to traffic. There could be impacts on Saylesville Road (County X) south of WIS 59. Specifically, it could increase traffic volumes and speeds on this stretch of road. It might also cause an increase of traffic on Green Lane as people use this as a shortcut between Merrill Hills Road and Sunset Drive. The town's land use plan shows much of the open land located near the study area as primary environmental corridors or open land to be preserved. The open land to be preserved is part of the land use plan but the plan serves only as a guide. This land could be developed if the landowner wanted it to be developed. There is one small subdivision south of the project area that is being developed and is not dependant on the bypass project. It was concluded that the presence of the bypass would not have a big impact on development patterns on the west side of the town.

Most of the growth in the area is taking place in the City of Waukesha. It may change traffic patterns and volumes in the town. While there would be really no impact on residential development, if the Sunset-to-County X alternative is selected, it could spur commercial development on Genesee Road (County X) south of Sunset Drive, an area that is currently residential. Additional commercial uses along Sunset Drive east of County X in the project corridor could also develop, however, existing development patterns are unlikely to change.

The supervisors noted that the Pebble Creek watershed and the aquifers in the area are notable features. Pebble Creek is a high valued creek with high quality wetlands surrounding it. The preservation of open space is also important to the town. Not every open space is developable. There is a lot of undeveloped land located within the town. Improving traffic safety is also important. It was noted that there are no good through routes in the Waukesha area and this leads to traffic safety issues.

The supervisors noted that most of the growth areas in the Town were not located near the indirect effects study area. The Vernon Wildlife Area (Vernon Marsh) is located south of the study area and prevents development in that location. The areas around the marsh are also County-protected areas. Undeveloped areas in the Town that are potential areas for development are located along WIS 164 on the east side of the Town (outside the indirect effects study area). The WIS 164 and Sunset Drive intersection is a commercial growth area. Most of the Town's growth area is located on the east side along the WIS 164 corridor. There is also potential for growth around the former Wal-Mart site at the WIS 164/Arcadian Avenue (WIS 59) intersection, however, construction of the bypass would have no impact on growth at this area. South and east of town there will not be a difference in development between the two alternatives.

The supervisors thought that if the Pebble Creek alternative was selected for the bypass route, it would decrease traffic at the Sunset/County X intersection and would not enhance economic development potential for the Town at this intersection. Outside of the immediate area, the selection of the Sunset-to-County X Alternative versus the Pebble Creek Alternative would not

have much of an impact on development in other parts of the Town. Development on the east side of town is not dependant on the bypass. The southeast part of the town would see no benefits from the bypass project. The group also said that that it would be easier for people from Mukwonago to utilize WIS 83 to reach I-94 as opposed to using the proposed West Waukesha Bypass.

In regards to demographics, the group noted that they are currently seeing a turnover of homes to a younger population. In 20 years the town could have an older demographic due to this current influx of younger residents. Most residences in the town are single-family structures. The town is looking at increasing densities (multi-family units, but not apartment complexes) in some areas and this could lead to future growth. The general consensus of the group is that the town population is very stable and should remain that way.

The availability of water and sewer services are important factors that contribute to development, especially commercial development. Demand and zoning issues play a large role in residential development. Transportation costs (cost of gasoline) also impact where people live and is a factor in the location and pace of development. The town is looking to zone certain residential areas for smaller lot residences. This increases the amount of open space.

The Bypass would not enhance development except at the Sunset Drive/County X intersection and along County X south of Sunset Drive. The group noted that this project would not improve the residential living environment for those who live along the roadway. It would not enhance the value of their property or improve their lifestyle.

In regards to known development in the area, the Lathers property located to the south of the study area could be developed into residences. This was approved at the last Town Board meeting. There is 84 acres available for development and at most 48 residences. The DNR also recently acquired 160 acres contiguous to the Vernon Marsh in this area.

It was also noted that it is key to provide highways that make it easier for residents to get around and through the community. The Bypass would not have much of an impact on people attempting to access downtown Waukesha. The Bypass would improve safety along the selected route, especially north of Sunset Avenue.

One indirect effect of the Bypass is that the town may take jurisdiction over some additional roads per the terms of the 2009 memorandum of agreement between the Town, City, County and WisDOT. The supervisors felt that it also would not increase the town's tax base because some taxable property would be acquired as right-of-way and because the project may decrease the property value of properties along the selected route. The Sunset-to-County X alternative would be more beneficial to the town because it would provide the opportunity for new commercial development at the Sunset/County X intersection and County X south of Sunset Drive.

The supervisors stated that the Pebble Creek alternative had negatives that included the loss of commercial potential at the Sunset Drive/County X intersection, environmental concerns, loss of property, and reduced property value for existing residents.

## City of Pewaukee

The planning director did not envision many direct or indirect impacts on the City of Pewaukee. There may be additional traffic due to easier access to the city. There would not be

any land use changes in Pewaukee and it would not change the type or pace of development. Most remaining areas for development in the City of Pewaukee are located in the northern part of the city and the presence of the bypass will not impact this development.

Pewaukee owns the land between the frontage road and the entrance/exit ramps in the SW quadrant of I-94/Meadowbrook Road as well as the land in the NW quadrant of the interchange. The state owns the Park and Ride land in the NE quadrant. The city's future land use map shows the land in the SW quadrant as government/institutional and in the NW quadrant as medium-density residential. These land uses would remain in place and they would not permit commercial development at this intersection. The City of Pewaukee is working with the City of Waukesha to sell the former Pewaukee fire station building in the NE quadrant of the Meadowbrook Road/Northview Road intersection. The City of Waukesha would turn this building into a maintenance building for the planned Meadowview Park.

The planning director noted that any development that occurs in the bypass area will occur based upon the availability of sewer and water connections and not because of the bypass. In the City of Pewaukee, there is an area zoned for low density residential development located west of Meadowbrook Road and south of Northview Road. There will be about 35 residences in this area. Due to rock formations close to the surface, septic systems in the area are failing. A developer would have to purchase sewer service from the City of Waukesha. Waukesha is reluctant to extend their water service further west and Pewaukee is thinking about a community shallow well in the area.

Most of the development along the bypass corridor is already in place. There should be no changes in land use as a result of the project. There are only a handful of open properties along the corridor. The area north of Rehabilitation Hospital of Wisconsin (west of Meadowbrook Road between Northview Road and Summit Drive) used to be owned by the City of Pewaukee before being transferred to the City of Waukesha. Pewaukee sees residential development for the area (Jason Fruth with Waukesha County noted the City of Waukesha was contemplating a senior housing development at this site).

## Expert Panel Input

The expert panel roster (see expert panel bios following the references) was initially developed by CH2M HILL and Waukesha County DPW and then modified based on discussion at the April 2011 progress meeting attended by the project management team (Waukesha County, City of Waukesha, Town of Waukesha, WisDOT). The panelists were people who are generally familiar with Waukesha County but care was taken not to invite people who have a vested interest or a clear preference for one alternative over another.

Following input from the project management team the study team began making calls to invite panelists. Most of the original roster of invitees agreed to participate. Additional invitees were contacted to provide the expertise of those original invitees who could not attend.

The expert panel started off the day with a brief bus tour of Meadowbrook/Merrill Hills Road south from I-94 which included a driving tour of the Sunset-to-County-X Alternative as well as a visual overview of the Pebble Creek Alternative for completing the connection to WIS 59. These alternatives and their connection between I-94 on the north and WIS 59 on the south are collectively referred to herein as the "project corridor."

Following the bus tour the panel returned to the meeting room and listened to a presentation on the history of the West Waukesha Bypass, including the original mapping of the Bypass; the existing as well as the planned and potential future development and uses along the project corridor; the shift in growth and demographics to the area; the challenges that Waukesha County faces with drinking water; the alternate roadway options that were/are being considered for the project and their environmental impacts; the impact of designing a safe, efficient, and aesthetically pleasing roadway; and the planned expansion of other major roadways that may have a direct or indirect impact on the project corridor, such as WIS 83, that were considered as a part of the traffic analysis for the project.

The remainder of the facilitated discussed focused on three areas: the Built Environment, the Natural Environment, and the Social Environment.

## Built Environment

The first of the three discussions was on the built environment. Charlie Webb gave a presentation on the history of the West Waukesha Bypass planning and land use in the study area.

After that presentation the first question the Panel addressed in regards to the Corridor was "What factors influence development?" Factors that were deemed to influence development included:

- real and perceived demand of the market;
- access to roadways, highways and cities;
- project feasibility;
- zoning and other governmental restrictions;
- level of taxation;
- workforce quality and availability;
- financing availability;
- demographics and demographic trends; population growth and true regional growth;
- quality of schools and natural areas;
- transportation options;
- availability of utilities and other public infrastructure;
- character of the community and the amenities it offers; and
- the supply of developed and developable land parcels.

The second question the Panel addressed in regards to the Corridor was "What role does transportation play in development?" Transportation was deemed to play a significant role in development with the following factors influencing development:

- the efficiency of the path of travel;
- the availability of alternate modes of transportation;
- the aesthetic quality of the transportation mode and route;
- the addition as well as relocation of businesses within a trade area;
- cost of transportation on residents and businesses in both time and expense;
- level of travel safety afforded;
- design limitations due to topography and the environment; and

- the roadway's design in response to the actual and anticipated traffic volumes.

The role that transportation plays on development changes as the economy changes. Impacts like higher gasoline price, stagnating wage growth, and high unemployment foster increased trip-chaining, carpooling, usage of park-and-ride facilities, and infill development to decrease commute times and travel expenses. Higher transportation costs also encourage the use of alternate modes of transportation such as mass transit and the use of pedestrian/bike/multi-use paths for both recreation and transportation purposes. The reliability and predictability of the transportation system in time and cost impacts the level and type of development that may occur in a given area. Roadways are necessary to open up areas to development with road type, design, and directness of route influencing the safety level of the roadway's perception in the community.

County as well as keeping Waukesha County a vibrant area for residents and businesses that benefit from the proximity to Milwaukee and being located between Milwaukee and Madison.

The economic slowdown and financial challenges facing development today have contributed to increased cooperation between the public and private sectors in an effort by many communities to continue to grow their tax base to address the increasing cost of community services and public improvements. These economic realities have contributed to communities offering financial assistance as well as design flexibility in items like density in an effort to continue to growth their tax base. Development plans have been altered to respond to these economic realities and include items such as increased density and the construction of sustainable buildings in an attempt to increase financial feasibility of development, lower operating costs for residents and building owners, and more efficiently utilize community services and infrastructure. The changes in density and building design are also responding to the changes in demographics.

The third question the Panel addressed in regards to the Corridor was "How have things changed in the last five years?" As mentioned above, the economy has negatively impacted employment and wages and facilitated a move towards developing more sustainable residences with greater density. Due to cost to construct, operate, and maintain "McMansions" and the current lack of demand for homes in this category, both developers and communities are recognizing the need for more sustainable developments with increased density. In addition to responding to market economics, this change is responding to changing demographics, the aging population that is looking for cost effective independent living choices, and a desire for an increased sense of community. To help bridge the gap between the cost of development and the market price for the completed product, given the downward pressure on sale prices and rents, communities and developers have been getting creative in their approach to building and financing projects. Development tools like the use of tax credits, increased density, TIF, and other public financing options have been and are being used to help lower development costs to meet the market's pricing expectation and to continue to grow a community's tax base.

The existence of infrastructure such as roads, utilities, and schools is helping to facilitate infill development in an attempt to further respond to pressure on project costs. The design of the roadway can have an impact on neighboring development with good designs fostering development and redevelopment. The design of the Corridor is encouraged to provide both a safe and aesthetically pleasing driving experience. Long term concerns exist for the permanent

funding of improved roads and other public infrastructure due to the current state of public finances and their funding source.

The fourth question the Panel addressed in regards to the Corridor was "Do these development factors exist in our Corridor?" The short answer is yes, they do exist in the Corridor. The area along the Corridor is anticipated to continue to grow in population and traffic due to its location in Waukesha County and the ease of access it affords to I-94 and to the City of Waukesha. The location of the road is anticipated to provide opportunities for an aesthetic roadway design complete with bike and multi-use paths and its design is encouraged to mitigate wetland and environmental impacts. Furthermore, provided that the Pebble Creek Roadway option is chosen, the Corridor will be completed in an efficient and safe roadway design that will facilitate this anticipated growth along the Corridor. The Corridor is not expected to operate as the strictest definition of the term "bypass" might connote due to the existence of traffic signals and cross streets; however, the Bypass will facilitate both a safer mode of travel as well as a more efficient path of travel to the west and southwest side of Waukesha and may lessen traffic congestion on other City streets[2].

The development along the Corridor is expected to progress as currently zoned and remain primarily residential. The economy and demographics will continue to influence the type, design, and density of housing demanded by the community. Once the road is improved, traffic patterns for both residents and businesses are likely to change to take advantage of the safety and efficiency improvements provided by the Corridor.

There was concern raised that development will occur along the Corridor on what are today farm fields that in turn will increase the propensity for other farmers to leave farming and look to develop their land. This concern; however, is mitigated by the existence of floodplains that limit development as well as zoning and other governmental restrictions and the health of the broader economy which will also influence the demand and timing for development.

The fifth question the Panel addressed in regards to the Corridor was "How different is the anticipated development from what is currently planned?" The development of the area along the Corridor is anticipated to be developed very much along the lines of what has been planned by the adjoining communities and SEWRPC. If the Corridor provides a safer and more efficient path of travel than what exists today on either the existing Corridor or neighboring streets, the Corridor in anticipated to encourage traffic to travel down the improved roadway as opposed to these alternate routes thereby improving the safety and efficiency of all streets. An improved roadway will also support more flexible development and redevelopment plans that adjoining communities may elect to pursue in response to the changing demographics and economics as previously discussed.

2 The planned widening of County TT has been referred to as the West Waukesha Bypass for decades. Originally conceived as a bypass, County TT has seen extensive residential and commercial development adjacent to it over the last 30 years. Whereas bypasses are designed to serve primarily through-traffic, traffic that does not have an origin or destination in the study area, County TT is intended to serve the planned development adjacent to it as well as through traffic. The project is not intended to serve as a bypass around all development in Waukesha's west side but rather to serve that development and provide a safe and efficient north–south arterial on Waukesha's west side.

The panel felt that the Pebble Creek Alternative seems to provide the most efficient for traffic and most closely resembles the "Bypass" as previously mapped and envisioned. The Sunset-to-County X Alternative is less efficient.

## Natural Resources

The panel listened to a presentation to the panel on the direct environmental impacts of the project by Dan Dupies/CH2M HILL. Dan is managing the study team's preparation of the EIS. The presentation prompted several questions, which Dan answered with assistance from Tom Slawski/SEWRPC. These questions and answers can be found in the *Indirect and Cumulative Effects Analysis: Summary of Expert Panel Input* report in Appendix A.

Following Dan's presentation the panel's discussion focused primarily on the Pebble Creek corridor, specifically the area between Sunset Drive and WIS 59.

The panel noted that the Pebble Creek Alternative that straddles the transition between upland and wetland may degrade the ability of the Pebble Creek corridor to support existing threatened and endangered turtle and snake habitat as well as potentially degrade water quality due to its proximity to Pebble Creek. Conversely, Sunset Drive already exists, that habitat has already been severed. In effect, the damage has already been done. The Sunset-to-County X alternative is a widening of the existing roadway, which would not increase the amount of fragmentation of the stream corridor lands beyond what has already occurred. For a better understanding of the definition and description of riparian buffers and their function as well as the critical linkages between wetland and upland, Tom Slawski referred the rest of the panel to SEWRPC's Riparian Buffer Guide entitled "Managing the Water's Edge: Making Natural Connections."

There will be degradation in the quality of the Pebble Creek wetland if the project is built. Will the degradation be too great, the panel wondered? Although the level of degradation may be difficult to determine, there will be direct wetland impacts associated with this project: proposed 4.2 acres of wetland impacts north of the Railroad tracks; proposed 7.1 acres of wetland impacts associated with the Sunset-to-County X Alternative; and proposed 4.2 acres of wetland impacts associated with the Pebble Creek Alternative[3]. In addition, there are four threatened and endangered species that could be affected by the project that include the Butler's Garter snake, Blandings Turtle, Slippershell Mussel, and Small White Lady's Slipper[4].

There was concern over the precedent of building a road through a high-quality wetland area being an indirect effect in itself as it relates to future similar projects. The *Pebble Creek Watershed Protection Plan* recommends maintaining and enhancing existing linkages between terrestrial (including wetland and upland) and aquatic biological communities (The plan discusses the potential Waukesha Bypass project on page 156). The panel felt the Pebble Creek Alternative would sever one of the largest contiguous primary environmental corridors within the Pebble Creek watershed, which contains both high quality wetland and upland communities.

[3] Since the expert panel meeting in May 2011 the wetland impacts of the alternatives under consideration have changed. Also, the Pebble Creek Far West Alternative, which had been dismissed from consideration at the time of the expert panel meeting, is again being considered because of the change wetland impacts based on SEWRPC's summer/fall 2011 wetland delineations.

[4] The seaside crowfoot was identified in the project area in fall 2011. Several protected species of mussel and the long-eared sunfish, and the little brown bat were also noted in the project area.

It is difficult to quantify the impact on water quality and wetland habitat quality if the Waukesha Bypass were built and spurred additional development in the study area. The best way to assess the indirect effect on wetland habitat quality is to rely on previous studies and assess the issue qualitatively. With respect to water quality, however, the impact of a change in land use from wetland to road surface can and should be assessed quantitatively using appropriate water quality models.

A riparian buffer effectiveness analysis was included within the *Pebble Creek Watershed Protection Plan*. This analysis indicates that riparian buffers are extremely effective in protecting water quality by reducing contaminant loads as well as providing habitat for terrestrial wildlife and in-stream aquatic communities. The Pebble Creek watershed plan concluded that the existing and future water quality and associated high quality fishery and wildlife in this river system was largely due to the high quality and extent of the riparian buffer land uses and environmental corridors adjacent to Pebble Creek. The plan on pages 151 through 155 recommends actions as they relate to buffers in non-agricultural areas of the Pebble Creek watershed specifically to protect and improve surface water and groundwater quality and aquatic life.

In terms of the specific recommendations relating directly to the Pebble Creek alternative for the Waukesha Bypass, the plan states that:

- It is recommended that the bypass be located so as to avoid impacting the highest quality reaches with the highest quality fisheries and habitat of the Pebble Creek system, namely reaches LP-1 and LP-2 on Map 19 in Chapter IV of this report.
- It is recommended that the proposed bypass be located so as to minimize impacting the primary environmental corridor adjacent to Pebble Creek to avoid impacting natural areas or critical species habitats, and cause no net loss of wetlands within the Pebble Creek watershed.

The Sunset-to-County X alternative for the Waukesha Bypass was not specifically addressed in the plan, but is wholly consistent with the plan according to Tom Slawski/SEWRPC, the plan's main author.

The plan also recommends the establishment of buffers with a minimum width of 75 feet or greater for purposes of either establishing or restoring protections in areas where such levels of protection do not currently exist. In the case of the Waukesha Bypass, however, the Bypass alternative that protects and maintains the greatest buffer widths and maximizes connectivity between upland and wetland (i.e. Sunset-to-County X alternative) should be preferred based upon the recommendations in the Pebble Creek Watershed Protection plan according to Tom Slawski.

The primary indirect effect of the project will be from run-off which will degrade water quality no matter what mitigation measures are put in place. While indirect effects may occur from development in the watershed, not just from the Waukesha Bypass, such development would never be allowed within the same areas as proposed to be in the Pebble Creek bypass alternative due to the fact that these lands are Advanced Identification of Disposal Areas (ADID) wetlands that are unsuitable for the discharge of dredge or fill materials. Consequently, it is not accurate to compare this alternative to other development within appropriately zoned areas of the watershed. In addition, run-off from roadways is in general far more polluted in

salts, heavy metals, and other pollutants than runoff from other forms of development. This is true for any project, not just this one. [no details were provided to the expert panel on how stormwater run-off associated with the project would be managed or how effective the management practices would be.]

The Fox River Parkway bike trail east of County X is not heavily used. Increased use of the trail and Fox River corridor as a result of a multi-use trail connection from the Waukesha Bypass to it could change quality of park areas through increased use. This would be good for recreation, bad for ecology.

The group's consensus during this session was that south of Summit Avenue the project would transition land use and the resulting impacts to wetland, water quality, loss of open space, and induce sprawl (and loss of development in other locations, for example west of the Corridor). [This was not consistent with the group's consensus during the earlier discussion of the built environment, which was that the study area has been and will continue to be an attractive area for development regardless of whether the Waukesha Bypass is built. The differing conclusions may have been a result of a greater understanding of other transportation projects in the area, or perhaps the timing of the development would be less under the No-Build Alternative. ] The group did acknowledge that the planning/zoning already in place contribute to the need for the roadway. Development has already started.

The expert panel noted that once 25 percent of a watershed develops, research has shown it is hard to maintain water quality and biological diversity. Approximately 41 percent of the Pebble Creek watershed was urbanized in 2005 according to the Pebble Creek Watershed Protection Plan. There is a threshold of how much development a stream can handle. The expert panel felt there has been a significant water quality impact already regardless of the Build Alternative selected. The 41 percent urban development corresponds to about 9 percent "directly connected" imperviousness (3 percent in the Brandy Brook subwatershed and 12 and 14 percent in the Lower and Upper Pebble Creek subwatersheds, respectively). That level of imperviousness is just below the threshold level of 10 percent at which the previous peer reviewed studies indicate that negative biological impacts have been observed. Therefore, this watershed is at a critical threshold to continue to be able to support brook trout and brown trout as well as the high quality warm water fishery without special considerations to protect this stream system as development continues to occur.

## Possible Mitigation Measures

Possible mitigation measures suggested were:

- conservation easements,
- farmland preservation, including Transfer of Development Rights,
- help get people out into wetlands to enjoy them and learn about them, and
- road signs that read "You Are Now Entering the Pebble Creek Watershed"
- Wildlife underpasses would allow animals, including threatened and endangered species, to move back and forth between upland and wetland. Locally, these have been installed in Germantown.

- Fish and other wildlife passage for crossings. Keep passage free of debris.
- Project staging – build only segment north of railroad first? Put off construction of the part south of Summit Avenue until traffic counts warrant it. This comment was based on some skepticism of the future traffic forecasts for 2015, 2025.
- Develop environmentally strict performance standards. Use the project as a showcase – like Complete Streets. Go above and beyond regulatory requirements.

## Social Environment

The study team informed the Expert Panel about the existing social and cultural resources located within and near the West Waukesha Bypass study area. This discussion included identifying existing residential communities, churches, schools, recreation facilities, employment centers, and land use patterns and identifying any potential changes in those uses as a result of this project. The following is a summary of the elements presented and the Expert Panel responses to those elements. At the end of the discussion, the study team asked the Expert Panel about the key factors and questions they would ask regarding social factors. The responses are presented at the end of this section as opportunities and limitations.

### Existing Conditions

**Residential Communities.** The development between I-94 and Northview Road along County TT consists of newer single-family housing. This community developed as the County TT roadway and access to the highway was improved. This residential community stretches from County SS on the west to University Drive on the east. The residences in this area access County TT via main subdivision entrance roads and face inward towards the subdivision and away from County TT. This community consists of many families with children attending nearby schools, such as Meadowbrook Elementary School.

Previously, the study team held a meeting at Meadow Brook School to discuss the project with the local residents. The residents noted that they are concerned about the safety of children crossing the proposed Bypass to access the school. One optioned discussed to provide for a safer crossing consisted of a pedestrian bridge over County TT.

Additional neighborhoods are located along County TT between Northview Road and Madison Street. Like the residential area to the north, these residences do not have direct access to County TT. South of Madison Street there is a handful of residences that have direct access to County TT. Future access to these properties would be via the existing County TT roadway which would serve as a frontage road to the new Bypass alignment. The character of this area is different from the neighborhoods to the north. The houses in this area have direct access to County TT, larger lots, and in many cases, are significantly older.

The panel debated if measures should be taken during design of the roadway to maintain the rural character of this area. Views to existing farmland (recognizing this land use may change in the future) and wetland areas should be protected. Suggested design modifications include street trees, possibly being planted closer together than regular specification suggest, using species more indicative rural areas such as larger maples and oak trees, addressing the quality and look of the shoulder, and directing any street lighting such that the light does not reflect upward or extend past the primary roadway corridor.

The Hawthorne Hollow neighborhood is located to the west of the proposed Pebble Creek alignment. This neighborhood has a more mature housing stock than the neighborhoods on the north end of the project corridor. Access to this neighborhood would remain on Merrill Hills Road. No direct access would be provided to the Bypass. The panel noted that the residences should be buffered from the Bypass in a manner that is consistent with the existing vegetation of the area.

The Ridge View neighborhood is located in the southwest quadrant of the Sunset Drive/County X intersection. Due to the surrounding built and natural environment limitations, this residential area is not likely to expand in size. As both Sunset Drive and County X have already experienced increased development and use, the panel agreed that the Bypass would pose limited adverse impacts to this neighborhood.

Places of Worship. There are three churches located within the study area: Faith Baptist Church, Apostolic Life Tabernacle, and St. John Neumann Congregation. Faith Baptist Church is located in a commercially developed portion of the project near intersections controlled by traffic signals. It is not considered to be affected by the proposed Bypass. Access to the Apostolic Life Tabernacle Church would continue to be via Merrill Hills Road and likewise would not be adversely affected. St. John Neumann Congregation is currently accessible from an already improved section of STH 59. The West Waukesha Bypass is not anticipated to have an indirect impact on the future viability of these churches.

Schools. There are 3 schools and one future school site located within or near the study corridor: Meadow Brook Elementary School, University of Wisconsin-Waukesha, Waukesha Christian Academy, and the undeveloped land owned by the Waukesha School District located north of the Glacial Drumlin State Trail.

As previously noted, safe access for students to and from Meadowbrook Elementary School is a concern for local residents. Furthermore, should residential development increase in this area, the roadway should be designed to provide sufficient access for the increased usage. Most of the students are driven to the school, however all modes of access should be accounted for. The University of Wisconsin-Waukesha campus is located to the east of the Bypass corridor. It was assumed that students would access the campus via local roadways as well as the proposed Bypass. Should attendance increase, the proposed Bypass would increase the overall driving safety of the area as the school offers both day and night programs.

The Waukesha Christian Academy would have access via the proposed frontage road. This is a K-12 school with a relatively small enrollment. Considerations for this site were similar to those addressed for the rural community homes in this area; the rural character should be maintained and safe conditions should be assured.

The proposed bypass cuts through a portion of the farm land currently owned by the Waukesha School District. The School District has stated that this land may be developed in the future as a middle school. While the timing of the development of this parcel is not known the panel suggested that this land be considered farm land and taken into account as such in considering the maintenance of the rural character of the residential area.

Recreation Facilities. The existing roadway passes by or provides access to several recreation facilities used by the residents of Waukesha County and beyond. Kisdon Hill Park is primarily an undeveloped area adjacent to County TT connected to a larger park on Summit Drive

consisting of baseball/softball fields, a skateboard ramp area, a play ground area, and picnicking area. The area adjacent to County TT is rarely used by park users.

The planned Meadowview Park is currently owned by the City of Waukesha and proposed to be developed as a regional park providing resources to a larger area. Access to this park, once developed, should be from Northview Road, and not County TT.

Good Times is a privately-owned summer recreation facility for children. While it is access is from Summit Drive, it has considerable frontage along County TT. Expansion at this specific area is limited by the existing commercial development at all corners of the intersection.

Sunset Park, located along Sunset Drive west of the study area, is owned by the Town of Genesee. It provides parking, soccer fields, and baseball fields as well as some playground equipment. It will not be directly impacted by the proposed project but use of the park may increase as access to the area is improved and it may draw baseball teams from further away.

The primary recreation areas accessed from County TT are Retzer Nature Center and the Glacial Drumlin State Trail. Retzer Nature Center is located to the west of County TT south of Madison Street. Retzer Nature Center is a community facility used by families, school groups, and numerous organizations. The safety improvements at the Madison Street/ County TT intersection would benefit the users of this park.

The Glacial Drumlin State Trail is a recreational trail used by people throughout the region. It is used as both a bike and pedestrian trail. The trail is primarily recreational in nature and not considered a viable transportation route for people walking or biking to commercial or employment areas. Currently there is limited parking for those attempting to access the trail at County TT. The parking consists of parking vehicles on the narrow shoulder along County TT near the trail. The panel was informed that the Wisconsin Department of Transportation (WisDOT) prefers eliminating the existing at-grade crossing with the trail and the Wisconsin & Southern rail line. The preliminary design has the new Bypass alignment on structure over the trail, Wisconsin & Southern line, and Pebble Creek, while the existing County TT alignment and bridge over Pebble Creek can remain in place to provide access and serve as a trailhead for the Glacial Drumlin State Trail. Increased and improved parking facilities and access could increase the use of the trail.

Employment Areas. The main commercial area in the study area is centered on the County TT/Summit Drive intersection. In the northeast quadrant of this intersection there is a strip mall with a large grocery store and a Walgreens. The area also contains a gas station, banks, coffee shops, and restaurants, among other commercial uses. There is also office space in this area. Additional commercial locations are spread out through the corridor. A rehabilitation hospital is located on the north end of the corridor and a storage facility, auto repair shop, and landscaping business are located on the south end. The expansion of these commercial areas is limited due to space constraints as they are surrounded by existing residential development or wetland areas. The panel considered that the improved roadway would provide safer access and possibly increase the usage of these commercial areas.

Along the Sunset-to-County X Alternative there is existing commercial development along Sunset Drive, and a bank along County X. Similar to the commercial areas described above, it is unlikely that the commercial development in this area would increase in size due to limited space. The area is bordered by wetlands of Pebble Creek on the west side and Fox River to the

east. The proposed improvements may change the nature and/or intensity of the existing commercial areas. The Shoppes at Fox River may see increased use, and as a result, some of the existing vacant space may be filled. This would improve the commercial value of the area.

Beyond the immediate area, major employment areas include GE Healthcare, located north of I-94, and Generac, located to the southwest along Genesee Road. Both of these companies employ people from within and outside of Waukesha County. Both proposed alternatives would improve the commuting times for both the employees and the larger truck operations providing supplies to these companies. The panel did not think that the road improvements would increase the use of the road by employees and suppliers, as they most likely already use the existing road. It would however reduce the travel time to these locations and provide a more consistent travel time.

Land Use. Historically, this western portion of Waukesha was viewed as the end of the city (and Milwaukee metro area) and the beginning of the rural areas. To some degree, this is still true. There is farmland and open space (wetland areas) existing along the western side of the roadway. The panel found it difficult to separate impacts of the road improvements from impacts of a growing community and population, regardless of the road work. While the country is currently experiencing a recession and residential development has been limited, it was the opinion of the panel that this was a short term issue and that residential development in this area would increase. Primarily, the only land available for such subdivision-level development along the corridor is existing farmland.

The panel also discussed the responsibility of being stewards of the land and landscape. This includes not only following DNR policies regarding wetlands, but taking a stance of limiting the size and scope of new development. Comments included instituting development boundary zones such as has been done in Oregon, changing zoning to increase the opportunities for higher density living, and the possibility of developing mixed use areas where residential development and commercial development are merged in the same area, thus maximizing the potential use of space.

### Opportunities

Recreation Facilities. The Project Team should consider possible expansion plans for Retzer Nature Center. There may be an opportunity to connect the Glacial Drumlin State Trail to the Nature Center, increasing usage of both facilities. People may be more likely to visit the Retzer Nature Center if a new access route to the Glacial Drumlin State Trail runs past or through the nature center. There is also potential to connect the trails located along the east side of the Fox River, south of WIS 59, to the Glacial Drumlin State Trail. It was noted that a bike lane was part of the proposed roadway cross-section. Opportunities for this lane to access other trail systems (such as providing a method to go from the overpass across the rail road to the Glacial Drumlin Trail) may promote bike lanes on connecting arterial roadways.

Residential Communities. The changing population demographics may offer opportunities for altering the development patterns of Waukesha. According to data from the latest census, the population is getting older. The housing and facility needs of an older population differ from a mixed-aged population. The Project Team should consider looking at development plans taking additional factors into account, beyond just looking at the SEWRPC projected plans.

Given the number of pedestrian/vehicle crossings, the project team should review a full range of street crossing and road designs. With potential growth in this area, the number of these interactions would be expected to grow, and therefore should be addressed upfront, instead of as an after-the-fact repair.

Other. The existing level of traffic delay at Northview Road and Madison Street intersections should be reduced by the proposed road modifications. With consideration to environmental quality, the overall area air quality should improve due to reduced idling times.

Waukesha and Wisconsin should see this project as an opportunity to set a precedent. Design standards that address pedestrian use, cycle use, air quality, noise pollution, and community character could all be set to address the highest level of environmental protection, community quality, and overall safety. While the panel recognizes that there is a budget limitation for this project, there should be the opportunity to design for the ultimate, and install in phases.

Stormwater runoff will be addressed along the entire length of the project corridor. This provides an opportunity to develop a comprehensive storm water management plan that addresses both quality and quantity of runoff. This is essential and valuable as the area abuts the Pebble Creek and Fox River ecosystems.

### Limitations

The project has historically been called the Waukesha Bypass. Development conditions have changed such that it is no longer a true "bypass". Furthermore, this title has implications to the amount of traffic it may carry and the type and design of the roadway. These implications may limit the acceptance of this project. The project team should contemplate changing the name of the project.

Should the current farm land become available for development, the type and scale of the development may differ from the existing residential development in the corridor. Smaller homes and smaller lot sizes have become more desirable due to changes in the economy. The belief that smaller lots mean poorer quality should be eliminated. Throughout any and all development, Waukesha should hold the developer and subsequent owners to the highest design, construction and safety standards possible.

The stability of the local and state-wide political landscape should be considered. If current relationships between the communities change, this could lead towards instability in the future land use along the corridor. There are many public lands and political entities present along the corridor. It is necessary that tenured officials maintain an open and cooperative relationship with other entities. This is important in developing and maintaining cohesion between communities. It was noted that parkland, churches, and schools are generally stable land uses.

The Panel was informed that a noise analysis has not yet been conducted. This must be conducted and appropriate design modifications must be made to limit the adverse impacts associated with increased noise pollution on all groups in this community.

## Summary and Conclusions

The interviews with local planning and elected officials, the expert panel input and the study team's assessment are consistent on key points.

- The West Waukesha Bypass is a long-standing part of city, county and regional transportation plans, and much of the development adjacent to the planned route has been developed with the bypass in mind, particularly in the fast-growing area north of Madison Street. Therefore, to some extent the West Waukesha Bypass has already had an effect on the location of development.
- Waukesha's west side north of Summit Avenue, like much of western Waukesha County, has seen extensive development over the past 20 years. Waukesha's west side may see continued growth after the economy improves. This growth has occurred without the Waukesha Bypass. Land availability, sewer/water service availability, proximity to I-94 and the metro area are all reasons this area is attractive. These factors will make this an attractive area for development regardless of whether the bypass is built.
- There are environmental and other features that limit areas for residential or commercial development south of Madison Street. These areas include Retzer Nature Center, the Pebble Creek corridor, and the Waukesha School District property. The Vernon Marsh south of the study area and the Fox River corridor east and south of the study area also limit development.
- There is an existing county highway in place for most of the study area; the proposed project would widen that roadway but would not open up new areas to development that are currently inaccessible. The only part of the study area in which a new roadway is a possibility is the area between Sunset Drive and WIS 59. Under the Pebble Creek Alternative a new roadway would be built across this ¾-mile segment. However, no new driveways or streets would be allowed to connect to this part of the roadway due to wetland on the east side of the proposed alignment and existing residential on the west side as well as WisDOT access control policies. For these reasons the Waukesha Bypass is not expected to affect residential development in the south part of the study area.
- The expert panel concurred with planning staff and land use plans in that there is little likelihood of commercial development in the study area beyond the existing commercial areas around the Sunset Drive/County X intersection and the County TT/Summit Avenue intersection. The Town of Waukesha felt that the Sunset-to-County X Alternative would have a beneficial indirect impact on commercial development on Sunset Drive and County X. The expert panel did not see a large difference in commercial development between the two alternatives in part due to the lack of available space on the east side of County X (due to Fox River).
- The planning staff and expert panel members did not envision significant changes in the extent of residential development as a result of the project.
- The indirect effect on natural resources is more difficult to assess. Run-off from the roadway was noted as a concern by the expert panel; the study team considers this to be a direct effect of the project. The cumulative effect of the potential roadway in addition to other past and reasonable foreseeable future transportation, residential and commercial development projects is discussed in *Cumulative Effects*, the next section of this report.
- The Pebble Creek Alternative, which would lie on the west edge of the Pebble Creek corridor between the Wisconsin & Southern Railroad and WIS 59, would decrease the

habitat value of the corridor by limiting the connection between upland and wetland for those species that travel back and forth from wetland to upland.

- Run-off from the new roadway would contain pollutants that would be carried into adjacent wetland and potentially Pebble Creek if effective mitigation measures are not implemented. If this occurs it would degrade the water quality of the Pebble Creek wetlands downslope of the roadway if the project is built. This is considered a direct effect of the project. However, indirect effects in terms of the project causing additional development which then causes other wetland to be filled is not seen as a concern.

# Cumulative Impact Analysis

## Introduction

The CFR 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 or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). Cumulative effects analysis identifies any impacts that may be minimal when examined within the context of the proposed action, but may accumulate and become significant when considered with all other planned actions.

### Data Collection and Methodology

The cumulative impact analysis follows the guidance provided in the Council of Environmental Quality's (CEQ) "Considering Cumulative Impacts under the National Environmental Policy Act." The three main elements defined by the guidance and used for the cumulative impacts analysis are listed in Table 4:

TABLE 4
Steps in Cumulative Effects Analysis

| # | Step | Description | Section of Memo which Addresses Step |
|---|---|---|---|
| 1 | Scoping | Identify the cumulative effects issues associated with the proposed action and define the assessment goals<br>Establish the geographic scope for the analysis; establish the time period for the analysis<br>Identify other actions to be included in the analysis. | Introduction, Methodology, Study Area |
| 2 | Describing the Affected Environment | Define a baseline condition for resources and human communities | Existing Conditions and Development Trends, also Indirect Impact Analysis, Study Area, Population and Employment Trends |
| 3 | Determining Environmental Consequences | Determine the magnitude and significance of cumulative impacts; and look for ways to avoid, minimize, or mitigate significant cumulative effects | Analysis of Proposed Project In Conjunction with other Planned Projects |

Source: CEQ. Considering Cumulative Effects Under the National Environmental Policy Act. January 1997.

Other guidance documents that echo the direction above include, but are not limited to, NCHRP Project 25-25 Task 11: Indirect and Cumulative Impact Analysis, WisDOT's Indirect and Cumulative Effects Analysis for Project-Induced Land Development: Technical Reference Guidance Document, WisDOT's Guidance for Conducting a Cumulative Effects Analysis (2007) and the FHWA position paper on secondary and cumulative impact assessment. The literature

review and trends analysis elements of the indirect impacts analysis were also used. Finally, the analysis considered all transportation projects listed in the SEWRPC 2035 regional transportation plan as well as non-transportation projects.

### Study Area

The cumulative impacts analysis typically uses a larger study area than what is analyzed under other environmental disciplines. The Pebble Creek watershed (**Exhibit 2**) was selected for this analysis for two reasons: 1) as discussed below, wetlands, groundwater and primary environmental corridor are the key resources evaluated in the cumulative effects analysis; and 2) the watershed's boundaries include the study area and the area west of the study area that is most likely to experience development. Conversely, most areas to the east of the study area are already developed. County TT between Northview Road and I-94 is not in the Pebble Creek watershed. This area is also included in the cumulative effects study area.

## Existing Conditions and Development Trends

The following description of existing conditions and development trends in the Pebble Creek watershed is taken from the *Pebble Creek Watershed Protection Plan*. See also **(Exhibit 3)**.

"The type, intensity, and spatial distribution of land uses within Pebble Creek watershed are important elements in natural resource management. In this regard, the current and planned future land use patterns, placed in the context of the historical development of the area, are important considerations in developing and implementing this plan.

Since 1970, much, though not all, of the urban growth in the watershed has occurred in the eastern half of the watershed. Comparison of 2000 and 2005 conditions indicates that most of the development in the 1996-2005 time period occurred at the outer perimeter of the watershed."

The 2008 Pebble Creek plan represents an up-to-date assessment of the Pebble Creek watershed. It was prepared by SEWRPC and the Waukesha County Department of Parks and Land Use in cooperation with an advisory committee. The advisory committee included representatives of the communities in the watershed, Department of Natural Resources, Natural Resources Conservation Service, farmers, developers and environmental groups.

### Population and Households

The Pebble Creek watershed generally experienced stable growth in population and number of households from 1963 to 2000. Over time, population and number of households in the watershed have grown at about the same rate as population and households on a countywide basis. The resident population approximated 7,032 persons in 1963. Since then, the Pebble Creek watershed has steadily continued to increase in population, with the greatest percentage of increase occurring between the years of 1970 and 1980. As of 2000, there were approximately 15,900 individuals residing in the watershed. The number of resident households has also continued to increase, although at a slower rate than the population. As of 2000, there were about 8,400 households in the watershed. Based upon the adopted regional land use plan, the population in the Pebble Creek watershed is projected to increase through the year 2035 by about 36 percent, while the number of resident households in the watershed is projected to increase by about 45 percent.

## Existing and Planned Land Use

This section characterizes existing land use conditions as of the year 2005, describes changes in land use which have occurred within the Pebble Creek watershed since 1950, and examines changes anticipated to occur through 2035. Although a large portion of this watershed is urbanized, about 59 percent is still in rural and other open space land uses. The remaining approximately 41 percent of the watershed area was in urban uses.

### Urban Land Use

In 1950 about 2 percent of the Pebble Creek watershed was urbanized. The percent of the watershed in urban land use increased about two to four percent every five years since. Between 2000 and 2005 a larger 7 percent increase occurred. In 2005, urban land uses, which include residential, commercial, industrial, governmental, transportation, communication and utilities encompassed approximately 37 percent of the total watershed area. Residential land uses comprised the largest urban land use, covering about 2,960 acres, or about 25 percent of the total watershed. While urban development exists throughout much of the Pebble Creek watershed, it is especially concentrated in the eastern portion of the watershed in the Cities of Pewaukee and Waukesha and the Town of Waukesha. The County TT corridor is located in the eastern portion of the watershed. Between 2000 and 2005 about 760 acres (1.2 square miles) were converted from rural to urban uses. Under planned 2035 land use conditions, about 6,850 acres, or 60 percent of the watershed, are anticipated to be in urban land uses. Residential development is anticipated to comprise the majority of the increase in urban land use, an increase of about 1,480 acres of residential lands. Much of this is recommended at low densities. Under State administrative rules, sanitary sewers may be extended only to areas located within planned sanitary sewer service areas identified in local sanitary sewer service area plans adopted as part of the Commission's regional water quality management plan, which is in turn based upon the regional land use plan.

Sewer service area plans are long-range plans intended to guide the provision of sanitary sewer service over a 20-year period. Sewer service area plans are prepared through a cooperative planning process involving the local unit of government responsible for operation of the sewage treatment facility, the Regional Planning Commission, and the Wisconsin Department of Natural Resources. Such plans may be amended in response to changing local conditions and needs, as well as in response to new population projections, subject to the provisions of *Wisconsin Administrative Code* Chapter NR 121. The planned incremental development through the year 2035 is generally located within currently adopted sanitary sewer service areas in the watershed.

Urban development would be accommodated within commercial; industrial; governmental; and high-, medium-, and low-density single-family residential areas. With the exception of some outlying low- and suburban-density enclaves, these areas are generally located within adopted sanitary sewer service areas.

Refined sewer service areas have been delineated through a local sewer service area planning process. As part of this process, the community concerned, assisted by the Regional Planning Commission, determines a precise sewer service area boundary consistent with local land use plans and development objectives. Reports documenting the sewer service areas include detailed maps of environmentally significant areas within the sewer service area. Following adoption by the designated management agency for the sewage treatment plant, local sewer

service area plans are considered for adoption by the by the Regional Planning Commission as a formal amendment to the regional water quality management plan. The Commission then forwards the plans to the Wisconsin Department of Natural Resources for approval.

### Rural Land Use

In 2005, rural lands, consisting of woodlands, wetlands, surface water, agricultural croplands and other open lands, comprised about 59 percent of the total land area in the Pebble Creek watershed. Agricultural and other open land uses were the largest rural land use in the watershed, encompassing about 34 percent of the total land area. Agricultural land use is divided between active cropland and other open lands, which includes farm buildings, pasture, grasslands that have not succeeded to a wetland or woodland community, and lands adjacent to cropland, such as tree lines and hedgerows. Surface water, wetlands, woodlands, and rural open lands comprised about 25 percent of the land area in the watershed. Most of the rural and open spaces in the watershed are located in the Brandy Brook subwatershed, with scattered areas throughout the Upper and Lower Pebble Creek subwatersheds. Between 1950 and 2005 rural land use declined about 35 percent, or about 4,000 acres. Between 2005 and 2035, rural lands in the watershed are anticipated to decrease by another 31 percent. The majority of this loss is anticipated to be from the conversion of agricultural cropland and other open lands to urban lands for residential, commercial, and industrial uses. Wetlands, woodlands, and surface water are not anticipated to experience any significant losses due to current zoning ordinances within the watershed. Wetlands and woodlands are primarily located adjacent to Pebble Creek and are largely considered to be Class I and II wildlife habitat. In addition, the majority of this wildlife habitat is located within the primary and secondary environmental corridors, as well as the isolated natural resource areas."

The area north of Northview Road in the cumulative effects study area is one of the few high-density residential areas (less than 1 acre per home) in the cumulative effects study area. Approximately 300 homes are within ¼ mile of County TT between Northview Road and I-94. Meadowbrook School is the only non-residential land use in this area.

## Projects Included in the Analysis

The cumulative impacts analysis assumes build-out of those transportation projects included in the SEWRPC 2035 regional transportation system plan. The plan outlines transportation improvements needed to serve expected population and employment growth in the region from present day to 2035. Transportation improvements include new arterials and collectors, improvements to existing arterials and collectors, new interchanges along existing freeways or new arterials, and improvements to existing interchanges.

Relevant past transportation projects, defined as major new or widening projects in or near the study area, are also noted.

The Waukesha Bypass is one of only a few roadway projects in Waukesha County that would potentially involve construction of a new roadway, and the only one in the cumulative effects study area.

Other roadway improvement projects in the regional transportation plan that are also in the cumulative impacts study area are[5]:

- Reconstruction and widening of WIS 59 to four lanes from County X to WIS 83.
- Reconstruction and widening of WIS 83 to four lanes from Sunset Drive (County D) to I-94 is just outside the cumulative effects study area but noteworthy because of it was noted by the expert panel and some attendees at public information meetings. WIS 83 was also widened from County N in Mukwonago to WIS 59 in 2011.

Past projects in the cumulative impacts study area are:

- Construction of County TT between Northview Road and Summit Avenue (1990s).
- Reconstruction and widening of County X to four lanes between Moreland Boulevard and WIS 59 (2010)
- Construction of WIS 59 east of County X in the 1960s and reconstruction and widening of WIS 59 in the late 1990s is just outside the cumulative effects study area but noteworthy because the proposed Waukesha Bypass would connect to this road.
- Construction of I-94 in the study area in the late 1950s/early 1960s, including an interchange at what is now County G/County TT. The interchange at I-94 and County G/County TT was reconstructed in the early 2000s. Though outside the cumulative effects study area, had an effect on development in the cumulative effects study area. I-94 construction provided efficient access between Waukesha County and the large employment and population center in Milwaukee County. That, combined with roadway construction in Waukesha County made the cumulative effects study area more attractive for residential development.

Past non-transportation projects considered in this analysis are:

- Residential and commercial development of the study area, documented in the previous section has been and is expected to continue to be the primary urban land use in the cumulative effects study area. Examples are:
  - The Lodge and single-family residential on County TT north of Summit Avenue (beginning late 2000's and on-going)
  - Commercial development at the County TT/Summit Avenue intersection and residential development in the southwest quadrant of the intersection (2000's)
  - Waukesha West High School (early 1990's)
  - Kame Terrace on County TT south of Summit Avenue (1980's)
  - Residential development east of County TT between MacArthur Road and Madison Street (1970's through 1995)

[5] The 2035 regional transportation plan also recommends reserving right-of-way for future reconstruction and widening Summit Avenue (US 18) to four lanes from County TT west to WIS 83. Unlike the WIS 59 or I-94 widening referenced in this section, the plan only calls for reserving right-of-way for a possible expansion beyond the 2035 planning horizon. Therefore it is also considered beyond the planning horizon of this cumulative effects analysis and is not considered a reasonably foreseeable project.

- The Pebble Creek industrial park on the north side of Sunset Drive along Badger Drive east of Pebble Creek (1970's, expanded in 1990's)
- Hawthorne Hollow subdivision on Merrill Hills Drive south of Sunset Drive (1960's)

  Commercial, residential and industrial development on Sunset Drive (beginning in 1950's, more extensive in 1960's and 1970's)

Future projects include:

- Future residential development, including parcels adjacent to Brandy Brook and Lower Pebble Creek.
- A Waukesha School District elementary school on County TT south of Madison Street

## Past Transportation Projects' Cumulative Impact

Construction of the WIS 164/WIS 59 bypass around the east and south sides of Waukesha had a direct impact on wetland and floodplain and an indirect impact on land use by making it easier to access previously undeveloped areas that were then converted to residential development.

On the other end of the proposed West Waukesha Bypass, the I-94/County G/County TT interchange (just north of the proposed project's north construction limit) was reconstructed in the early 2000's. The interchange capacity was increased as part of the project, and safety-related improvements were made (separating frontage roads from freeway entrance/exit ramps). County TT was widened to a four-lane roadway from I-94 to Rolling Ridge Drive, a distance of about 0.3 mile, as part of that project.

That project enhanced the desirability of the County TT corridor from a development standpoint by providing more efficient and safer access to and from I-94. This project, combined with the earlier extension of County TT between Northview Road and Summit Avenue, contributed to a cumulative impact on water quality in the study area by adding impervious area in the form of residential and commercial development in the cumulative effects study area, as did I-94's construction in the 1950s and 1960s. Development that occurred after the County TT extension and I-94/County G interchange reconstruction include The Lodge and single-family residential on the east side of County TT south of Northview Avenue, additional commercial development at the County TT/Summit Avenue intersection, the Heritage Hills subdivision at County TT and Madison, three additional residential subdivisions west of Heritage Hills between Summit Avenue and Madison Street. All of this development is in the central part of the West Waukesha Bypass study area; residential development and the north and south ends of the study area had largely occurred prior to these two projects.

## Analysis of Proposed Project in Conjunction with Other Planned Projects

Based on the direct impacts of the project and input from the expert panel the study team has focused the cumulative effects analysis on:

- Wetlands
- Water Quality

- Floodplain
- Threatened and endangered species
- Farmland

Other resources such as air quality, noise, environmental justice, commercial and business relocations, socioeconomic, visual, institutional and public service either have no direct impacts or the direct impacts are on a small scale that they would not cause cumulative impacts as determined by the study team based on expert panel and local government input.

## Wetland

### Direct Impact

The direct wetland impact associated with the improvements north of the Wisconsin & Southern Railroad is 5.6 acres, the Pebble Creek West Alternative is 8.4 acres, the Pebble Creek Far West Alternative is 5.7 acres, and the Sunset-to-X Alternative is 6.5 acres. The project's unavoidable wetland impacts would be mitigated, possibly in the same watershed. One of the wetlands directly affected by the Pebble Creek Alternative is a fen. Fens are very difficult to effectively recreate in a mitigation site.

### Past Condition/Trends

Past transportation projects and residential and commercial development in Waukesha County reduced wetland acreage by over 600 acres between 1963 and 1990.

The 2010 widening of County X filled less than 0.5 acre of wetland. The WIS 59 cosntruction in the 1960s and its reconstruction in the late 1990s also affected wetland associated with the Fox River crossing. The construction of WIS 59 on its current alignment east of County X impacted wetland and widening of this segment of WIS 59 in 1996 resulted in about 12 acres of wetland impact adjacent to the Fox River.

### Status/Existing Condition

According to the Pebble Watershed Protection plan, about 1,400 acres, or 12 percent of the watershed, are wetland. The Christoph parcel on County TT near Sunset Drive contains a large area of farmed wetland that may be converted to residential development according to the county land use plan.

Wetland is present on the Waukesha School District's property on County TT. Some or all of it may be filled if and when an elementary school is built.

There are no large-scale wetland restoration projects in the study area, although Wiconsin DNR recently acquired 160 acres (adding to its existing 4,000+ acres it already owns) in the Vernon Marsh, just south of the study area. Waukesha County may develop a project specific wetland mitigation area and/or wetland bank site in the study area.

### Future Trends

Future residential development will face tighter regulatory controls over filling wetland, including the need to mitigate unavoidable wetland impacts. As a result the rate of wetland decline will likely slow. SEWRPC's 2035 land use plan notes that major changes in zoning between 1972 and 1985 led to more protection on wetland. Further losses of wetland in the

Pebble Creek watershed are expected to be relatively smaller compared to the percent of wetland lost county-wide between 1963 and 1990. Thirty-four acres of wetland are expected to be filled (about 2 percent of the 1,400 acres of wetland in the watershed) between 2000 and 2035 according to the Pebble Creek Watershed Protection Plan. The WIS 59 and WIS 83 widening projects would contribute to adverse cumulative wetland impacts. The WIS 83 widening between County D and I-94 would require filling about 6 acres of wetland. The wetland impacts of the WIS 59 widening are not known at this time. The 5-mile-long corridor likely has wetland adjacent to it that would be affected.

Incremental filling of wetland will reduce the amount of wildlife habitat available in the cumulative effects study area.

Construction of the Waukesha Bypass would have an effect on those wetlands that would remain (see EIS Section 3, Wetlands) but would not have a significant cumulative effect on wetlands if the project's wetland impacts are mitigated within the Pebble Creek watershed. Zoning and other measures in place to regulate the filling of wetland and require mitigation of unavoidable wetland impacts also mitigate the wetland impacts of other future projects.

## Water Quality

### Direct Impact

Direct impacts of the project on water quality result from stormwater runoff from road surfaces, bridge decks, median areas, and adjoining rights of way. The increase in impervious area would increase stormwater runoff volumes and could increase in-stream erosion. The runoff carries pollutants that have accumulated as a result of roadway use. As noted in the Pebble Creek Watershed Protection Plan, stream crossings act as direct conduits for nonpoint source pollution. The primary highway runoff components include suspended sediments (pavement wear and dirt), lead (tire filler), zinc (tire filler, motor oil stabilizers), copper (metal platings, brake linings), and petroleum (gasoline, antifreeze, hydraulic fluids).

FHWA research concluded that pollutants in highway runoff are not present in amounts sufficient to threaten surface water or groundwater where average daily traffic volumes are below 30,000 vehicles per day. Forecast traffic for the proposed improvements varies from approximately 18,000 vehicles per day near Highway 59 to 28,000 vehicles per day near I-94 which is below that threshold.

While the FHWA research focused strictly on road runoff's impact on water quality, the *Pebble Creek Watershed Protection Plan* evaluated the impact of urbanization in general in the watershed. While urbanization in the Upper Pebble Creek and Lower Pebble Creek subwatersheds is forecast to reduce annual sediment loads to the creek, as compared to levels associated with agricultural land use, an increase in the use of metals (copper, zinc, and cadmium) and other materials that contribute to the pollution of aquatic systems is predicted. The plan goes on to note that without significant mitigation, the ongoing urbanization of the Pebble Creek watershed is likely to contribute to further water quality degradation.

The footprint of the Pebble Creek West Alternative accounts for approximately five percent of the area of ground water contribution to Pebble Creek and the adjacent wetlands. In general, increases in impervious surface within a wetland watershed resulted in increasing water level fluctuations within the wetland. For example, wetlands with less than 5.5 percent impervious

surface in the area of contribution had comparatively lower levels of water level fluctuations (Wright and et al, 2006). Wetlands with greater than 21 percent impervious surface in the area of contribution had comparatively greater levels of water level fluctuations. The footprint of the Pebble Creek West Alternative is at the lower end of the range for evaluated wetland systems.

While the Build Alternatives are evidence of the increasing urbanization in the watershed and Waukesha County in general, the project—because of its 9-acre (Sunset-to-County X Alternative) to 13-acre (Pebble Creek alternatives) increase in impervious area in relation to the 255 acres of impervious area already in the Lower Pebble Creek subwatershed—is expected to have an immeasurably smaller impact on Pebble Creek water quality than the other forms of urban development throughout the watershed. As a frame of reference the Pebble Creek Industrial Park on Sunset Drive currently has approximately 27 acres of impervious area (roads, rooftops and parking lots).

### Past Condition/Trends

The County TT extension in the 1990s crossed Pebble Creek. Past residential and commercial development, in part spurred by transportation improvements in and adjacent to the cumulative effects study area, have led to the Pebble Creek watershed exceeding the 25 percent threshold beyond which it is difficult to maintain good water quality. It has also played an incremental role in pushing the watershed to the brink of the 10 percent directly connected imperviousness.

The Pebble Creek Watershed Protection plan (pp. 26-30) notes "directly connected imperviousness" is a major factor in degradation of urban water bodies and uses it as a surrogate for the combined effects of urbanization without mitigation. the plan defines directly connected imperviousness as impervious area that discharges directly to the sotrmwater drainage system without the potential for infiltration. The Pebble Creek watershed had 6 percent urban land use in 1970 which equated to about 2 percent directly connected imperviousness. As of 2005 about 41 percent of the watershed was urbanized which equated to about 9 percent directly connected imperviousness. The Upper and Lower Pebble Creek watersheds are already above the 10 percent figure (14 and 12 percent, respectively). The Pebble Creek plan cites a 1997 study that indicates 10 percent directly connected imperviousness is a threshold above which Index of Biotic Integrity scopres decline dramatically.

### Status/Existing Condition

The expert panel noted that once 25 percent of watershed develops, it's hard to maintain water quality and biological diversity. Approximately 41 percent of the Pebble Creek watershed was urbanized in 2005 according to the Pebble Creek Watershed Protection Plan. There is a threshold of how much development a stream can handle. The expert panel felt there has been a significant water quality impact already regardless of whether or which Build Alternative is selected.

### Future Trends

The WIS 59 and WIS 83 widening projects would not cross or be adjacent to Pebble Creek or Brandy Brook and the WIS 83 widening is not even in the Pebble Creek watershed. Based on this, and their forecast traffic volume falling below the FHWA threshold noted above the two projects would have a minimal impact on water quality in the cumulative effect study area.

Future residential development, of which land use plans call for a lot of, would continue to push the watershed past the threshold beyond which water quality decreases, and each new residential area would continue to push the watershed to, and likely beyond, the 10 percent directly connected imperviousness threshold. Like wetlands, there are now tighter regulatory controls over the quality of run-off from new residential and commercial development. The closer the development to Pebble Creek or its tributaries, the higher the potential of degrading water quality in the creek.

The 9 to 13 acres of impervious area that would be created by the West Waukesha Bypass and pollutants in the associated run-off would contribute to a cumulative water quality degradation in the cumulative effects study area.

The WisDOT/DNR Cooperative Agreement contains a Memorandum of Understanding regarding stormwater discharges to waters of the state. This Memorandum of Understanding requires WisDOT to implement a stormwater management program for its projects that is consistent with Section 402(p) of the Clean Water Act, Chapter 283 of the State Statutes, and Chapter NR 216 Wisconsin Administrative Code.

Wisconsin Administrative Code Chapter TRANS 401 outlines stormwater management and erosion control procedures for WisDOT projects. As applied to this project, this rule requires removal of 40 to 80 percent of total suspended solids for the study area, buffer areas upstream of waterways and wetland, and maintaining the 2-year peak discharge rate to the maximum extent practicable.

Construction of the Waukesha Bypass will include measures to manage stormwater per TRANS 401 and therefore would not necessarily be defined as "directly connected imperviousness." Also, the increase in imperviousness as a result of the project would be a small fraction of one percent. But clearly, the Pebble Creek watershed water quality has diminished through past urbanization and is close to the brink of further degradation of water quality.

## Floodplain

### Direct Impact

The Waukesha Bypass project would result in filling 7 to 11 acres of 100-year floodplain. All the potential floodplain impacts would be caused by transverse floodplain crossings. Transverse crossings are approximately perpendicular to the floodplain edge, such as a perpendicular bridge crossing of a river or stream. All of the floodplain impact would occur in the south end of the project, between the Wisconsin & Southern railroad and WIS 59.

The loss of naturally vegetated floodplains may aggravate the flood hazard through loss of their ability to slow floodwaters and reduce flood velocities and peaks. Given the small acreage affected compared to the size of the floodplain, loss of cover type is not expected to alter the flood hazard.

### Past Condition/Trends

The construction of WIS 59 on its current alignment east of County X and widening of this segment of WIS 59 in 1996 resulted in floodplain impacts. The amount of floodplain affected was not available, but based on a current aerial photo an estimated 3,000 linear feet of

floodplain was affected. The I-94/County G interchange reconstruction did not affect floodplain.

The County X widening did not affect floodplain.

### Future Trends

The WIS 59 widening project would cross floodplain in two locations. The WIS 83 widening project would affect one larger floodplain area along Scuppernong Creek.

The modest floodplain impacts of the project will add incrementally to the cumulative loss of Pebble Creek floodplain that has occurred over the years. Given the lack of direct impact to flood *risk*, and the requirement that the Waukesha Bypass project comply with NR 216, it is not expected to contribute to cumulative flood risk impacts.

## Threatened and Endangered Species

### Direct Impact

Several state threatened and endangered species are known to be present in the study area or have the potential to be present. Section 3 of the Draft EIS documents the species. Along with impacts from past, present, and anticipated future actions, the Waukesha Bypass project and other foreseeable actions could impact the Blandings turtle and Butler's garter snake by reducing habitat. The Sunset-to-County X Alternative would affect the state-listed seaside crowfoot. It is the only known population of seaside crowfoot in Waukesha County. If it were removed under the Sunset-to-County X Alternative there would be no known populations of the plant in Waukesha County.

State laws regulate impacts to the species, but no state or federal permits are required. No other threatened or endangered species impacts are anticipated.

### Past Condition/Trends

Urban development is the primary cause of the loss and fragmentation of Blandings turtle and Butler's garter snake habitat in the cumulative effects study area. Habitat degradation (including wetland degradation) reduces and isolates species in remaining habitats.

The County X widening affected Butler's garter snake habitat, as did the WIS 59 construction east of County X in the 1960s and its reconstruction in the late 1990s. There is no conservation plan in place for the Blandings turtle.

### Status/Existing Condition

The DNR is in the process of removing the Butler's garter snake and Blandings turtle from their protected status.

### Future Trends

Local governments can manage the cumulative effect of other land development actions through existing land use and zoning regulations. Communities in the study area have zoning regulations that limit development along waterways and conservation areas, which are typically environmental corridors and isolated natural areas where Butler's garter snakes may be present.

The WIS 83 widening project would affect threatened and endangered species habitat north of US 18. The WIS 59 widening project's impact on threatened and endangered resources is not known.

WisDOT and DNR have developed measures to avoid, minimize, and mitigate impacts to the Butler's garter snake. Utilizing these measures, WisDOT will minimize the potential for cumulative impacts to the Butler's garter snake. A conservation plan for the Butler's garter snake (if required) may include monitoring. Local governments can further manage direct effects of other developments and potential indirect effects from the project through local plans and zoning regulations.

The Sunset-to-County X Alternative would have a cumulative impact on the plant because it would remove the only known population in Wisconsin outside of a coastal county.

## Farmland

### Direct Impact

The Waukesha Bypass project would directly affect 43 to 46 acres of farmland. Almost all of the potentially affected farmland is between Madison Street and Sunset Drive.

### Past Condition/Trends

County-wide, 87,631 acres of farmland have been converted to other uses between 1963 and 2000 (2035 Regional Land Use Plan Table A-8). The County X widening did not affect farmland. The extension of County TT and the WIS 59 construction/reconstruction east of County X did affect farmland.

### Status/Existing Condition

About 34 percent, nearly 4,000 acres, of the Pebble Creek watershed was in agricultural use in 2004, according to the Pebble Creek Watershed Protection Plan.

### Future Trends

This is expected to decrease to 20 percent in 2035, a reduction of 1,674 acres. Most of the ag land is in the Brandy Brook subwatershed, with scattered areas in the Upper and Lower Pebble Creek subwatersheds.

The expert panel felt that the Waukesha Bypass project would make land currently deemed agricultural convert to other development, tipping the scales towards residential development rather than farmland, and it would be harder for farm equipment sales and other services that depend on farming. The panel did note that long-range land use plans for the study area show transition to residential in the project corridor and that the tipping point may have already occurred.

The WIS 83 widening project would affect 6.5 acres farmland according to the Final EIS for the project. The WIS 59 widening project would have minimal impacts on farmland, assuming it would remain on its current alignment.

The panel said that encouraging roadway construction would discourage the farmland preservation. This would change the character of the area, though not necessarily have a noticeable change on food production.

Part residential and commercial development has likely had the biggest cumulative effect on farmland than any other resource. And that trend will likely continue. While regulatory protections have been put in place to protect wetland and floodplain there is no such regulatory protection for farmland. For these and other reasons farmland is more attractive for residential and commercial development than wetland or floodplain.

Future residential development will continue to decrease farmland acreage in the cumulative effects study area. Land use planning calls for most of the farmland in the cumulative effects study area to be converted to residential development. Farmland acreage in the cumulative effect study area is forecast to decrease 2,268 acres between 2000 and 2035.

The project's 43- to 46-acre farmland impact will continue the reduction in farmland acreage in the cumulative effects study area (and Waukesha County) that began decades ago. Indirectly it may result in the conversation of additional farmland to residential development, although the study area has been an attractive area for development even without the West Waukesha Bypass.

# Summary

The Pebble Creek Watershed Protection Plan and 2035 Regional Land Use Plan gives a glimpse into land use changes in the cumulative effects study area on wetland, water quality and other natural resources from past development including these and other transportation projects.

TABLE 5
Cumulative Impact of Development on Key Natural Resources in Pebble Creek Watershed

| Resource | Past Actions 1940 to 2000 | Present Actions 2000 to 2005 | Proposed Action | Future Action 2005 to 2035 | Cumulative Effect |
|---|---|---|---|---|---|
| Urban Development in Pebble Creek Watershed | 35 percent urban development in watershed | Additional 6 percent urban development | Direct impact of 9 to 13 acres additional impervious area | Additional 19 percent urban development | 60 percent urban development in watershed |
| Wetland | Watershed data unavailable but 1 percent reduction, or 610 acres, county-wide between 1963 and 1990 (2035 Regional Land Use Plan Table A-8) | 10 acres lost | 11 to 14 acres direct impact | 22 acres lost | 32 acres, or 2.3 percent, reduction between 2000 and 2035 |
| Farmland | Watershed data unavailable but 44 percent reduction, or 87,631 acres, county-wide between 1963 and 2000 (2035 Regional Land Use Plan Table A-8) | 5 percent decrease in rural lands, or 594 acres lost | 43 to 46 acres direct impact | 31 percent decrease in rural lands; or 1,674 acres lost | 50 percent decrease in rural lands, or 2,268 acres lost, between 2000 and 2035 |
| Water Quality (directly connected imperviousness) | Less than one percent in 1940 to 2 percent in 1970 to 7 percent in 2000 | Additional 1-2 percent | Additional 9 to 13 acres | Additional 3 percent | 11 percent directly connected imperviousness |
| Floodplain | No data available | No data available | 6 to 10 acres direct impact | No data available | No data available |

Source: *Pebble Creek Watershed Protection Plan* unless noted. Future Action begins at 2005 because the *Pebble Creek Watershed Protection Plan* land use forecast, which is in turn based on the regional land use plan, uses 2005 and later as 'future'. City of Waukesha and Waukesha County do not maintain data on past floodplain filling.

# Conclusions

The project would have a cumulative effect on wetlands in the watershed if the direct effect on wetland cannot be effectively mitigated in the Pebble Creek watershed. Waukesha County and WisDOT are investigating wetland mitigation sites in the watershed. Fens impacted as part of the project would likely not be effectively mitigated therefore the cumulative effects study area would have fewer acres of this type of wetland.

The Waukesha Bypass would contribute to a cumulative impact on water quality in the Pebble Creek watershed. The Pebble Creek watershed is right at the threshold of impervious area and urbanization at which studies suggest water quality will be greatly diminished. Of course all watersheds are different and there is not an exact point at which water quality significantly degrades, but the Pebble Creek watershed is at the generally accepted thresholds.

A cumulative impact on farmland would occur as a result of the project. However, the project's 43- to 46-acre loss in farmland is small compared to the 1,674-acre reduction in farmland anticipated in the Pebble Creek Watershed Protection Plan.

Implementing mitigation measures would result in a minimal cumulative impact on the Blandings turtle and Butler's garter snake. The Sunset-to-County X Alternative would have a cumulative impact on the seaside crowfoot.

# Expert Panel Background/Contact Info—May 2011

## West Waukesha Bypass Indirect and Cumulative Effects

**Ed Beimborn**, Ph.D. Ed is retired from the UWM Civil Engineering Department. Ed's research interests are transportation engineering, public transit, transportation planning, municipal engineering, land use, technology transfer.
www4.uwm.edu/ceas/cem/
Beimborn@uwm.edu

**Jim D'Antuono**. Jim is the Wisconsin DNR's Southeast Fox River Basin Team Leader. Jim was involved in the preparation of the 2008 *Pebble Creek Watershed Protection Plan*.
www.dnr.wi.gov
james.dantuono@wisconsin.gov

**Greg Kost**. Greg is the managing principal in the Waukesha office of TOLD Development Company, a real estate firm focused on the development, acquisition, and management of retail, multi-housing, office, medical office, and industrial properties.
www.tolddevelopmentcompany.com
gkost@toldwi.com

**Patrick Lawton**. Pat is a senior vice president at M&I Bank.
www.mibank.com
Patrick.lawton@micorp.com

**Bob Lichtfuss**. Bob is Director of Supply Chain Logistics at Generac in Waukesha.
www.generac.com
blichtfuss@generac.com

**Gretchen Messer**. Gretchen is an adjunct lecturer in ecology and land use planning at Carroll University and an instructor at Phoenix University.
www.Carrollu.edu
gmesser@carrollu.edu

**Doug Seymour**. Doug is the community development director at the City of Oak Creek.
www.oakcreekwi.org
dseymour@oakcreekwi.org

**Tom Slawski**, Ph.D. Tom is a principal planner at the Southeastern Wisconsin Regional Planning Commission in Pewaukee. Tom was the principal author of the 2008 *Pebble Creek Watershed Protection Plan*.
www.sewrpc.org
tslawski@sewrpc.org

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# Exhibits

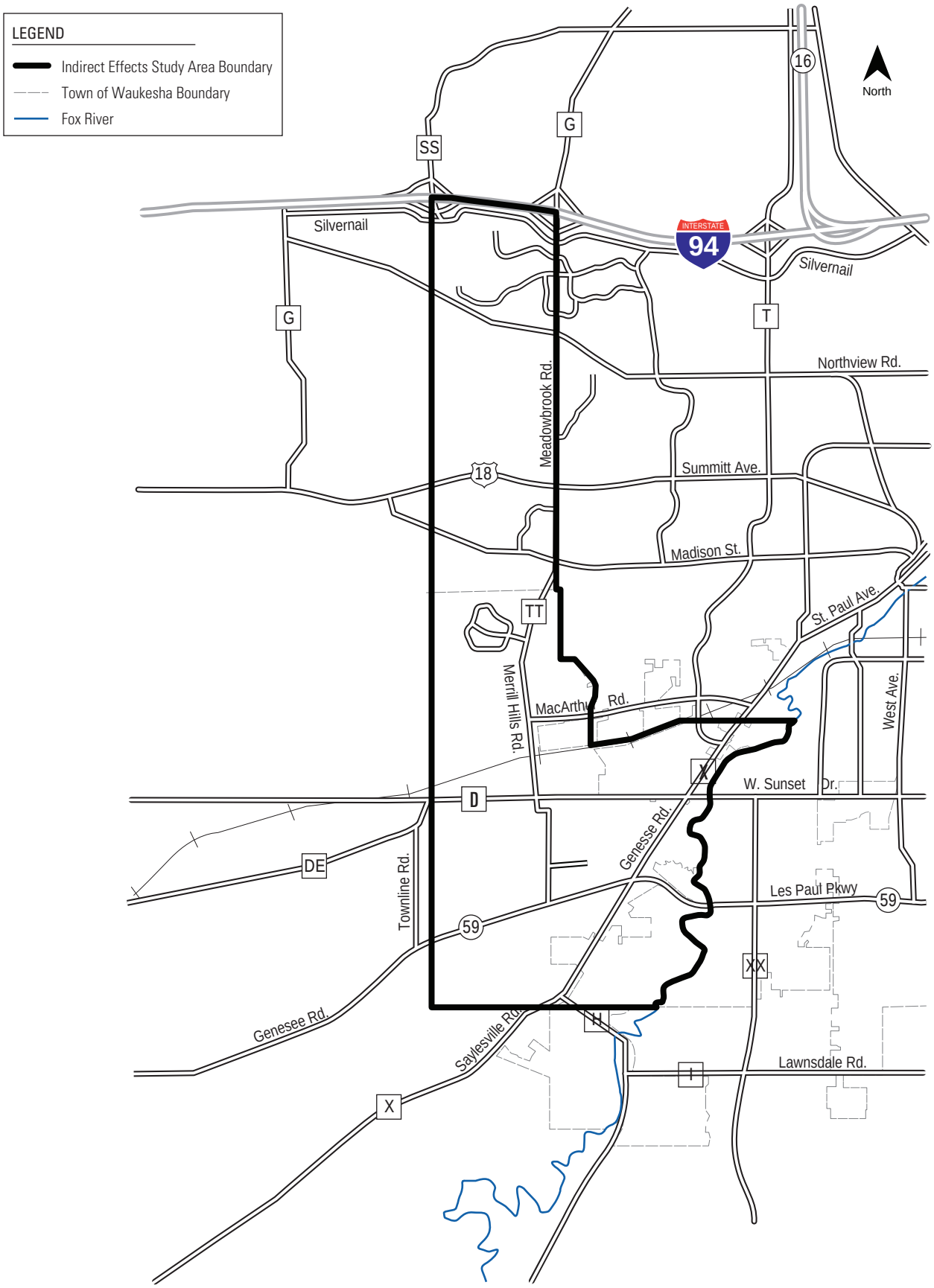



Exhibit 1

**Indirect Effects Study Area**



TBG060111153036MKE Indirect_Effects_Study_Area_v4.ai 08.17.12 mjl/jls

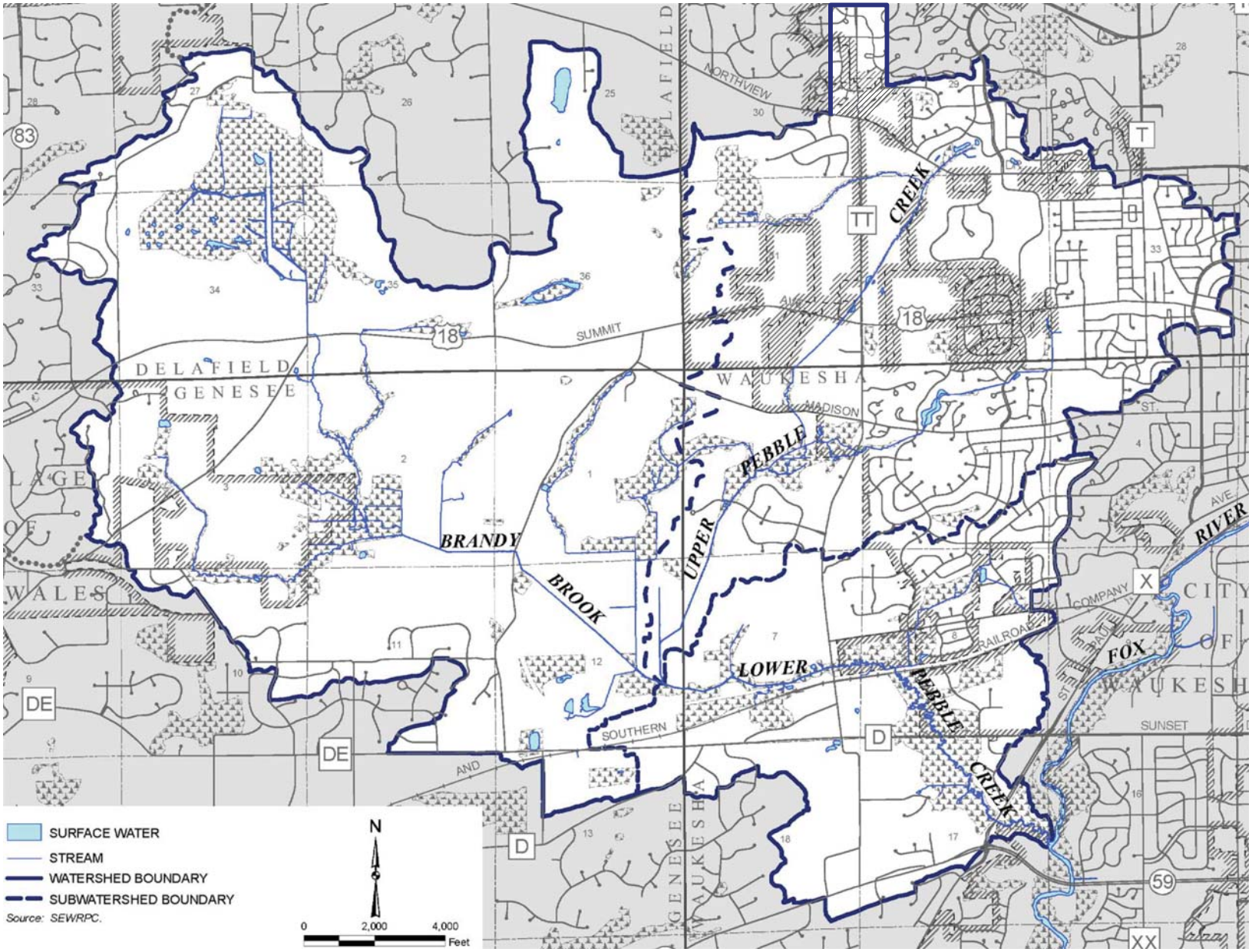



Exhibit 2

**Cumulative Effects Study Area**

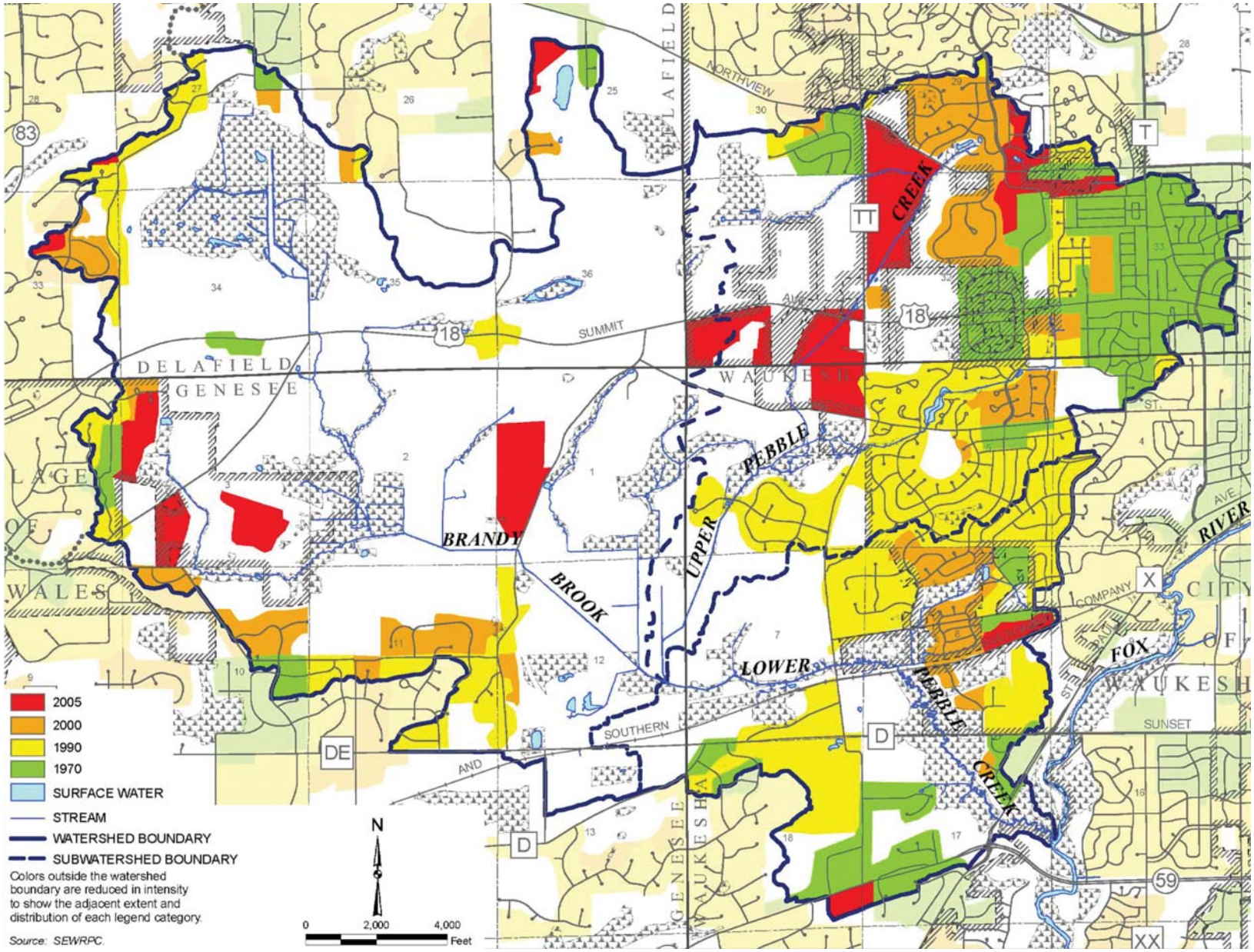



Exhibit 3

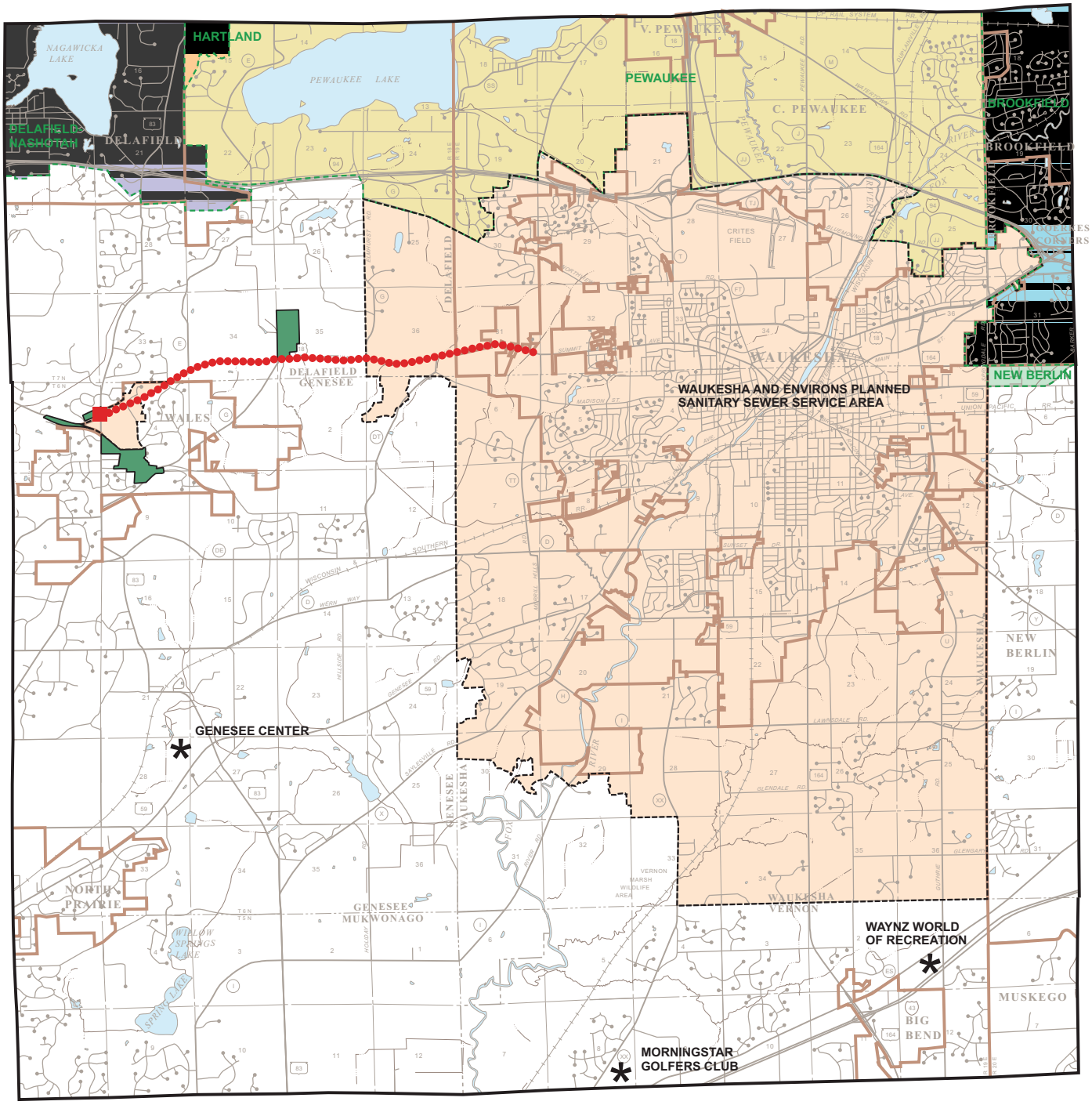
**Historic Urban Growth Within the Pebble Creek Watershed: 2005**



TBG060111153036MKE Exhibit_3_Historic_Urban_Growth_PC_v2.ai 08.17.12 mjl

## Map 1

## PROPOSED AMENDMENT TO THE WAUKESHA AND ENVIRONS SANITARY SEWER SERVICE AREA




CITY OF WAUKESHA AND ENVIRONS PLANNED SANITARY SEWER SERVICE AREA

OTHER PLANNED SANITARY SEWER SERVICE AREAS

AREAS PROPOSED TO BE ADDED TO THE WALES PORTION OF THE WAUKESHA AND ENVIRONS SANITARY SEWER SERVICE AREA

HOLDING TANK SEWAGE DISPOSAL SYSTEM DESIGNED TO ACCEPT AT LEAST 3,000 GALLONS PER DAY – ATTACHED TO THE WAUKESHA SANITARY SEWER SERVICE AREA.

PROPOSED FORCE MAIN

PROPOSED PUMPING STATION

GRAPHIC SCALE

0 ¼ ½ 1 MILE

0 2000 4000 6000 FEET

*Source: SEWRPC.*

# Appendix A
# West Waukesha Bypass Indirect and Cumulative Effect Stakeholder Meeting Notes

# West Waukesha Bypass Indirect and Cumulative Effect Stakeholder Meeting

**ATTENDEES:** Mike Hoeft, City of Waukesha; Paul Day, City of Waukesha; Charlie Webb, CH2M Hill; Ben Goldsworthy, CH2M Hill

**FROM:** Ben Goldsworthy

**DATE:** January 26, 2011

Charlie Webb and Ben Goldsworthy met with Mike Hoeft, City of Waukesha City Planner, and Paul Day, City of Waukesha City Engineer, to discuss the West Waukesha Bypass project and develop background information about the study area and any potential indirect and cumulative effects as a result of the project.

Mike provided a recently updated land use map, which is part of Waukesha County's Land Use Plan, which outlined the City of Waukesha's Urban Service Area. He noted that the land within the urban service area was not necessarily connected to the city's sewer service. The sewer service is mostly confined to land within the city limits.

Mike noted that that the west side of the side provides the only area for the city to experience new growth since there is vacant land to the west. He noted that there is limited opportunity to annex additional land to the west. The City of Waukesha has a border agreement with Pewaukee. There is potential to annex land north of Summit Avenue and west of Highway TT.

Mike and Paul noted that there are environmental areas west of the proposed project corridor that could limit development in the area. The Retzer Nature Center, a wetland complex to the south of the nature center, and the property owned by the Waukesha School District are barriers to growth in this area.

Mike and Paul stated that the construction of Highway TT helped spur development on the west side of Waukesha by providing easier access to I-94. It is a fast growing area that located to the west of most of the regional growth centers. Based on Census data, they believe that this area of Waukesha continues to grow and believe this will be the case in the future.

In terms of employment growth in the City of Waukesha, they both feel that this growth would occur at redeveloped sites. The old Wal Mart site located on the East Side Bypass is one area of potential redevelopment. The new Wal Mart located along Highway 59 was constructed in a redeveloped area, next to Weld All Manufacturing. Waukesha Electric Systems, located in the southern part of Waukesha, and GE Medical Systems, located north of the city, have recently experienced job growth. There is a slow developing industrial park on the south side of the city. They see most business growth occurring at the existing industrial park or at existing businesses.

In the study area additional residential growth is anticipated to occur on both sides of Madison Street, west of Highway TT. Residential lots in this area have already been platted and this land has been annexed into the city. Outside of the study area residential growth is planned in both the south and southeast sections of the city.

Both Mike and Paul don't believe that the West Waukesha Bypass would have a huge impact on development in the study area. Any new residential development in the area will occur no matter what. The bypass will accommodate planned development and most likely not spur new development. They believe the West Waukesha Bypass may help the industrial areas to the south reach westbound I-94 quicker.

A portion of the village of Wales is connected to the Waukesha sewer system. The city also plans to install a sanitary sewer interceptor line along Meadowbrook Road with the intent of eliminating pump stations (about 6 or 7 of them). This would be done to eliminate the pump stations and not because of capacity issues.

Didn't see any difference in how the area develops if the bypass is two-lanes or four-lanes. They noted that there are not many options to reach I-94 on the west side of the city. People will take the easiest option. Do not think the options at the south end of the project will have any bearing on regional development.

Most of the development I the project area is from the 1970's or newer. Everything that has been developed in the area has done so since the West Waukesha Bypass has been on the map. The area was developed with the bypass in mind as is evident by the excess ROW located along the northern portions of Highway TT. The West Waukesha Bypass will fit in well with the city's planning goals.

# West Waukesha Bypass Indirect and Cumulative Effects Stakeholder Meeting

**ATTENDEES:** Jason Fruth, Waukesha County
Charlie Webb, CH2M Hill
Ben Goldsworthy, CH2M Hill

**FROM:** Ben Goldsworthy

**DATE:** January 28, 2011

Charlie Webb and Ben Goldsworthy met with Jason Fruth, Waukesha County Planning and Zoning manager, to discuss the West Waukesha Bypass project and develop background information about the study area and any potential indirect and cumulative effects as a result of the project.

Jason noted that he thought the project would be good for regional connectivity. He also noted that there is potential for a Walgreens to be constructed at the Sunset/X intersection.

Jason thought the largest growth center in the City of Waukesha was along the northern leg of the Bypass project. There has been a lot of growth in that area over the past decade. The Highway TT/Highway 18 intersection has been a center of growth over the past 5 years. A medical facility, condo project, and residential growth has occurred along Highway 18 west of Highway TT and a large apartment complex (The Lodge) was constructed along the east side of Highway TT. A senior housing development has also been proposed along the west side of TT. Jason believes that the prospect of the bypass is fueling the plans along Highways TT and 18

This project would improve westbound I-94 access and may improve the viability of businesses in Waukesha due to better access to the interstate. Jason does not believe the bypass would have a large impact on residential development. There is already a facility in place to serve the residents. The bypass would just be an enhancement of the existing facility. The project would be more important in regards to regional connectivity. Currently there are not a lot of good north-south linkages on the west side of Waukesha and this project would help serve that purpose.

Jason does not see a shift in the location of regional growth centers as a result of this project. Believes people would use the bypass to access existing employment centers. Also noted that there is not a lot of planned commercial development in this corridor.

Jason noted that demographic data shows that household size is declining. In the year 2035 the average household is expected to contain 2.5 persons. The population is also aging. In 2000 the average age was 38.1. This average is expected to increase as the baby boom generation pushes into older tiers.

Jason believes that transportation is one of the most important factors to growth. People looking for a home and commercial or industrial sites are concerned with access.

Waukesha County recently updated its bikeway plan and looked at on-road facilities and ways to fill in the gaps in the greenway corridors. He noted the city is working on a bikeway plan as well. The Retzer Nature Center is expected to expand as well. As part of potential development along Madison Street, a developer is providing the county with some environmental corridor land.

Jason noted that the West Waukesha Bypass alignment has been part of the mapped plan for a long time. The land uses that have been built along the corridor have been constructed to co-exist with the transportation aspect of the corridor. He also noted the entire project area is within the sewer service boundary.

Jason believes development patterns will be the same with either 2 or 4 lanes. He also noted that it was difficult to imagine any development in the Plum Creek area because of the surrounding wetlands. He noted the Golf Course East area is already developed.

Jason said that SEWRPC is planning on updating its Critical Species Plan and that could be a good resource. He said the NR 115, which focuses on impervious surfaces, is being updated as well. The County Farmland Preservation Plan was recently completed and will be proposed as an amendment to the county's development plan. None of the farmland along the project corridor was proposed as a preservation area.

# West Waukesha Bypass Indirect and Cumulative Effect Stakeholder Meeting

**ATTENDEES:** Harlan Clinkenbeard, City of Pewaukee; Ben Goldsworthy, CH2M Hill

**FROM:** Ben Goldsworthy

**DATE:** April 12, 2011

Ben Goldsworthy met with Harlan Clinkenbeard, City of Pewaukee City Planner, to discuss the West Waukesha Bypass project and develop background information about the study area and any potential indirect and cumulative effects as a result of the project.

Harlan noted that he worked for the Southeast Wisconsin Regional Planning Commission (SEWRPC) in the early 1960's and helped develop the first land use and transportation planning document. Harlan noted that the West Waukesha Bypass was first part of a plan in 1966.

Development along Meadowbrook Road north of Northview Road in the City of Waukesha and Pewaukee occurred with the notion that the road would become the bypass. The development along Meadowbrook Road north of Northview Road was designed to limit access to Meadowbrook Road by having the rear of the properties face Meadowbrook Road and collector roads provide access to Meadowbrook road. The right-of-way for this segment of Meadowbrook Road provided significant space to accommodate the bypass.

Harlan noted the bypass has been in official plans for too long to not be constructed. It was part of a long range plan and in this case the long range planning worked because development along Meadowbrook Road occurred with the bypass in mind and was designed to accommodate the bypass. Development further south along the proposed bypass route didn't necessarily take into account the potential bypass route.

As part of the original plan, Meadowbrook Road was to be signed as WIS 164. This may draw additional traffic as some motorists and truckers could view this as a bypass of the entire Milwaukee area by continuing on WIS 164 south out of Waukesha and heading east towards I-94 along CTH K in Racine County.

Harlan did not envision many direct or indirect impacts on the City of Pewaukee. There may be additional traffic due to easier access to the city. There would not be any land use changes in Pewaukee and it would not change the type or pace of development. Most remaining areas for development in the City of Pewaukee are located in the northern part of the city and the presence of the bypass will not impact this development.

Harlan noted that Pewaukee owned the land between the frontage road and the entrance/exit ramps in the SW quadrant of I-94/Meadowbrook Road as well as the land in the NW quadrant of the interchange. The state owns the Park and Ride land in the NE quadrant. The city's future land use map shows the land in the SW quadrant as

government/institutional and in the the NW quadrant as medium density residential. Harlan stated that these land uses would remain in place and they would not permit commercial development at this intersection. Harlan stated that the City of Pewaukee is working with the City of Waukesha to sell the former Pewaukee fire station building in the NE quadrant of the Meadowbrook Road/Northview Road intersection. The City of Waukesha would turn this building into a park building for Meadowview Park.

Harlan noted that any development that occurs in the bypass area will occur based upon the availability of sewer and water connections and not because of the bypass. In the City of Pewaukee, there is an area zoned for low density residential development located west of Meadowbrook Road and south of Northview Road. There will be about 35 residences in this area. Due to rock formations close to the surface, septic systems in the area are failing. A developer would have to purchase sewer service from the City of Waukesha. Waukesha is reluctant to extend their water service further west and Pewaukee is thinking about a community shallow well in the area.

Most of the development along the bypass corridor is already in place. There should be no changes in land use as a result of the project. There are only a handful of open properties along the corridor. The area north of Rehabilitation Hospital of Wisconsin (west of Meadowbrook Road between Northview road and Summit Drive) used to be owned by the City of Pewaukee before being transferred to the City of Waukesha. Harlan noted that Pewaukee saw residential development for the area (Jason Fruth with Waukesha County noted the City of Waukesha was contemplating a senior housing development sat this site). North of the Wisconsin & Southern Railroad crossing is the vacant Waukesha School District property and agricultural land north of that. That agricultural land is the only other land open for development along the corridor.

There would be increased traffic along the bypass route. There would be additional traffic at the Meadowbrook Road intersections with Summit Avenue and Northview Road along with the I-94 interchange. Harlan noted that the Waukesha area is more likely to develop south rather than west and that the bypass project would not have an impact on regional development patterns.

# West Waukesha Bypass Indirect and Cumulative Effects Stakeholder Meeting

**ATTENDEES:** Angie Van Scyoc, Town of Waukesha
Joe Banske, Town of Waukesha
Brian Fischer, Town of Waukesha
Charlie Webb, CH2M HILL
Ben Goldsworthy, CH2M HILL

**FROM:** Ben Goldsworthy

**DATE:** March 30, 2011

Charlie Webb and Ben Goldsworthy met with Angie Van Scyoc, Town of Waukesha Chairman, Joe Banske, Town of Waukesha Supervisor, and Brian Fischer, Town of Waukesha Plan Commission member, to discuss the West Waukesha Bypass project and develop background information about the study area and any potential indirect and cumulative effects as a result of the project.

## 1. Study Area Boundaries

The meeting started with a discussion about the area of influence of the project in the Town, an area that is beyond the immediate footprint of the roadway. The group noted that the entire town could be impacted, especially as it relates to traffic. There could be impacts on Saylesville Road (CTH X) south of WIS 59. It could increase traffic volumes on speeds on this stretch of road. It might also cause an increase of traffic on Green Lane as people use this as a shortcut between Merrill Hills Road and Sunset Drive. The town's land use plan shows much of the open land located near the project area as primary environmental corridors or open land to be preserved. The open land to be preserved is part of the land use plan but the plan serves only as a guide. This land could be developed if the landowner wanted it to be developed. These is one small subdivision south of the project are that is being developed and is not dependant on the bypass project. It was concluded that the presence of the bypass would not have a big impact on development patterns on the west side of the town.

Most of the growth in the area is taking place in the City of Waukesha. It may change traffic patterns and volumes in the town. While there would be really no impact on residential development, if the Sunset to X alternative is selected, it could spur commercial development on Genesee Road (CTH X) south of Sunset Drive, an area that is currently residential. Additional commercial uses along Sunset Drive east of CTH X in the project corridor could also develop, however, existing development patterns are unlikely to change.

## 2. Notable Features Within Study Area

The group noted that the Pebble Creek watershed and the aquifers in the area would be considered notable features. Pebble Creek is a high valued creek with high quality wetlands surrounding it. The preservation of open space is also important to the Town. Not every open space is developable. There is a lot of undeveloped land located within the Town. The

improvement of traffic safety is also important. It was noted that there are no good through routes in the area (Waukesha area) and this leads to traffic safety issues.

**3. Study Area in Relation to Regional Growth Centers**

The group noted that most of the growth areas in the Town were not located near the project area. The Vernon Wildlife Area (Vernon Marsh) is located south of the project area and prevents development in that location. The areas around the marsh are also County protected areas. Undeveloped areas in the Town that are potential areas for development are located along WIS 164 on the east side of the Town. The WIS 164 and Sunset Drive intersection is a commercial growth area. Most of the Town's growth area is located on the east side along the WIS 164 corridor. There is also potential for growth around the former Wal-Mart site at the WIS 164/Arcadian Avenue (WIS 59) intersection, however, construction of the bypass would have no impact on growth at this area. South and east of town there will not be a difference in development between the two alternatives.

Currently most people who live on the south side of the Town use I-43 to access downtown Milwaukee as opposed to I-94. This is because there is not quick and easy access to I-94 from this area. The group thought that if the Pebble Creek alternative was selected for the bypass route, it would decrease traffic at the Sunset/CTH X intersection and would not enhance economic development potential for the Town at this intersection. Outside of the immediate area, the selection of the Sunset-to-CTH X Alternative versus the Pebble Creek Alternative would not have much of an impact on development in other parts of the Town. Development on the east side of town is not dependant on the bypass. The southeast part of the town would see no benefits from the bypass project. The group also said that that it would be easier for people from Mukwonago to utilize WIS 83 to reach I-94 as opposed to a constructed West Waukesha Bypass.

**4. Demographic Issues**

In regards to demographics, the group noted that they are currently seeing a turnover of homes to a younger population. In 20 years the Town could have an older demographic due to the current influx of younger residents. Most residences in the Town are single-family structures. The population base is pretty stable. The group did not anticipate any trends that would cause a sudden shift in the Town's demographics. There could potentially be some condominium development over time and some smaller lot residences, but this would not significantly alter the character of the Town. The Town is looking at increasing densities (multi-family units, but not apartment complexes) in some areas and this could lead to future growth. The Town wants to become smarter in their development options and become more attractive to developers. The general consensus of the group is that the town population is very stable and should remain that way.

**5. Employment Growth in the Region**

Employment growth within the Town could occur along WIS 164, specifically at the Arcadian/Greenfield Avenue and Sunset Drive intersections with WIS 164 on the east side of the Town. Development could also occur at the Sunset Drive and CTH C intersection in the project area.

**6. Factors Contributing to Growth**

The availability of water and sewer services are important factors that contribute to development, especially commercial development. Demand and zoning issues play a large role in residential development. Transportation costs (cost of gasoline) also impact where people live and is a factor in the location and pace of development. The Town is looking to zone certain residential areas for smaller lot residences. This increases the amount of open space.

The Bypass would not enhance development except at the Sunset Drive/CTH X intersection and along CTH X south of Sunset Drive. The group noted that this project would not improve the residential living environment for those who live along the roadway. It would not enhance the value of their property or improve their lifestyle.

**7. Reasonably Foreseeable Plans and Projects**

In regards to known development in the area, the Lathers property located to the south of the project area could be developed into residences. This was approved at the last Town Board meeting. There is 84 acres available for development and at most 48 residences. The DNR also recently acquired 160 acres contiguous to the Vernon Marsh in this area.

The group noted that any plans to improve Saylesville Road south of WIS 59 would be opposed by the residents along Saylesville Road. Improvements would make it easier for motorists to use Saylesville Rd to cut over to WIS 83 and would increase traffic. This could impact the historic community of Saylesville. There is also a concern that Merrill Hills Road could be used as a shortcut between the Bypass and Genesee Road if access to Merrill Hills Road is made easy.

It was also noted that Sunset Drive in the project area is slated to be expanded to four lanes.

**8. How Does the Project Fit in with Overall Town Goals**

Joe Banske noted that potential commercial development along CTH X could serve as a good buffer between traffic noise and the residences to the west in the Ridgeview Road subdivision. It was also noted that it is key to provide highways that make it easier for residents to get around and through the community. The Bypass would not have much of an impact on people attempting to access downtown Waukesha. The Bypass would improve safety along the selected route, especially north of Sunset Avenue.

One indirect effect of the Bypass is that the Town may take jurisdiction over some additional roads. It also would not increase the Town's tax base and may decrease the property value of properties along the selected route. The Sunset to X alternative would be more beneficial to the Town because it would provide the opportunity for new commercial development at the Sunset/CTH X intersection and CTH X south of Sunset Drive.

The group stated that the Pebble Creek alternative had negatives that included the loss of commercial potential at the Sunset/CTH X intersection, environmental concerns, loss of property, and reduced property value for existing residents.

Brian Fischer said that the Sunset Avenue crossing of Pebble Creek should be upgraded to minimize the environmental impact of the crossing. Even if the Pebble Creek alternative is selected, the Sunset Avenue crossing of Pebble Creek should be improved. This should be

an environmentally special project that uses the latest innovations (capture run-off before it enters the creek) and could serve as a model for future projects.

To conclude, the group noted that the project would reduce the tax revenue for the Town, would lower the quality of life for current and future residents who live along the bypass, and would increase noise in Hawthorne Hollow subdivision. They asked the question, "How does this project positively impact anything in the Town of Waukesha?"

## Appendix B

# Local Government Stakeholder Interview Questions

## Local Government Stakeholder Interview Questions

The questions below were asked to local government representatives at Town of Waukesha, City of Waukesha, City of Pewaukee, and Waukesha County interviews, with the intent of developing background information to inform the expert review panel.

1. How would you describe the study area in relation to the rest of the region? What would you consider to be its boundaries and why? (focus on larger area, not project footprint)

2. What would you consider to be some "notable features" within this study area (natural, cultural, transportation-related, or built).

3. To your knowledge, where is the study area in relation to your agency's regional growth centers (employment, residential), identified projects, protected natural areas, etc.?

4. Do you expect major demographic changes within your jurisdiction within the planning horizon? This could include a trend of young families, for example, or retirees. What type of employment trends are you seeing – is your employment base changing over time? How?

5. Eventually, when the economy turns around, are there thoughts or indications regarding where employment growth would occur in the region? Do you see it staying in the central city, moving outwards in one direction over another (jurisdiction or other), or a bit of both? Is this different for housing?

6. What are the factors, in your opinion, that contribute to growth? Is transportation access a factor? If so, how important is it?

7. What other reasonably foreseeable plans and projects will you be completing? Reasonably foreseeable typically means likely to happen within the planning horizon for this project (roughly 20 years).

8. Please discuss qualitatively how this project fits in with overall planning goals for your jurisdiction. The project has been considered for a long time in the area – do future projects and growth depend on the construction of the project? In your opinion what would construction of the project do or not do to help meet and further other planning goals?

# Appendix C
# Summary of Expert Panel Input

*West Waukesha Bypass*

# Indirect and Cumulative Effects Analysis

# Summary of Expert Panel Input

Prepared for

Waukesha County
Department of Public Works

December 2011

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# Introduction

Waukesha County, WisDOT and the Federal Highway Administration are studying the implementation of the West Waukesha Bypass project. These agencies are preparing an environmental impact statement (EIS) on the West Waukesha Bypass to comply with the National Environmental Policy Act. The EIS will document the purpose of the project, the need for the project, alternatives considered, the impacts of those alternatives, and the public outreach that occurred during preparation of the EIS.

This indirect and cumulative effects report is one of several analyses undertaken by these agencies to assess the impacts of the project on the human and natural environment.

The expert panel is one of three elements of the indirect and cumulative effects analysis. The others are a literature search and input from planning staff from Waukesha County, Town of Waukesha, City of Waukesha, and City of Pewaukee.

# Expert Panel Development

The study team decided to solicit input from professionals in the field of real estate development, financial lending, natural resources, community development and planning. The panelists were people who are generally familiar with Waukesha County but care was taken not to invite people who have a vested interest or a clear preference for one alternative over another.

The study team decided that a one-day facilitated meeting was the appropriate venue for gathering input from the panel. The meeting took place on May 10, 2011. The panelists were not compensated for their time.

The expert panel roster (see panel bios at the end of this report) was developed by the study team and discussed at the April progress meeting attended by the project management team (Waukesha County, City of Waukesha, Town of Waukesha, WisDOT). Following input from the project management team the study team began making calls to invite panelists. Most of the original roster of invitees agreed to participate. Additional invitees were contacted to provide the expertise of those original invitees who could not attend. Three people who originally accepted the invitation to participate in the panel subsequently withdrew in the days prior to the meeting. Two additional participants were identified by the study team to replace them. One invitee, a residential developer, cancelled the day before the meeting due to an urgent family matter. Given the day-long commitment required and so little notice, no attempt was made to invite another residential developer to participate on the panel.

# Expert Panel Introduction to the Project

The expert panel started off the day with a bus tour of Meadowbrook/Merrill Hills Road south from I-94 which included a driving tour of the Sunset-to-County X Alternative as well as a visual overview of the Pebble Creek Alternative for completing the connection to WIS 59.

Following the bus tour the panel returned to the meeting room and listened to a presentation on the history of the West Waukesha Bypass, including the original mapping of the Bypass; the existing as well as the planned and potential future development and uses along the project

corridor; the shift in growth and demographics to the area; the challenges that Waukesha County faces with drinking water; the alternate roadway options that were/are being considered for the project and their environmental impacts; the impact of designing a safe, efficient, and aesthetically pleasing roadway; and the planned expansion of other major roadways that may have a direct or indirect impact on the project corridor, such as WIS 83 and the recently reconstructed County X/Sunset Drive intersection, that were considered as a part of the traffic analysis for the project.

The remainder of the facilitated discussion focused on three areas: the Built Environment, the Natural Environment, and the Social Environment. The panelists were not requested to suggest any other roadway alternatives or designs.

# Built Environment

The first of the three discussions was on the built environment. The first question the Panel addressed in regards to the Corridor was "What factors influence development?" Factors that were deemed to influence development included:

- real and perceived demand of the housing, commercial and farming markets;
- access to roadways, highways and cities;
- project feasibility;
- zoning and other governmental restrictions;
- level of taxation;
- workforce quality and availability;
- financing availability;
- demographics and demographic trends; population growth and true regional growth;
- quality of schools and natural areas;
- transportation options;
- availability of utilities and other public infrastructure;
- character of the community and the amenities it offers; and
- the supply of developed and developable land parcels.

The second question the Panel addressed in regards to the Corridor was "What role does transportation play in development?" Transportation was deemed to play a significant role in development with the following factors influencing development:

- the efficiency of the path of travel;
- the availability of alternate modes of transportation;
- the aesthetic quality of the transportation mode and route;
- the addition as well as relocation of businesses within a trade area;
- cost of transportation on residents and businesses in both time and expense;
- level of travel safety afforded;
- design limitations due to topography and the environment; and
- the roadway design in response to the actual and anticipated traffic volumes.

The role that transportation plays on development changes as the economy changes. Impacts like higher gasoline price, stagnating wage growth, and high unemployment foster increased trip-chaining, carpooling, use of park-and-ride facilities, and infill development to decrease commute times and travel expenses. Higher transportation costs also encourage the use of

alternate modes of transportation such as mass transit and the use of pedestrian/bike/multi-use paths for both recreation and transportation purposes. The reliability and predictability of the transportation system in time and cost impacts the level and type of development that exists and may occur in a given area. Roadways are necessary to open up areas to new development with road type, design, and directness of route influencing the safety level of the roadway's perception in the community.

Transportation can affect development in many ways. Two potential examples of how transportation can affect development include (i) a shift in the location of a business or industry to a different location and (ii) the growth of new or existing businesses in a given area. In both cases, the overall amount of development grows and land uses change. One panelist felt that most of the impacts of transportation on development are of the first type, especially of the boundaries of an area are relatively large. Another panelist disagreed with this assessment.Properly designed roadways are an integral part of linking communities within Waukesha County as well as keeping Waukesha County a vibrant area for residents and businesses that benefit from the proximity to Milwaukee and being located between Milwaukee and Madison.

The economic slowdown and financial challenges facing development today have contributed to increased cooperation between the public and private sectors in an effort by many communities to continue to grow their tax base to address the increasing cost of community services and public improvements. These economic realities have contributed to communities offering financial assistance as well as design flexibility in items such as development density in an effort to continue to growth their tax base. Development plans have been altered to respond to these economic realities and include items such as increased density and the construction of sustainable buildings in an attempt to increase financial feasibility of development, lower operating costs for residents and building owners, and more efficiently utilize community services and infrastructure. The changes in density and building design are also responding to the changes in demographics.

The third question the Panel addressed in regards to the Corridor was "How have things changed in the last five years?" As mentioned above, the economy has negatively impacted employment and wages and facilitated a move towards developing more sustainable residences with greater density. Due to cost to construct, operate, and maintain "McMansions" and the current lack of demand for homes in this category, both developers and communities are recognizing the need for more sustainable developments with increased density. In addition to responding to market economics and social trends across the Midwest, this change is responding to changing demographics, the aging population that is looking for cost effective independent living choices, and a desire for an increased sense of community. To help bridge the gap between the cost of development and the market price for the completed product, given the downward pressure on sale prices and rents, communities and developers have been getting creative in their approach to building and financing projects. Development tools like the use of tax credits, increased density, TIF, and other public financing options have been and are being used to help lower development costs to meet the market's pricing expectation and to continue to grow a community's tax base.

The existence of infrastructure such as roads, utilities, and schools is helping to facilitate infill development in an attempt to further respond to pressure on project costs. The design of the roadway can have an impact on neighboring development with good designs fostering

development and redevelopment. The design of the Corridor is encouraged to provide both a safe and aesthetically pleasing driving experience. Long term concerns exist for the permanent funding of improved roads and other public infrastructure due to the current state of public finances and their funding source. Highway user fee revenues are flat or decreasing and there is great reluctance to increase highway user fees at both the state and federal level. This leads to great constraints on funding roadway maintenance and construction.

The fourth question the Panel addressed in regards to the Corridor was "Do these development factors exist in our Corridor?" The short answer is yes, they do exist in the Corridor. The area along the Corridor is anticipated to continue to grow in population and traffic due to its location in Waukesha County and the ease of access it affords to Interstate-94 and to the City of Waukesha. The location of the road is anticipated to provide opportunities for an aesthetic roadway design complete with bike and multi-use paths and its design is required under the Clean Water Act to mitigate wetland impacts, should any occur. The project is not expected to operate as the strictest definition of the term "bypass" might connote due to the existence of traffic signals and cross streets; however, the project will facilitate both a safer mode of travel as well as a more efficient path of travel to the west and southwest side of Waukesha and may lessen traffic congestion on other City streets.

The development along the Corridor is expected to progress as currently zoned and remain primarily residential. The economy and demographics will continue to influence the type, design, and density of housing demanded by the community. Once the road is improved, traffic patterns for both residents and businesses are likely to change to take advantage of the safety and efficiency improvements provided by the Corridor.

There was concern raised that development will occur along the Corridor on what are today farm fields that in turn will increase the propensity for other farmers to leave farming and sell their land for residential development. This concern; however, is mitigated by the existence of floodplains that limit development as well as zoning and other governmental restrictions and the health of the broader economy which will also influence the demand and timing for development.

The fifth question the Panel addressed in regards to the Corridor was "How different is the anticipated development from what is currently planned?" The development of the area along the Corridor is anticipated to be developed very much along the lines of what has been planned by the adjoining communities and SEWRPC. If the Corridor provides a safer and more efficient path of travel than what exists today on either the existing Corridor or neighboring streets, the Corridor in anticipated to encourage traffic to travel down the improved roadway as opposed to these alternate routes thereby improving the safety and efficiency of all streets. An improved roadway will also support more flexible, development and redevelopment plans that adjoining communities may elect to pursue in response to the changing demographics and economics as previously discussed.

A panelist was skeptical of the traffic forecasts, noting that energy costs and demographic changes will result in a slower rate of growth than what Waukesha County has experienced in the past. Charlie Webb noted that SEWRPC traffic projections for the Waukesha County and the study area assume a lower rate of growth than Waukesha County has experienced in the past.

# Natural Resources

The panel listened to a presentation to the panel on the direct environmental impacts of the project by Dan Dupies/CH2M HILL. Dan is managing the study team's preparation of the environmental impact statement. The presentation prompted several questions:

- Does the study team look at different wetland types/boundaries within the larger areas defined as wetland? Yes, within wetlands are smaller subareas where different species and group are located.
- In response to a question about how wetlands are rated, Dan explained that the size of the wetland and the diversity of the species it supports are the key factors. While size itself is not indicative of the quality of a wetland, Dan noted that it would be unusual for a small wetland to have a high function or value unless it supported a rare species.
- Tom Slawski/SEWRPC , a member of the expert panel and the primary author of the Pebble Creek Watershed Protection Plan (SEWRPC Community Assistance and Planning Report No. 284, Pebble Creek Watershed Protection Plan, Waukesha County, Part One, June 2008; http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-284_part-01_pebble_creek_watershed_protection_plan.pdf?) , explained that west of the project corridor Brandy Brook, a tributary to Pebble Creek, discharges the coldest water into the Pebble Creek watershed and WDNR observed that this supports brook trout, a species that does not do well in warmer water. Brandy Brook and Upper Pebble Creek are two distinct lobes of the system; Brandy Brook is higher quality and Upper Pebble Creek has been degraded mostly due to much more intensive urban development. The Lower Pebble Creek reach (from confluence of Brandy Brook and Upper Pebble Creek to the confluence of the Fox River) that will be directly impacted by this proposed project currently contains the highest diversity of both fish and wildlife found within the watershed. This lower reach contains both high quality cold (brown trout) and warmwater (northern pike) gamefish species. This reach has maintained such a high quality, due to limited encroachment of both agricultural or urban development and limited channelization (straightening of the channel).
- How does Pebble Creek function as a means of storing flood water? Wetlands act as a flood storage area, as does upper Pebble Creek (above its confluence with Brandy Brook). However, it is important to note that flooding and stormwater management have been identified within the Pebble Creek Watershed Protection Plan as very important problems and issues of concern. For example, one out of the four main goals in the aforementioned plan was to "Control urban runoff pollution and flooding" within this watershed. Do wetland inventories distinguish between native and non-native species? Yes.
- Will Sunset Drive be reconstructed and widened at some point no matter what? This was a matter of some misunderstanding by the study team. After originally telling the expert panel that SEWRPC's 2035 regional transportation plan recommends widening Sunset Drive to four lanes regardless of the Waukesha Bypass project, the study team later clarified at the expert panel discussion (and confirmed with a more thorough review of the SEWRPC 2035 transportation plan after the meeting) that widening Sunset Drive is not included in SEWRPC's 2035 regional transportation plan.

- If Sunset Drive is widened, would that be a cumulative impact? On most projects, a review of transportation-related projects in a land use or transportation plan typically serve as a guide of "reasonably foreseeable" transportation projects.
- How did the Pebble Creek Alternative come to be? It was developed and included in SEWRPC and County transportation plans decades ago.
- Consider roundabouts at Sunset Drive intersection, consider pushing Pebble Creek Alternative further west away from Pebble Creek than it is currently shown.

## Discussion

The discussion focused primarily on the Pebble Creek corridor, specifically the area between Sunset Drive and WIS 59.

The Pebble Creek Alternative that straddles the transition between upland and wetland would degrade the ability of the Pebble Creek corridor to support existing threatened and endangered turtle and snake habitat as well as potentially degrade water quality due to its proximity to Pebble Creek. Conversely, Sunset Drive already exists, that habitat has already been severed. In effect, the damage has already been done. The Sunset-to-County X alternative is a widening of the existing roadway, which would not increase the amount of fragmentation of the stream corridor lands beyond what has already occurred. For a better understanding of the definition and description of riparian buffers and their function as well as the critical linkages between wetland and upland, we have attached a copy of the SEWRPC Riparian Buffer Guide entitled "Managing the Water's Edge: Making Natural Connections" (http://www.sewrpc.org/SEWRPCFiles/Environment/RecentPublications/ManagingtheWatersEdge-brochure.pdf).

There will be a degradation in the quality of the Pebble Creek wetland if the project is built. Will the degradation be too great? Although this may be difficult to determine, there will be direct wetland impacts associated with this project: proposed 4.2 acres of wetland impacts north of the Railroad tracks; proposed 7.1 acres of wetland impacts associated with the Sunset-to-County X Alternative; and proposed 4.2 acres of wetland impacts associated with the Pebble Creek Alternative. In addition, there are four threatened and endangered species that could be affected by the project that include the Butler's Gartersnake, blandings turtle, slippershell mussel, and small white Lady's Slipper.

There was concern over the precedent of building a road through a high-quality wetland area being an indirect effect in itself as it relates to future similar projects. The Pebble Creek Watershed Protection Plan recommends maintaining and enhancing existing linkages between terrestrial (including wetland and upland) and aquatic biological communities (The plan discusses the potential Waukesha Bypass project on page 156). The Pebble Creek Alternative would sever one of the largest contiguous primary environmental corridors within the Pebble Creek watershed, which contains both high quality wetland and upland communities.

It is difficult to quantify the impact on water quality and wetland habitat quality if the Waukesha Bypass were built and spurred additional development in the study area. The best way to assess the indirect effect on wetland habitat quality is to rely on previous studies and assess the issue qualitatively. With respect to water quality, however, the impact of a change in

land use from wetland to road surface can and should be assessed quantitatively using appropriate water quality models.

A riparian buffer effectiveness analysis was included within the Pebble Creek Watershed Protection Plan. This analysis indicates that riparian buffers are extremely effective in protecting water quality by reducing contaminant loads as well as providing habitat for terrestrial wildlife and instream aquatic communities. The Pebble Creek watershed plan concluded that the existing and future water quality and associated high quality fishery and wildlife in this river system was largely due to the high quality and extent of the riparian buffer land uses and environmental corridors adjacent to Pebble Creek. The plan on pages 151 through 155 recommends the following actions as they relate to buffers in non-agricultural areas of the Pebble Creek watershed specifically to protect and improve surface water and groundwater quality and aquatic life:

- Observe and implement the guidelines set forth in regional, county, local land use plans, and the Waukesha County land and water resource management plan, to protect environmentally sensitive lands as recommended in the regional natural areas and critical species habitat protection and management plan;[1]
- Integrate the Pebble Creek Watershed Protection Plan recommendations into regional and local level development plans including a refined comprehensive watershed management plan for the Fox River basin;[2]
- Limit development within environmental corridors and isolated natural resource areas as identified by SEWRPC and shown in Maps 11 through 13 in Chapter II of this report;
- Promote defragmentation by connecting environmental corridor and isolated natural resource areas with other larger corridors and natural areas where and when possible as recommended in the regional natural areas and critical species habitat protection and management plan as shown on Map 35 in Chapter IV of this report. Encourage expansion and connection of natural areas by means of the environmental corridor network, as shown in Maps 11 through 13;
- Maintain or establish natural vegetation in urban and rural areas, preferably using native species, within the riparian corridors along perennial, intermittent and ephemeral waterways in accordance with WDNR and NRCS technical standards for filter strips. Encourage voluntary perpetual conservation easements as needed to implement this plan. Maps 31, 32, and 33 in Chapter IV of this report show the existing buffers along perennial and intermittent streams;
- Preserve and/or restore natural vegetation and topography along perennial, intermittent and ephemeral waterways by seeking voluntary, perpetual conservation easements on

[1]*SEWRPC Planning Report No. 42*, A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, *September 1997*.

[2]*The Fox River watershed study is documented in SEWRPC Planning Report No. 12*, A Comprehensive Plan for the Fox River Watershed*; Volume One*, Inventory Findings and Forecasts; *Volume Two*, Alternative Plans and Recommended Plan, *February 1970. See also WDNR, Publication No. PUBL-WT-701-02*, The State of the Southeast Fox River Basin, *February 2002*.

targeted lands. Targeted lands are recommended to be designated as open space areas. Lands recommended to be included within such targeted easements lie within 75 feet of each streambank or within the floodplain, whichever is greater;

- Protect remaining natural stream channels, including small tributaries and shoreland wetlands that provide habitat for the continued survival, growth, and reproduction of a sustainable fishery and wildlife throughout the study area.
- Restore wetlands, woodlands, and grasslands adjacent to stream channels and establish buffers with a minimum of width of 75 feet to reduce pollutant loads entering streams and protect water quality.

[Note: In terms of the specific recommendations relating directly to the Pebble Creek alternative for the Waukesha Bypass, the plan states that:

- It is recommended that the bypass be located so as to avoid impacting the highest quality reaches with the highest quality fisheries and habitat of the Pebble Creek system, namely reaches LP-1 and LP-2 on Map 19 in Chapter IV of this report.
- It is recommended that the proposed bypass be located so as to minimize impacting the primary environmental corridor adjacent to Pebble Creek to avoid impacting natural areas or critical species habitats, and cause no net loss of wetlands within the Pebble Creek watershed.

Tom Slawski/SEWRPC, primary author of the Pebble Creek Watershed Protection Plan, stated that the Sunset-to-County X alternative for the Waukesha Bypass was not specifically addressed in the plan, but is wholly consistent with the plan.]

The plan also recommends establishment of buffers with a minimum width of 75 feet or greater for purposes of either establishing or restoring protections in areas where such levels of protection do not currently exist. Tom stated that in the case of the Waukesha Bypass, however, the Bypass alternative that protects and maintains the greatest buffer widths and maximizes connectivity between upland and wetland (i.e. Sunset-to-County X alternative) should be preferred based upon the recommendations in the Pebble Creek Watershed Protection plan.

The primary indirect effect of the project will be from run-off which will degrade water quality no matter what mitigation measures are put in place. While indirect effects may occur from development in the watershed, not just from the Waukesha Bypass, such development would never be allowed within the same areas as proposed to be in the Pebble Creek bypass alternative due to the fact that these lands are Advanced Identification of Disposal Areas (ADID) wetlands that are unsuitable for the discharge of dredge or fill materials. Consequently, it is not accurate to compare this alternative to other development within appropriately zoned areas of the watershed. In addition, run-off from roadways is in general far more polluted in salts, heavy metals, and other pollutants than runoff from other forms of development. This is true for any project, not just this one. [no details were provided to the expert panel on how stormwater run-off associated with the project would be managed or how effective the management practices would be.]

The Fox River Parkway bike trail east of County X is not heavily used. Increased use of the trail and Fox River corridor as a result of a multi-use trail connection from the Waukesha Bypass to

it could change quality of park areas through increased use. This would be good for recreation, bad for ecology.

The group's consensus during this session was that south of Summit Avenue the project would transition land use and the resulting impacts to wetland, water quality, loss of open space, and induce sprawl (and loss of development in other locations, for example west of the Corridor). [This was not consistent with the group's consensus during the earlier discussion of the built environment, which was that the study area has been and will continue to be an attractive area for development regardless of whether the Waukesha Bypass is built. The differing conclusions may have been a result of a greater understanding of other transportation projects in the area, or perhaps the timing of the development would be less under the No-Build Alternative. ] The group did acknowledge that the planning/zoning already in place contribute to the need for the roadway. Development has already started.

The expert panel noted that once 25 percent of watershed develops, research has shown it is hard to maintain water quality and biological diversity. Approximately 41 percent of the Pebble Creek watershed was urbanized in 2005 according to the Pebble Creek Watershed Protection Plan. There is a threshold of how much development a stream can handle. The expert panel felt there has been a significant water quality impact already regardless of the Build Alternative selected. The 41 percent urban development corresponds to about 9 percent "directly connected" imperviousness (3 percent in the Brandy Brook subwatershed and 12 and 14 percent in the Lower and Upper Pebble Creek subwatersheds, respectively). That level of imperviousness is just below the threshold level of 10 percent at which the previous peer reviewed studies indicate that negative biological impacts have been observed. Therefore, this watershed is at a critical threshold to continue to be able to support brook trout and brown trout as well as the high quality warm water fishery without special considerations to protect this stream system as development continues to occur.

## Possible Mitigation Measures

Possible mitigation measures suggested were

- conservation easements,
- farmland preservation, including Transfer of Development Rights,
- help get people out into wetlands to enjoy them and learn about them, and
- road signs that read "You Are Now Entering the Pebble Creek Watershed"
- Wildlife underpasses would allow animals, including threatened and endangered species, to move back and forth between upland and wetland. Locally, these have been installed in Germantown.
- Fish and other wildlife passage for crossings. Keep passage free of debris.
- Project staging – build only segment north of railroad first? Put off construction of the part south of Summit Avenue until traffic counts warrant it. This comment was based on some skepticism of the future traffic forecasts for 2015, 2025.
- Develop environmentally strict performance standards. Use the project as a showcase – like complete streets. Go above and beyond regulatory requirements.

# Social Environment

The study team informed the Expert Panel about the existing social and cultural resources located within and near the West Waukesha Bypass study area. This discussion included identifying existing residential communities, churches, schools, recreation facilities, employment centers, and land use patterns and identifying any potential changes in those uses as a result of this project. The following is a summary of the elements presented and the Expert Panel responses to those elements. At the end of the discussion, the study team asked the Expert Panel about the key factors and questions they would ask regarding social factors. The responses are presented at the end of this section as opportunities and limitations.

## Existing Conditions

### Residential Communities

The development between I-94 and Northview Road along CTH TT consists of newer single-family housing. This community developed as the CTH TT roadway and access to the highway was improved. This residential community stretches from CTH SS on the west to University Drive on the east. The residences in this area access CTH TT via main subdivision entrance roads and face inward towards the subdivision and away from CTH TT. This community consists of many families with children attending nearby schools, such as Meadowbrook Elementary School.

Previously, the study team held a meeting at Meadow Brook School to discuss the project with the local residents. The residents noted that they are concerned about the safety of children crossing the proposed Bypass to access the school. One optioned discussed to provide for a safer crossing consisted of a pedestrian bridge over CTH TT.

Additional neighborhoods are located along CTH TT between Northview Road and Madison Street. Like the residential area to the north, these residences do not have direct access to CTH TT. South of Madison Street there is a handful of residences that have direct access to CTH TT. Future access to these properties would be via the existing CTH TT roadway which would serve as a frontage road to the new Bypass alignment. The neighborhood character of this area is different from the neighborhoods to the north. The houses in this area have direct access to CTH TT, larger lots, and in many cases, are significantly older.

The panel debated if measures should be taken during design of the roadway to maintain the rural character of this area south of Madison Street. Views to existing farmland (recognizing this land use may change in the future) and wetland areas should be protected. Suggested design modifications include installing street trees, possibly being planted closer together than regular specification suggest, using species more indicative of rural areas such as larger maples and oak trees, addressing the quality and look of the shoulder, and directing any street lighting such that the light does not reflect upward or extend past the primary roadway corridor.

The Hawthorne Hollow neighborhood is located to the west of the proposed Pebble Creek alignment. This neighborhood has a more mature housing stock than the neighborhoods on the north end of the project corridor. Under both alternatives, this neighborhood would retain its access from Merrill Hills Road. No direct access would be provided to the Bypass. The panel noted that the residences should be buffered from the Bypass in a manner that is consistent with the existing vegetation of the area.

The Ridge View neighborhood is located in the southwest quadrant of the Sunset Drive/CTH X intersection. Due to the surrounding built and natural environment limitations, this residential area is not likely to expand in size. As both Sunset Drive and CTH X have already experienced increased development and use, the panel agreed that the Bypass would pose limited adverse impacts to this neighborhood.

### Places of Worship

There are three churches located within the study area: Faith Baptist Church, Apostolic Life Tabernacle, and St. John Neumann Congregation. Faith Baptist Church is located in a commercially developed portion of the project near intersections controlled by traffic signals. It is not considered to be affected by the proposed Bypass. Access to the Apostolic Life Tabernacle Church would continue to be via Merrill Hills Road and likewise would not be adversely affected. St. John Neumann Congregation is currently accessible from an already improved section of STH 59. The West Waukesha Bypass is not anticipated to have an indirect impact on the future viability of these churches.

### Schools

There are 3 schools and one future school site located within or near the study corridor: Meadow Brook Elementary School, University of Wisconsin-Waukesha, Waukesha Christian Academy, and the undeveloped land owned by the Waukesha School District located north of the Glacial Drumlin State Trail.

As previously noted, safe access for students to and from Meadowbrook Elementary School is a concern for local residents. Furthermore, should residential development increase in this area, the roadway should be designed to provide sufficient access for the increased usage. Most of the students are driven to the school, however all modes of access should be accounted for.

The University of Wisconsin-Waukesha campus is located to the east of the Bypass corridor. It was assumed that students would access the campus via local roadways as well as the proposed Bypass. Should attendance increase, the proposed Bypass would increase the overall driving safety of the area as the school offers both day and night programs.

The Waukesha Christian Academy would have access via the proposed frontage road. This is a K-12 school with a relatively small enrollment. Considerations for this site were similar to those addressed for the rural community homes in this area; the rural character should be maintained and safe conditions should be assured.

The proposed bypass cuts through a portion of the farm land currently owned by the Waukesha School District. The School District has stated that this land may be developed in the future as a middle school. While the timing of the development of this parcel is not known the panel suggested that this land be considered farm land and taken into account as such in considering the maintenance of the rural character of the residential area.

### Recreation Facilities

The existing roadway passes by or provides access to several recreation facilities used by the residents of Waukesha County and beyond. Kisdon Hill Park is primarily an undeveloped area adjacent to CTH TT connected to a larger park on Summit Drive consisting of baseball/softball fields, a skateboard ramp area, a play ground area, and picnicking area. The area adjacent to CTH TT is rarely used by park users.

The planned 22-acre Meadowview Park is currently owned by the County and proposed to be developed as the City of Waukesha's eleventh community park providing resources to a larger area. The park's amenities have not been planned yet. Access to this park, once developed, should be from Northview Road, and not CTH TT.

Good Times is a privately-owned summer recreation facility for children. While it is access is from Summit Drive, it has considerable frontage along CTH TT. Roadway expansion at this specific area is limited by the existing commercial development at all corners of the intersection.

Sunset Park, located along Sunset Drive west of the study area, is owned by the Town of Genesee. It provides parking and baseball fields as well as some play ground equipment. It will not be directly impacted by the proposed project but use of the park may increase as access to the area is improved and it may draw baseball teams from further away.

The primary recreation areas accessed from CTH TT are Rezter Nature Center and the Glacial Drumlin State Trail. Rezter Nature Center is located to the west of CTH TT south of Madison Street. Rezter Nature Center is a community facility used by families, school groups, and numerous organizations. The safety improvements at the Madison Street/CTH TT intersection would benefit the users of this park.

The Glacial Drumlin State Trail is a recreational trail used by people throughout the region. It is used as both a bike and pedestrian trail. The trail is primarily recreational in nature and not considered a viable transportation route for people walking or biking to commercial or employment areas at this time. Currently, there is limited parking for those attempting to access the trail at CTH TT. The parking consists of parking vehicles on the narrow shoulder along CTH TT near the trail. The panel was informed that the Wisconsin Department of Transportation (WisDOT) prefers eliminating the existing at-grade road crossing with the trail and the Wisconsin & Southern Railroad (WSOR) rail line. The preliminary design has the new Bypass alignment on structure over the trail, WSOR line, and Pebble Creek, while the existing CTH TT alignment and bridge over Pebble Creek can remain in place to provide access and serve as a trailhead for the Glacial Drumlin State Trail. Increased and improved parking facilities and access could increase the use of the trail.

### Employment Areas

The main commercial area in the study area is centered on the CTH TT/Summit Drive intersection. In the northeast quadrant of this intersection there is a strip mall with a large grocery store and a Walgreens. The area also contains a gas station, banks, coffee shops, and restaurants, among other commercial uses. There is also office space in this area. Additional commercial locations are spread out through the corridor. A rehabilitation hospital is located on the north end of the corridor and a storage facility, auto repair shop, and landscaping business are located on the south end. The expansion of these commercial areas is limited due to space constraints as they are surrounded by existing residential development or wetland areas. The panel considered that the improved roadway would provide safer access and possibly increase the usage of these commercial areas.

Along the Sunset-to-County X Alternative there is existing commercial development along Sunset Drive, and a bank along CTH X. Similar to the commercial areas described above, it is unlikely that new commercial development in this area would increase due to limited space. The area is bordered by wetlands of Pebble Creek on the west side and Fox River to the east.

The proposed improvements may change the nature and/or intensity of the existing commercial areas. The Shoppes at Fox River may see increased use, and as a result, some of the existing vacant space may be filled. This would improve the commercial value of the area.

Beyond the immediate area, major employment areas include GE Healthcare, located north of I-94, and Generac, located to the southwest along Genesee Road. Both of these companies employ people from within and outside of Waukesha County. Both proposed alternatives would improve the commuting times for both the employees and the larger truck operations providing supplies to these companies. The panel did not think that the road improvements would increase the use of the road by employees and suppliers, as they most likely already use the existing road. It would however reduce the travel time to these locations and provide a more consistent travel time.

### Land Use

Historically, this western portion of Waukesha was viewed as the end of the city (and Milwaukee metro area) and the beginning of the rural areas. To some degree, this is still true. There is farmland, parkland and open space (wetland areas) existing along the western side of the roadway. The loss of farmland is a highly contentious issue, based both on direct economic measures as well as externalities.

The panel found it difficult to separate impacts of the road improvements from impacts of a growing community and population, regardless of the road work. While the country is currently experiencing a recession and residential development has been limited, it was the opinion of the panel that this was a short term issue and that residential development in this area would increase. Primarily, the only land available for such subdivision-level development along the corridor is existing farmland. In addition, there is vacant land west of the corridor that could be developed.

The panel also discussed the responsibility of being stewards of the land and landscape. This includes not only following DNR policies regarding wetlands, but taking a stance of limiting the size and scope of new development. Comments included instituting development boundary zones such as has been done in Oregon, changing zoning to increase the opportunities for higher density living, and the possibility of developing mixed use areas where residential development and commercial development are merged in the same area, thus maximizing the potential use of space.

The expert panel felt that the Waukesha Bypass project would make land currently deemed agricultural convert to other development, tipping the scales towards residential development rather than farmland. Farming would be more difficult and less lucrative, and it would be harder for farm equipment sales and other services that depend on farming. The panel did note that long-range land use plans for the study area show transition to residential in the project corridor and that the tipping point may have already occurred.

## Opportunities

### Recreation Facilities

The Project Team should consider possible expansion plans for Retzer Nature Center. There may be an opportunity to connect the Glacial Drumlin State Trail to the Nature Center, increasing usage of both facilities. People may be more likely to visit the Retzer Nature Center if

a new access route to the Glacial Drumlin State Trail runs past or through the nature center. There is also potential to connect the trails located along the east side of the Fox River, south of STH 59, to the Glacial Drumlin State Trail. It was noted that a bike lane was part of the proposed roadway cross-section. Opportunities for this lane to access other trail systems (such as providing a method to go from the overpass across the rail road to the Glacial Drumlin Trail) may promote bike lanes on connecting arterial roadways.

### Residential Communities

The changing population demographics may offer opportunities for altering the development patterns of Waukesha. According to data from the latest census, the Waukesha population is getting older. The housing and facility needs of an older population differ from a mixed-aged population. The Project Team should consider looking at development plans taking additional factors into account, beyond just looking at the SEWRPC projected plans.

Given the number of pedestrian/vehicle crossings, the project team should review a full range of street crossing and road designs. With potential growth in this area, the number of these interactions would be expected to grow, and therefore should be addressed upfront, instead of as an after-the-fact repair.

### Other

The existing level of traffic delay at Northview Road and Madison Street intersections should be reduced by the proposed road modifications. With consideration to environmental quality, the overall area air quality should improve due to reduced idling times.

Waukesha and Wisconsin should see this project as an opportunity to set a precedent. Design standards that address pedestrian use, cycle use, air quality, noise pollution, and community character could all be set to address the highest level of environmental protection, community quality, and overall safety. While the panel recognizes that there is a budget limitation for this project, there should be the opportunity to design for the ultimate, and install in phases.

Storm water runoff will be addressed along the entire length of the project corridor. This provides an opportunity to develop a comprehensive storm water management plan that addresses both quality and quantity of runoff. This is essential and valuable as the area abuts the Pebble Creek and Fox River ecosystems.

### Limitations

The project has historically been called the Waukesha Bypass. Development conditions have changed such that it is no longer a true “bypass”. Furthermore, this title has implications to the amount of traffic it may carry and the type and design of the roadway. These implications may limit the acceptance of this project. The project team should contemplate changing the name of the project.

Should the current farm land become available for development, the type and scale of the development may differ from the existing residential development in the corridor. Smaller homes and smaller lot sizes have become more desirable due to changes in the economy. The belief that smaller lots mean poorer quality should be eliminated. Throughout any and all development, Waukesha should hold the developer and subsequent owners to the highest design, construction and safety standards possible.

The stability of the local and state-wide political landscape should be considered. If current relationships between the communities change, this could lead towards instability in the future land use along the corridor. There are many public lands and political entities present along the corridor. It is necessary that tenured officials maintain an open and cooperative relationship with other entities. This is important in developing and maintaining cohesion between communities. It was noted that parkland, churches, and schools are generally stable land uses. The sense of community is necessary for a region to remain established and stable.

The panel was informed that a noise analysis has not yet been conducted. This must be conducted and appropriate design modifications must be made to limit the adverse impacts associated with increased noise pollution on all groups in this community.

## Post-Meeting Coordination With the Expert Panel

At the conclusion of the May 10, 2011 expert panel discussion three panel members agreed to prepare written summaries of the notes from the three sessions (built, natural and social environment). The study team used the written notes and prepared this summary report, which was sent to the panel members for their review. The panelists' original summaries of the draft are attached to this report so the panel can see how the study team edited the summaries. The intent of the editing was to shape the work of the three different authors into a cohesive report without changing the nature of the summaries.

The edited draft report was sent to the expert panel members on June 8th. Comments were received from three panelists. Key comments included adding information from the SEWRPC *Pebble Creek Watershed Protection Plan*, removing references to the Pebble Creek Alternative being safer than the Sunset-to-County X Alternative (the panelists had not been presented this information at the May 2010 meeting) and clarification of the expert panel's position on the project's indirect on farming in the study area. Comments on the June 8th version are shown in red.

These comments were incorporated into the report and a revised report was e-mailed to the expert panel members on July 25th. Two panelists commented on the July 25th version. One panelist's comments added more information from the *Pebble Creek Watershed Protection Plan* and added the comment that the Sunset-to-County X is "wholly consistent" with the plan and should be the preferred alternative based on the recommendations of the plan. While the study team does not feel it is appropriate for this report to state which alternative is more or less compatible with the *Pebble Creek Watershed Protection Plan* without a dialogue on this issue among the panelists, this report is a product of the expert panel and not the study team and so those comments remain in the report. The rest of the panel received the one panelist's comments on the July 25th version and had an opportunity to comment on it, but none did. Comments on the July 25th version are shown in blue.

# Originally Prepared Meeting Summaries

## Built Environment

The "Waukesha Bypass Expert Review Panel" started off the day with a brief bus tour of Meadowbrook Road south from I-94 which included a driving tour of the Sunset to County X roadway option as well as a visual overview of the Pebble Creek roadway option for completing the connection to the existing STH-59 portion of the Waukesha Bypass. These streets and their connection between I-94 on the north and STH-59 on the south are collectively referred to herein as the "Corridor".

Following the bus tour, the Panel discussed the existing built environment. This discussion included: a brief history of the Corridor, including the original mapping of the Bypass; the existing as well as the planned and potential future development and uses along the Corridor; the shift in growth and demographics to the area; the challenges that Waukesha County faces with drinking water; the alternate roadway options that were/are being considered for the Corridor and their environmental impacts; the impact of designing a safe, efficient, and aesthetically pleasing roadway; and the planned expansion of other major roadways that may have a direct or indirect impact on the Corridor, such as STH-83, that were considered as a part of the traffic analysis for the Corridor.

The first question the Panel addressed in regards to the Corridor was "What factors influence development?". Factors that were deemed to influence development included: real and perceived demand of the market; access to roadways, highways and cities; project feasibility; zoning and other governmental restrictions; level of taxation; workforce quality and availability; financing availability; demographics and demographic trends; population growth and true regional growth; quality of schools and natural areas; transportation options; availability of utilities and other public infrastructure; character of the community and the amenities it offers; and the supply of developed and developable land parcels.

The second question the Panel addressed in regards to the Corridor was "What role does transportation play in development?". Transportation was deemed to play a significant role in development with the following factors influencing development: the efficiency of the path of travel; the availability of alternate modes of transportation; the aesthetic quality of the transportation mode and route; the addition as well as relocation of businesses within a trade area; cost of transportation on residents and businesses in both time and expense; level of travel safety afforded; design limitations due to topography and the environment; and the roadway design in response to the actual and anticipated traffic volumes.

The role that transportation plays on development changes as the economy changes. Impacts like higher gasoline price, stagnating wage growth, and high unemployment foster increased trip-chaining, carpooling, usage of park and ride facilities, and infill development to decrease commute times and travel expenses. Higher transportation costs also encourage the use of alternate modes of transportation such as mass transit and the use of pedestrian/bike/multi-use paths for both recreation and transportation purposes. The reliability and predictability of the transportation system in time and cost impacts the level and type of development that may occur in a give area. Roadways are necessary to open up areas to development with road type, design, and directness of route, influencing the safety level of the roadway's perception in the community. Properly designed roadways are an integral part of linking communities within

Waukesha County as well as keeping Waukesha County a vibrant area for residents and businesses that benefit from the proximity to Milwaukee and being located between Milwaukee and Madison.

The economic slowdown and financial challenges facing development today have contributed to increased cooperation between the public and private sectors in an effort by many communities to continue to grow their tax base to address the increasing cost of community services and public improvements. These economic realities have contributed to communities offering financial assistance as well as design flexibility in items like density in an effort to continue to growth their tax base. Development plans have been altered to respond to these economic realities and include items such as increased density and the construction of sustainable buildings in an attempt to increase financial feasibility of development, lower operating costs for residents and building owners, and more efficiently utilize community services and infrastructure. The changes in density and building design are also responding to the changes in demographics.

The third question the Panel addressed in regards to the Corridor was "How have things changed in the last five years?" As mentioned above, the economy has negatively impacted employment and wages and facilitated a move towards developing more sustainable residences with greater density. Due to cost to construct, operate, and maintain "McMansions" and the current lack of demand for homes in this category, both developers and communities are recognizing the need for more sustainable developments with increased density. In addition to responding to market economics, this change is responding to changing demographics, the aging population that is looking for cost effective independent living choices, and a desire for an increased sense of community. To help bridge the gap between the cost of development and the market price for the completed product, given the downward pressure on sale prices and rents, communities and developers have been getting creative in their approach to building and financing projects. Development tools like the use of tax credits, increased density, TIF, and other public financing options have been and are being used to help lower development costs to meet the market's pricing expectation and to continue to grow a community's tax base.

The existence of infrastructure in things such as roads, utilities, and schools is helping to facilitate infill development in an attempt to further respond to pressure on project costs. The design of the roadway can have an impact on neighboring development with good designs fostering development and redevelopment. The design of the Corridor is encouraged to provide both a safe and aesthetically pleasing driving experience. Long term concerns exist for the permanent funding of improved roads and other public infrastructure due to the current state of public finances and their funding source.

The fourth question the Panel addressed in regards to the Corridor was "Do these development factors exist in our Corridor?". The short answer is yes, they do exist in the Corridor. The area along the Corridor is anticipated to continue to grow in population and traffic due to its location in Waukesha County and the ease of access it affords to Interstate-94 and to the City of Waukesha. The location of the road is anticipated to provide opportunities for an aesthetic roadway design complete with bike and multi-use paths and its design is encouraged to mitigate wetland and environmental impacts. Furthermore, provided that the Pebble Creek Roadway option is chosen, the Corridor will be completed in an efficient and safe roadway design that will facilitate this anticipated growth along the Corridor. The Corridor is not expected to operate as the strictest definition of the term "bypass" might connote due to the

existence of traffic signals and cross streets; however, the Corridor with the Pebble Creek Roadway option will facilitate both a safer mode of travel as well as a more efficient path of travel to the west and southwest side of Waukesha and may lessen traffic congestion on other City streets.

The development along the Corridor is expected to progress as currently zoned and remain primarily residential. The economy and demographics will continue to influence the type, design, and density of housing demanded by the community. Once the road is improved, traffic patterns for both residents and businesses are likely to change to take advantage of the safety and efficiency improvements provided by the Corridor. Due to the cost and number of interested parties, the confluence of both agreement amongst the governmental stakeholders as well as the availability of funds for the completion of the Corridor has not existed until now.

There was concern raised that development will occur along the Corridor on what are today farm fields that in turn will increase the propensity for other farmers to leave farming and look to develop their land. This concern; however, is mitigated by the existence of floodplains that limit development as well as zoning and other governmental restrictions and the health of the broader economy which will also influence the demand and timing for development.

The fifth question the Panel addressed in regards to the Corridor was "How different is the anticipated development from what is currently planned?" The development of the area along the Corridor is anticipated to be developed very much along the lines of what has been planned by the adjoining communities and SEWRPC. If the Corridor provides a safer and more efficient path of travel than what exists today on either the existing Corridor or neighboring streets, the Corridor in anticipated to encourage traffic to travel down the improved roadway as opposed to these alternate routes thereby improving the safety and efficiency of all streets. An improved roadway will also support more flexible, development and redevelopment plans that adjoining communities may elect to pursue in response to the changing demographics and economics as previously discussed. The Pebble Creek design seems to provide the most efficient and safest design for traffic and most closely resembles the "Bypass" as previously mapped and envisioned. Completion of the Corridor utilizing the Sunset Road to CTH-X route is anticipated to have unintended consequences with drivers taking alternate routes to avoid this less efficient and potentially less safe design.

# Natural Resources

## Questions on Presentation

1. Even though one wetland, are you looking at different wetland boundaries? Yes, within areas have smaller subareas where different species and groups are located.
2. Current wetland area is generous – Ultimate area will narrow when footprint is developed.
3. Colors: Light blue = wetland; darker blue is potential mitigation areas
4. Rating System – Size of parcel versus diversity of the species. Unusual to see a small we with strong function/value, would have to be some rare species. W-18
   - Connection to the stream channels wetland 18
   - West of project area Brandy Brook discharges coldwater – the coldest water in the system and enables trout – species would do better in that area than warmer areas. Trout difficulty sustaining itself in warmers waters.
   - Two lobes distinct – Brandy Brook sustained system. Pebble Creek has been compromised in past due to development. Water ending up _____ (pg. 2) DF tapped.
   - How Pebble Creek functions as a means of holding flood water? Wetlands are acting as a stop overall to flood storage, as does Upper Pebble Creek.
   - Mitigate within your watershed so you don't lose your flooding storage functions.
   - Is it an outcome of the study to say that flooding will be contained (with mitigation). State law – you have to – can't say yet how or what.
   - Do inventories distinguish between native and not native? Analysis and scores to consider this. Yes.
   - Sunset Drive to be rebuilt at some time no matter what? Yes, could be viewed that way. Small piece is part of our project.
   - Wetland impacts associated with the build alternatives <u>are</u> considered and quantified.
   - Pebble Creek Alternative would <u>not</u> include Sunset Drive impacts (would be a separate study).
   - Are there wetland impacts associated with Pebble Creek Alternative? Yes, but only those <u>associated</u> with <u>this</u> project.
   - Sunset is in long-range plan, but may be not – some projects aren't built.
   - If Sunset is built, does it become a cumulative impact?
   - On some projects, look at LR plan and projects are included in reasonably foreseeable list.
   - How did this alignment come to be? Weight of history behind it.

- Consider roundabouts, consider pushing out west of current areas. This would avoid bisecting farmland and ↓ (negative) impacts on water quality.
- S/w (Stormwater) quality and quantity to be addressed. Monitoring period from DNR – 5 years. Mitigation is not experimental.

## Future Actions

1. Genesee Road – 4-lane road west of Meadowbrook.

   NOTE: Sunset Drive not in plan.

## Past Actions

1. Construction of corridor to north.
2. Widening of Hwy 59.
3. Reconstruction Hwy X.
4. Hwy 83 widening.

## Discussion

1. For turtle and snake – bisect upland and wetland habitat underpass and other mitigation possible. Precedents for crossings for wildlife to connect upland and wetland. There are – Germantown.
2. Impacts from Pebble Creek too great? Net degradation of quality of wetland.
3. Concern over precedent of going through wetlands and recreating (?? – discussion pg. 1)
4. If spur development from project, how does that impact WQ (water quality) and wetlands? Difficult to quantify those impacts. Rely on existing studies. Qualitative.
5. Past actions – Walgreens, etc.
6. SWRPAC (SEWRPC?) planned for buildout.
7. Standards today are pretty stringent.
8. Primary effect: direct runoff and quality. WQ degraded no matter what you do may occur based on development and not just about the nad. This is true for any project, not just this one. Also a direct effect road or no road if the development takes place – if development ↑ (increases) then impact may ↑ (increase).

## Roundtable

1. Cumulative: This project tips scales towards residential development commutes. Harder for farming equipment. Less lucrative for agriculture. Makes land currently deemed ag change rate and development. Even though ultimately slated for residential? (LR LU (land use) plan shows transition to residential) West of Retzer is shown as some ag. Indirect of Pebble Creek by serving upland and wetland diff. sustain wildlife values and water quality if s/w (stormwater) ponds even greater.

2. Cumulative: There should (or these hold??) of how much can a stream handle development, sustainable water quality all reaches of Pebble. Significant impact already. Regardless of alignment.
3. If it turns more residential, larger tax base.
4. Bike trail east side, nice empty. ↑ (Increased) use of parkways. Change quality of park areas with ↑ (increased) use. Good for recreation, bad for ecology.
5. Good Gretchen thought. . . . Charlie
6. This project with Summit Drive transitions land uses and resulting impacts to wetlands, water quality, inducing sprawl, losses in other spaces, but not sure where. Less growth elsewhere. Some impacts to water quality from indirect
7. Wetland banking and farmland preservation programs.
8. Encourage roadway, you discourage the farmland preservation. Not just food though important – it's character.
9. Tipping point with farmland – Waukesha County may be past it – let services, farm equipment.

## Ideas for Mitigation/Improvement

1. TDR/conservation easements.
2. Farmland preservation.
3. Help people get out and appreciate/enjoy the wetlands, bring them to it.
4. Signs "You are in Pebble Creek Watershed."
5. Fish other wildlife passage for crossings.
6. Keep passage free of debris.
7. Project staging – north of RR first? Put off bottom part (Skeptical of traffic forecasts, e.g., 2015, 2025)
8. Develop environmental performance standards ↘ Use as a showcase – like complete streets. . . Above and beyond.

## Natural Resources Roundtable

1. Cumulative.
2. Once 25 percent of watershed develops, it's hard to maintain water quality and biological diversity.
3. For every new house in the corridor, there is an empty house/loss of population elsewhere.
4. Educational value of adverse impacts.
5. LU (Land use) planning/zoning already in place contribute to the need for the roadway. Development already started.

6. Past projects' _____ is to build Pebble Creek to connect them.
7. Safety issues of more traffic on Sunset/X intersection.

# Social Impacts

## Topic 3: Indirect and Cumulative Social Impacts of the Proposed Waukesha Bypass.

### What do we already know?

A brief presentation highlighted the social and cultural elements existing immediately and in the nearby surrounding area of the proposed project. This discussion included identifying residential communities, churches, schools, recreation facilities, employment centers, and land use patterns and potential changes in those uses. The following is a summary of the elements presented and the Expert Panel comments during the presentation. Specific comments to facilitated questions are presented later within this section, summarized as opportunities and limitations.

### Residential Communities

1. Relatively new single family residential development along TT, just south of I-94. This community is relatively new and developed as the TT roadway and access to the highway was improved. It extends westward just past the highway exit for County Road SS, eastward to the RR right of way, and southward to just south of Northview Road. The homes in this area access TT via main subdivision entrance roads. The homes face towards the subdivision and not towards TT. Some sound barrier walls have already been constructed. This community supports young families with children attending nearby schools, such as Meadow Brook Elementary School.

   Past project presentations to this community has identified that the residents are greatly concerned with the safety factor associated with crossing the roadway to get back and forth to the elementary school located on the east side of TT. Possible options for providing safer crossing methods were discussed including overhead walkways and below grade tunnels under TT such as crosses under Highway 164 to provide access for residents to Heyer Elementary School on the east side of Waukesha.

2. Smaller residential communities are located between Northview Road and Madison Street. None of these developments have single home access to the main road. The roadway expansion in this area would affect the residents on the eastern side more than the western side due to the existence of an Energy substation located just north of Madison Street. There was little discussion of the impacts to this area with regards to the residential community.

3. Frontage homes along Merrill Hills Road south of Madison Street. These homes currently have direct access to Merrill Hills Road. The roadway would be offset such that they would be accessed via a separate frontage road. The character of this area is different from the communities nearer the I-94 interchange. The houses in this area face the roadway, have larger lots, and in many cases are significantly older. It was agreed by the panel that measures should be taken in the design of the roadway in this area to maintain the rural character of this area. Views to existing farmland (recognizing this land use may change in the future) and wetland areas should be protected. Suggested design modifications include street trees, possibly being planted closer together than regular specification suggest and using species more indicative rural areas such as larger maples and oak trees as compared to shorter trees such as Bartlett Pear that are associated with urban development; addressing the quality and look of the shoulder; and altering and directing any street lighting such that the light does not reflect upward or extend past the primary roadway corridor.

4. Another residential area addressed is located on the west side of the proposed Pebble Creek connection. This is an older, mature subdivision with a functioning Home Owners Association (?). One house in this area would be purchased in order to build the Pebble Creek connection. There was little discussion of this area. The residents would continue to access major roadways via Merrill Hills Road by the Country Club to Sunset Drive, and existing roadways to Genesee Road. It was commented that the homes be buffered from the roadway in a manner in keeping with the environment, which in this case is a deciduous forest.

5. The last residential area discussed is located in the area bordered by the existing Sunset Drive, County Road X, and Pebble Creek wetland area. Due to these structural limitations, this residential area will not increase in size. As both Sunset and County Road X have already experienced increased development and use, the panel agreed that the new bypass would pose limited adverse impacts to this neighborhood.

### Churches

1. There are three churches accessed by the existing roadway: Faith Baptist Church, Apostolic Life Tabernacle, and St. John Neumann Congregation. These are relatively small churches. Faith Baptist Church is located in a commercially developed portion of the project and near intersections controlled by traffic lights. It was not considered to be affected by the proposed development. Access to the Apostolic Life Tabernacle Church would continue to be via Merrill Hills road and likewise would not be adversely affected. St. John Neumann Congregation currently has access off the already improved section of Highway 59. None of these churches currently have any sound barrier protections between the buildings and the roadways. This may be a concern at a later time as traffic conditions increase.

### Schools

1. There are 4 school areas within this corridor: Meadow Brook Elementary School, University of Wisconsin Waukesha, Waukesha Christian Academy, and the undeveloped land just north of the Glacial Drumlin Trail owned by the Waukesha School District.

   As previously mentioned, safe access for students to the Meadow Brook Elementary School should be guaranteed as part of this development. Furthermore, should residential development increase in this area, the access should be designed to provide sufficient access for increased usage. Most of the students are driven to the school and there are few buses, however all modes of access should be addressed.

   The University of Wisconsin Waukesha campus is located on the eastern side of Meadowbrook Road. Due to the increased cost of college level education, it has been anticipated that attendance to smaller community colleges such as this would increase over time. It was assumed that students would access this college via local roadways as well as the proposed bypass. Should the attendance increase as suggested, the proposed roadway improvements in this area would increase the overall driving safety of the area as the school offers both day and night programs.

   The Waukesha Christian Academy would maintain its access via the proposed frontage road. This is a K-12 school with a relatively small enrollment. Considerations for this site were similar to those addressed for the rural community homes in this area; the rural character should be maintained and safe conditions should be assured.

The proposed bypass cuts through a portion of the undeveloped farm land currently owned by the Waukesha School District. The School District has stated that this land may be developed in the future as a middle school. Agreements with the School District would have to be made to ensure that future school development and access is not hindered or limited by the development of this diversion from the existing Merrill Hills Road. While the timing of the development of this parcel is not known, especially due to the current fiscal conditions of the state and local school system, the panel suggested that this land be considered farm land and taken into account as such in considering the maintenance of the rural character of the residential area.

### Recreation Facilities

1. The existing roadway passes by or provides access to several recreation facilities used by the residents of Waukesha County and beyond. Kisdon Hill Park is one of the smaller parks. It borders Meadowbrook Road but does not have vehicle access. This is primarily an undeveloped area connected to a larger County park on Summit Drive. The County Park provides baseball fields, a skateboard ramp area, a play ground area, and picnicking area. The area bordering Meadowbrook Road is rarely used by park users.

   Meadowbrook Park is currently owned by the County and proposed to be developed as a regional County park providing resources to a larger area. Access to this park, once developed, should be from Northview Road, and not TT.

   Good Times is currently a privately-owned summer recreation facility for children. While it is accessed from Summit Drive, it has considerable frontage along Meadowbrook Road. Expansion at this specific area is limited by the existing commercial development at all corners of the intersection. Screening and safety should be primary concerns along the eastern side of the road, compared to protecting the desired commercial visibility along the western side of Meadowbrook Road.

   Sunset Park, located along Sunset Drive, is owned by the Town of Genesee. It provides parking and baseball fields as well as some play ground equipment. It was not considered to be affected by the proposed road work. If anything, possible baseball groups may want to use the facility as its access may be improved for those teams coming from further away.

   The primary recreation areas accessed from Merrill Hills Road are Rezter Nature center and the Glacial Drumlin State Trail. The Rezter Nature Center currently has land abutting Merrill Hills Road. This is mapped by SEWRPC as wetland area, and should be protected to the greatest degree possible. However, it must be balanced by addressing and securing the atmosphere of the residential area immediately across the road from the wetland area.

   Rezter Nature Center is a community facility used by families, school groups, and numerous organizations. The safety improvement of the intersection of Madison Street and Merrill Hills Road would benefit the use of this important Park.

   The Glacial Drumlin Trail is a State maintained (?) trail used by people throughout the area. It is used as a bike as well as pedestrian trail. It is primarily recreational in nature and not considered a viable transportation route for people walking or biking to commercial or employment areas. The current access to this trail is limited to parking vehicles on the narrow sand shoulder adjacent to the Wisconsin & Southern Railroad and adjacent Commercial Storage facility. The panel was informed that the State Department of

Transportation and the Wisconsin & Southern Railroad require an unimpeded access over the rail line. The proposed road modifications indicate that the roadway would be raised to bridge over the existing rail line and Merrill Hills Road would remain, ending at the Glacial Drumlin Trail. Increased and improved parking facilities to access the trail at this point should be designed as part of this project. Furthermore, road railings on the portion of the road bridging the trail should be designed such that materials possibly falling from the road (rocks from dump trucks, hub caps from cars, etc.) should not be able to fall on or near the trail area to protect the trail users and parked vehicles.

### Employment Areas

1. Commercial development is currently located at the intersections of Summit Drive and Meadowbrook Road, and along Merrill Hills Road between the Wisconsin & Southern Railroad and Sunset Drive. These commercial areas provide services such as medical facilities, auto mechanics, office space, coffee shops, a grocery store and Walgreens built within a small strip development, gas station, banks, and a commercial storage facility. The expansion of these areas is limited due to limited space as they are surrounded by existing residential development or wetland areas. The panel considered that the improved roadway would provide safer access and possibly increase the usage of these commercial areas.

   Considering the option to extend Sunset Drive and County Road X to this bypass, there is existing development along the Sunset Drive portion, and little, if any along County Road X. Similar to the area described above, it is unlikely that the commercial development in this area would increase in size due to limited space. The area is bounded by wetlands of Pebble Creek on the west side and Fox River to the east. The proposed improvements however may change the nature of these commercial areas. The Shoppes at Fox River may see increased use, and as a result, some of the currently vacant space may be filled. This would improve the commercial value of the area.

   Beyond the immediate area, the major employment areas include GE Healthcare located north of I-94, and Generac located southwest along Genesee Road. Both of these companies employ people from across and beyond Waukesha County. The proposed road improvements, either the Sunset to County X or the Pebble Creek option, would improve the commuting times for both the employees and the larger truck operations providing supplies to these companies. The panel did not think that the road improvements would increase the use of the road by employees and suppliers, as they most likely already use the existing road. It would however reduce the commuting time.

### Land Use Patterns

1. Historically, this western portion of Waukesha was viewed as the end of the city and the beginning of the rural areas. To some degree, this is still true. There is considerable farmland and open space (wetland areas) existing along the western side of the roadway. The panel found it difficult to separate impacts of the road improvements from impacts of a growing community and population, regardless of the road work. While the country is currently experiencing a recession and residential development has been limited, it was the opinion of the panel that this was a short term issue and that residential development in this area would increase. Primarily, the only land available for such subdivision-level development is existing farmland. The loss of farmland is a highly contentious issue; based both on economics as well as personal values.

It is beyond the scope of this project to determine the ultimate land use change of the farmland. The panel recognized its value in Waukesha County as well as within Southeastern Wisconsin as a whole. It is anticipated that more residential development would occur in this area. The panel could only suggest that methodologies such as farmland preservation actions or land transfers/farmland banking be considered in this area in order to protect the continued use of the land as agricultural.

The panel also discussed the moral responsibility of being stewards of the land and landscape. This includes not only following DNR policies regarding wetlands, but taking a stance of limiting the size and scope of their community. Comments included instituting development boundary zones such as has been done in Oregon, changing zoning to increase the opportunities for higher density living and the possibility of developing mixed use areas where residential development and commercial development are merged in the same area, thus maximizing the potential use of space. Such stewardship would force development to consider community character, in this case the historical rural edge of Waukesha.

## Facilitated Questions

### Opportunities

1. The Project Team should consider possible expansion plans for Retzer Nature Center. Their land extends to the south towards the Glacial Drumlin Trail, and there may be the opportunity to connect the State Trail to the Nature Center. This would increase usage of both facilities. People might be more likely to visit Retzer Nature Center as another access route/experience to use the State Trail should the road improvements be made and the intersection of Madison Street and Merrill Hills Road be made safer.

   Such park connections also addresses extending/connecting the trails along the east side of the Fox River, south of Highway 59 to those north of the highway.

   It was noted that a bike lane was part of the proposed roadway cross-section. Opportunities for this lane to access other trail systems (such as providing a method to go from the overpass across the rail road to the Glacial Drumlin Trail) should be considered as part of the project scope.

2. The changing population demographics may offer opportunities for altering the development patterns of Waukesha. According to data from the latest census, the population is getting older. The housing and facility needs of an older population differ from a mixed-aged population. The Project Team should consider looking at development plans taking additional factors into account, beyond just looking at the SEWRPC projected plans.

3. Given the number of pedestrian/vehicle crossings, the Project team should review a full range of street crossing and road designs. With potential growth n this area, the number of these interactions would be expected to grow, and therefore should be addressed upfront, instead of as an after the fact repair.

4. While Environmental Impact Statements require the Project team to identify and consider the impacts to economic, social and natural resources, the Panel believed that the scope should be increased to consider the impacts of such development on the health of residents (including diet and access to healthy foods, exercise and access to recreational facilities).

5. The current level of traffic delay at Northview and Madison Street should be reduced by the proposed road modifications. With consideration to environmental quality, the overall area air quality should improve.

6. Waukesha and Wisconsin should see this project as an opportunity to become a precedent. Design standards that address pedestrian use, cycle use, air quality, noise pollution, community character could all be set to address the highest level of environmental protection, community quality, and overall safety. While the Panel recognizes that there is a budget limitation for this project, there should be the opportunity to design for the ultimate, and install in phases.

7. Storm water runoff will be addressed along the entire length of the project corridor. This provides an opportunity to develop a comprehensive storm water management plan that addresses both quality and quantity of runoff. This is essential and valuable as the area abuts the Pebble Creek and Fox River ecosystems which both exhibit poor water quality in this region.

### Limitations

1. The Project has historically been called the Waukesha Bypass. Development conditions have changed such that it is no longer a true "bypass". Furthermore, this title has implications to the amount of traffic it may carry and the type and design of the roadway. These implications may limit the acceptance of this project. While "Bypass" may be a limitation, the Project team has the opportunity to change the project's name – which should be done as soon as possible.

2. The Project team continually referred to the projected development plans of Waukesha as their guide. A concern is that these maps are often build-out maps and show the scenario of full development at a given time and a given set of zoning patterns. These maps should not necessarily be considered always desirable. They are planned projections developed under the economic and social conditions of the time. Future development must take into account that society is changing – and at a faster rate these days than previously projected. Part of this is due to the increased cost of fuels and the diminishment of natural resources. It is also related to health issues such as societies concern over its high rates of obesity, low education rates, high unemployment etc. New technologies were also not considered in the development of the build-out maps. Such technologies include wind farms, development of bio-fuels (and the increased need for farm land), electric vehicles and the associated need for recharging stations. These relate again to changes in society's values: increased value in opportunities for recreation and clean air and water; increased demand for mass transportation; reduced single-destination trips etc.

3. Should the current farm land become available for development, there should be plans for providing mixed-income housing, recognition of the trend to value smaller homes and lots, and measures taken to ensure the residential area does not become blighted. The creation of Home Owner Associations should not be considered the only viable manner for such assurance. The belief that smaller lots mean poorer quality should be eliminated.

4. Throughout any and all development, Waukesha should hold the developer and subsequent owners to the highest design, build, safety standards possible.

5. The stability of the local and state-wide political landscape should be considered. The current situations seem jumbled and this could lead towards instability in the future use of public lands and environmental corridors. It is necessary that tenured officials maintain an open and cooperative relationship with other entities. This is key in developing and maintaining cohesion between communities. Due to the development periods (old, direct road access; development in year 2000; and development in 2020) along this corridor and the fact that most may not be linked by interior roadways, areas may develop in isolation and not in connection with the adjacent areas. Community connection begins with the development of a sense of neighborhood and place. Sense of community is necessary for a region to remain established and stable.

6. There is a trend towards the development of so-called "mega-churches". There are currently several churches within the proposed project area. The catchment area of the church congregations should remain primarily local. While churches are encouraged to grow their congregations, the modification of any of the existing churches should be limited such that their use does not become a traffic concern of its own. The example given is the Elmbrook Church located on Barker Road in Waukesha. Police are required before and after services to control the flow of traffic entering and exiting from Barker Road. The current bypass conditions do not support the traffic associated with such large sized churches.

7. The Panel was informed that a noise analysis has not yet been conducted. This must be conducted and appropriate design modifications must be made to limit the adverse impacts associated with increased noise pollution on all age groups in this community.

8. Data was also not available regarding conformance to air quality requirements. Again, all measures should be taken to reduce the extent of decreased air quality. Design measures beyond those presented by the Wisconsin Department of Transportation should be explored. Methods used in more progressive areas such as Europe, which has high traffic levels and has developed intriguing designs as they work to reduce our community's overall carbon output.

9. Storm water runoff from the Pebble Creek option would adversely affect the environmental conditions of the Pebble Creek wetland habitat. The impacts associated with modifications to the existing Sunset and County X roadways provide an opportunity to improve the storm water management of the existing system, improving the quality and reducing the quantity of storm water runoff entering the natural wetland systems. The Panel stated this level of decision represents a social consideration as it sets a standard for how we, as stewards of the land, should estimate and understand the direct and indirect; short term and long term, values of wetland habitats.

# Expert Panel Background/Contact Info—May 2011

## West Waukesha Bypass Indirect and Cumulative Effects

**Ed Beimborn**, Ph.D. Ed is retired from the UWM Civil Engineering Department. Ed's research interests are transportation engineering, public transit, transportation planning, municipal engineering, land use, technology transfer.
www4.uwm.edu/ceas/cem/
Beimborn@uwm.edu

**Jim D'Antuono**. Jim is the Wisconsin DNR's Southeast Fox River Basin Team Leader. Jim was involved in the preparation of the 2008 *Pebble Creek Watershed Protection Plan*.
www.dnr.wi.gov
james.dantuono@wisconsin.gov

**Greg Kost**. Greg is the managing principal in the Waukesha office of TOLD Development Company, a real estate firm focused on the development, acquisition, and management of retail, multi-housing, office, medical office, and industrial properties.
www.tolddevelopmentcompany.com
gkost@toldwi.com

**Patrick Lawton**. Pat is a senior vice president at M&I Bank.
www.mibank.com
Patrick.lawton@micorp.com

**Bob Lichtfuss**. Bob is Director of Supply Chain Logistics at Generac in Waukesha.
www.generac.com
blichtfuss@generac.com

**Gretchen Messer**. Gretchen is an adjunct lecturer in ecology and land use planning at Carroll University and an instructor at Phoenix University.
www.Carrollu.edu
gmesser@carrollu.edu

**Doug Seymour**. Doug is the community development director at the City of Oak Creek.
www.oakcreekwi.org
dseymour@oakcreekwi.org

**Tom Slawski**, Ph.D. Tom is a principal planner at the Southeastern Wisconsin Regional Planning Commission in Pewaukee. Tom was the principal author of the 2008 *Pebble Creek Watershed Protection Plan*.
www.sewrpc.org
tslawski@sewrpc.org

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YOUR VOICE COUNTS

This petition has collected
445 signatures
using the online tools at iPetitions.com

Printed on 12-10-2012

445
108
553 signatures.

Not Vetted for Duplicates

# West Waukesha Bypass the Bypass "No Build. Improve!" Petition

Sponsored by: Waukesha County Environmental Action League (WEAL), Citizens, and Neighbors, Coalition Opposed to the West Waukesha Bypass

About the petition

Waukesha County is a wonderful place to live and raise a family with great schools, excellent parks, open space, and wonderful neighborhoods.

But plans are now underway to expand and build a 4 lane highway through the west side of the Town and City of Waukesha linking I94 on the north to Hwy 59 on the south, through residential neighborhoods, and wetlands. This huge highway project would drastically and negatively impact the quality of life of the thousands of people who live along, and within, the proposed bypass routes; would change traffic patterns within residential neighborhoods making pedestrian travel more hazardous; would degrade wetlands and environmentally sensitive areas; would increase noise, water, and air pollution, while simultaneously, adversely, and permanently affecting the health and longevity of residents. Tens of MILLIONS of State of Wisconsin residents' tax dollars will be spent to complete the WEST Waukesha Bypass project, a project estimated to run upwards of $53 million - all of which is to be paid by city, county, and state funds.

We can change these plans now, by convincing elected officials in Waukesha County, the City of Waukesha, the Town of Waukesha, and the State of Wisconsin that with modest safety improvements on current roads, tens of millions of dollars can be saved, safety improved, rural residential neighborhood atmosphere and welfare preserved, the environment saved from drastic degradation, and most if not all project goals met.

This highway expansion, or "Bypass" project is not needed, and will never do what it was intended to do when it was mapped SIX decades ago...bypass the City of Waukesha. This huge road expansion project does not bypass anything.

Tell County, City, Town, and State officials that you support a "No Build. Improve!", option!

- Follow existing roads along County X and Sunset to TT (Sunset-to-X Alternative).
- Maintain two lanes along the entire route within the current two lane footprint.
- Add left hand turn lanes where needed.
- Add stop signs or lights, reduced speed limits, and improved signage where needed for safety reasons.
- Build a bike path to connect the Glacial Drumlin Trail to the Lake Country Trail.
- Improve the Madison TT intersection to minimize steep hill to stop.
- Consider a bridge over the RR Tracks and Glacial Drumlin Trail.

- Minimize any loss of wetlands or primary environmental corridor. Improve stream crossings to minimize road runoff into streams.

- Limit Gross Vehicle Weight to 8 tons (16,000 pounds) along the entire route.

- Consider any other modest safety improvements along current routes.

- De-map the concept of a Waukesha West Bypass and cease any future bypass planning on any of the previously or currently proposed alternatives.

## Signatures

1. Name: Kristie on Feb 25, 2011
Comments:

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2. Name: Anonymous on Feb 27, 2011
Comments:

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3. Name: Larry Wolf on Feb 27, 2011
Comments:

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4. Name: Justin Peters on Feb 27, 2011
Comments:

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5. Name: Allen Stasiewski on Feb 27, 2011
Comments:

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6. Name: Susan Nettesheim on Feb 27, 2011
Comments:

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7. Name: Richard Nettesheim on Feb 27, 2011
Comments:

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8. Name: Jennifer Wolf on Feb 27, 2011
Comments:

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9. Name: Diana Felsmann on Feb 27, 2011
Comments:

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10. Name: Alexis La Joie on Feb 27, 2011
Comments:

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11. Name: Anonymous on Feb 27, 2011
Comments:

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12. Name: James Bartz on Feb 27, 2011
Comments: I support the "No Build, Improve" option regarding the Waukesha Bypass.

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13. Name: Anonymous on Feb 27, 2011
Comments:

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14. Name: Mark Ford on Feb 27, 2011
Comments: This plan does not 'bypass' anything. It would require so many lights its ridiculous. Improvements yes, 4 lane bypass no.

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15. Name: Kristy Spellman on Feb 27, 2011
Comments:

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16. Name: Anonymous on Feb 27, 2011
Comments: This bypass proposal was originally a carrot held out to the Godfrey company to keep them around...they're long gone and the bypass proposal should be long gone with them. Also, let's get anyone from Target off the panel making decisions, they're not really interested in the community.

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17. Name: Justin Jehn on Feb 27, 2011

Comments: Minimize any loss of wetlands or primary environmental corridor. Improve stream crossings to minimize road runoff into streams.

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18. Name: Marilyn Ford on Feb 27, 2011
*Comments: Makes sense to me.*

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19. Name: Katie J Kasper on Feb 27, 2011
Comments:

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20. Name: Pete Brierton on Feb 27, 2011
Comments: I support this ban.

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21. Name: Bruce Bell on Feb 28, 2011
Comments: The "by-pass should go further west as major improvements have been made and will continue next year to Hwy 83.

If improvements are to be made to TT I would like to see a bike path that connects Glacial Drumlin Trail to the path just north of Hwy 18 at Fox Run.

I would also suggest that improvements to TT should include a boulevard/median design with a stop sign or round-about at every intersection from Sunset to Hwy 18,along with a reduced speed limit. This would improve safety and make it easier for people that live along the route to access TT.

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22. *Name: Dylan Keller on Feb 28, 2011*
Comments: Stop trying to build in wetlands, its disgraceful.

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23. Name: James And Lynda Bodis on Feb 28, 2011
Comments:

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24. Name: Jocelyn DeCloux on Feb 28, 2011
Comments:

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25. Name: Bill & Kris Desmond on Feb 28, 2011
Comments:

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26. Name: Susan Bell on Feb 28, 2011
Comments: I strongly oppose any destruction to the Pebble Creek corridor for the sake of a road.

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27. Name: T Buchholtz on Feb 28, 2011
Comments: The items above are all that is needed not a 4-lane mess. A by-pass for all intensive purposes normally goes around a large city at 55 or 60 mph. The current by-pass is just another road going 45. If people can't handle what is currently there, leave *earlier or find a new route. Stop this continual destruction of our natural areas.*

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28. Name: Ryan Fisk on Feb 28, 2011
Comments:

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29. Name: Thomas Ellenson on Feb 28, 2011
Comments: go for it

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30. Name: Margie Ahler on Feb 28, 2011
Comments: Please..."NO Build"!!!!

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31. Name: Derrick Ahler on Feb 28, 2011
Comments: il you build a bypass,you will only attract more traffic.We moved here in Kame Terrace for the beauty and the serenity of nature,lets keep it this way!

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32. Name: Halley A Ahler on Feb 28, 2011
Comments:

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33. Name: Charlene Sivyer on Feb 28, 2011
Comments: These improvements are exactly what we need to improve quality of life and environmental sustainability in the Town of Waukesha.

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34. Name: Harrison Keyes on Feb 28, 2011
Comments: Please consider these options. There are too many stop lights on the "bypass" to call it a "bypass". Lets improve what we have to save money in these hard economic times. Thank you for listening!!

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35. Name: Alexa Ahler on Mar 01, 2011
Comments:

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36. Name: Anne Utech on Mar 01, 2011
Comments:

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37. Name: Courtney Bell on Mar 01, 2011
Comments: Please do not expand the highway. I grew up in that area, my parents live in that area, and I would be devastated to see it paved over. This would be terrible for all of the wildlife in the wetlands and surrounding nature as well. Waukesha does not need this. Keep our town safe and quiet and enjoyable for generations to come!

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38. Name: Jeff Yorton on Mar 02, 2011
Comments:

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39. Name: Gabriele LaJoie on Mar 02, 2011
Comments: Do NOT build this bypass! It is NOT needed! This is a WASTE of money and a poisonous project! How dare you propose spending money on widening a road that is already big enough but you refuse to build transit alternatives such as rail?! SHAME ON YOU!

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40. Name: William La Joie on Mar 02, 2011
Comments: We do not support building the western bypass! Merrill Hills Road is wide enough and this will only make traffic worse! DO NOT BUILD THE BYPASS!

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41. Name: Nicholas La Joie on Mar 02, 2011
Comments: This project was flawed from the start. The committee pushing for this bypass is run by the developers and engineers who stand to profit from its construction. The fact is that this bypass is totally and completely unnecessary. It will ruin the rural landscape and will only make development and congestion worse in the region. INVEST IN TRANSIT ALTERNATIVES SUCH AS RAIL INSTEAD!

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42. Name: Brian Baumler on Mar 03, 2011
Comments: I agree that the above suggestions are all that needs to be done.

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43. Name: Terence W. Amerson on Mar 03, 2011
Comments: The suggestions listed on this thoughtful petition are first rate! The EXISTING roads are in need of basic improvements, and no one would reasonably suggest otherwise. Fix and improve only on the existing footprint. That is where all discussion should be focussed.

To even suggest further traversing a pristine wetland is a non starter for any forward thinking municipality. Threatening a unique neighborhood with a "rustic road", not to mention remove 250 year old trees and architecturally significant homes is just plain dumb.

My last point: didn't our Governor Walker declare Wisconsin "broke"? Unless he is lying, we can't afford new, expensive and highly controversial roads. Do not bypass Waukesha.

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44. Name: Maureen German on Mar 05, 2011
Comments: I support "Improve, No Build Opption"

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45. Name: Linda Franz on Mar 07, 2011
Comments: Just because land is available doesn't mean it should be used.

46. Name: Holly Bartz on Mar 09, 2011
Comments:

47. Name: Peter Rathmann on Mar 12, 2011
Comments: We do not need a new road. We can't even take care of the roads we have built. Fix those!

48. Name: Krista Nelson on Mar 19, 2011
Comments: Let me know if I can help! This is wonderful!

49. Name: David Stasiewski on Mar 19, 2011
Comments: Great Petition you're a much better writer then i am.

50. Name: Anonymous on Mar 20, 2011
Comments: I agree with all the reasons stated above to NOT REBUILD but improve the existing bypass.

I would think with the budget deficit that exists in our state another more practical very good plan should be inacted. We are cutting so many departments in our state government why not make IMPROVEMENTS which is a cheaper plan??

I also think the Department of Transpportation should be affected by these cuts that all state agencies are going to have to live with. A practical, wisely planed alternative plan should go forward.

51. Name: Paul Shedivy on Mar 20, 2011
Comments:

52. Name: James C. Hoffman on Mar 20, 2011
Comments:

53. Name: Mark Finken on Mar 20, 2011
Comments:

54. Name: Mary Jo Hultman on Mar 20, 2011
Comments: I especially agree with making bike and pedestrian traffic safer south of hwy 18 and leaving the road 2 lanes. There is no good reason to expand into wetlands, build 4 lanes, or ignore bike and pedestrian safety.

55. Name: Sandra Villa on Mar 20, 2011
Comments: Let's not pretend that equal consideration has been given to alternate plans.

56. Name: Phil & Annette Juopperi on Mar 20, 2011
Comments:

57. Name: Margie Ahler on Mar 20, 2011
Comments:

58. Name: Benjamin Berg on Mar 20, 2011
Comments:

59. Name: Lisa Conley on Mar 20, 2011
Comments:

60. Name: Mary Ann Voss on Mar 20, 2011
Comments: Stop any building on bypasses that aren't wanted or needed, a waste of money.

61. Name: Gus Koutsouvas on Mar 20, 2011
Comments: I do not appreciate further urban/suburban sprawl and encroachment into this area. The rural and rustic character of this area makes it a nice place to live and a massive highway project such as this only detracts from that.

Thanks for your consideration.

Sincerely,
Gus Koutsouvas
Genesee, WI

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62. Name: Angela Reifenberg on Mar 20, 2011
Comments: Protect the Pebble Creek watershed and save the state money by not building this road.

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63. Name: Anonymous on Mar 20, 2011
Comments:

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64. Name: Ellen Gennrich on Mar 21, 2011
Comments:

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65. Name: Jacalyn Budelier on Mar 21, 2011
Comments:

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66. Name: Cynthia Lepkowski on Mar 21, 2011
Comments:

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67. Name: Jocelyn DeCloux on Mar 21, 2011
Comments: I do not want this in my neighborhood. I moved here 6 years ago to get away from traffic and the noises a by-pass would bring. I say no to this. If this happens, I will move out of Waukesha.

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68. Name: Mary Hiebl on Mar 21, 2011
Comments: I support a 'no build, improve' option. It is possible to achieve a smooth traffic flow with modest improvements such as left hand turn lanes, reduced speeds, stop signs or lights to control traffic flow, and following existing roadways instead of decimating, compromising, degrading wetlands, residential areas, and quality of life for residents and wildlife.
Why is it that only extreme measures are considered when there are other options?
Please, no build, improve' is sensible on all levels. Be reasonable and enact this option.

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69. Name: Sandra Klingensmith on Mar 21, 2011
Comments:

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70. Name: Rhoda L Flagg on Mar 21, 2011
Comments: Please heed the requests of myself and the other petitioners and avoid making the west side of Waukesha a concrete monument to road builders.

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71. Name: Ernabelle Madushaw on Mar 21, 2011
Comments: Building more roads is not the answer to the air pollution problem in our country. New roads tend to eventually get more croweded and traffic problems increase. If it gets built it will be filled up with cars. Solution, don't build it in the first place. Improving the roads we have now is what is needed. The pot holes are bad. With money in short supply, this road should not be built.

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72. Name: Joe Russ on Mar 21, 2011
Comments: With the current fiscal situation, there is no reason to build more roads that we have to maintain.

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73. Name: Jeanette Somppi on Mar 21, 2011
Comments:

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74. Name: James Hansen on Mar 21, 2011
Comments: Please consider the alternatives and protect the few exisiting wetlands remaining in Waukesha County.

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75. Name: Lynda And James Bodis on Mar 21, 2011
Comments: No Build/Improve option

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76. Name: Mary Lou Findley on Mar 21, 2011
Comments:

77. Name: Ian Cliffe on Mar 22, 2011
Comments:

78. Name: Karen Cliffe on Mar 22, 2011
Comments: The No-Build alternative truly is in the best interest of the community for the long term. The enhancements proposed in this petition more than adequately address safety concerns while protecting our environment at all levels.

79. Name: Beth Hultman on Mar 22, 2011
Comments:

80. Name: Sue Saint Aubin on Mar 22, 2011
Comments: Dividing a city is always a bad idea. The Park East freeway in Milwaukee is a classic example of how a road meant to move traffic also drastically damaged neighborhoods, income and investments. This reasonable alternative will also help an already stressed budget on all municipal levels.

81. Name: Mark Menting on Mar 22, 2011
Comments:

82. Name: Susan Della on Mar 22, 2011
Comments: I agree totally with the petition and the options listed above.

83. Name: Anonymous on Mar 22, 2011
Comments:

84. Name: Duane Budelier on Mar 23, 2011
Comments: I cannot believe that we are spending 50 million dollars in these economics times to expand a road, when our current roads are in horrific condition.

85. Name: Francis J Owen on Mar 23, 2011
Comments:

86. Name: Dr. Caryl McAllister on Mar 23, 2011
Comments: There is no need for this outdated, so-called bypass. The state is supposed to be short of money. Why waste spend tens of millions on an antiquated project that would destroy significant portions of the countryside?

87. Name: Judy Grenz on Mar 23, 2011
Comments:

88. Name: Richard Kapusniak on Mar 23, 2011
Comments: We don't have the money to spend on this highway expansion. Northview and Moreland Roads are a mess and need repaving for driver safety.

89. Name: Lynn Preston on Mar 23, 2011
Comments:

90. Name: Adam Brauhn on Mar 23, 2011
Comments:

91. Name: Charles J. Helling on Mar 23, 2011
Comments: Do not waste money on the bypass, just make a few changes on TT and Meadowbrook Road.
Do not destroy any wetlands. Just because the plan was put on the map 50 years ago it doesn't mean that it still has to be done.

92. Name: Renee Kapusniak on Mar 23, 2011
Comments: Money should be spent on improving the roads we currently have first before widening HWY TT

93. Name: Kay Bantz on Mar 23, 2011
Comments: I fought back in the 90s to stop this project. And even more so now, money at all levels of government is extremely tight , so with all of the opposition to this non-bypass, it should be dropped or modified slightly to actually improve the envirionment as WEAL has proposed. It is my belief that, although there are claims that the bypass was on the map for many decades, it actually disappeared from one or more official land use plan map for awhile.

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94. Name: Anonymous on Mar 23, 2011
Comments:

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95. Name: Andrew Teller on Mar 23, 2011
Comments:

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96. Name: Dennis Klemm on Mar 23, 2011
Comments:

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97. Name: Anonymous on Mar 23, 2011
Comments:

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98. Name: Virginia Whitstone on Mar 23, 2011
Comments:

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99. Name: Peter Bantz on Mar 23, 2011
Comments:

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100. Name: Anonymous on Mar 23, 2011
Comments:

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101. Name: Shannon Majewski on Mar 23, 2011
Comments: The additional traffic, and the subsequent pollution, that the Bypass will attract is a detriment to the quality of life for the residents and the environment.

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102. Name: Rebecca Teller on Mar 23, 2011
Comments:

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103. Name: Andrew Connolly on Mar 23, 2011
Comments:

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104. Name: Noreen Wells on Mar 24, 2011
Comments: l;eave family neighborhoods intact ....no new roads

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105. Name: Nancy Gloe on Mar 24, 2011
Comments: While I agree that we need to move goods and people in a safe and efficient way, we must balance that objective with maintaining the quality of our neighborhoods and environment. I believe the Waukesha West Bypass will go too far in degrading our neighborhoods and environment. I therefore urge you to adopt the "No build. Improve!" option for the Waukesha West Bypass Project. Thank you, Nancy Gloe, Brookfield, WI

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106. Name: Mary Horejsh on Mar 24, 2011
Comments: I hope that the petition will make a difference. We fought the EC inner BYPASS for many years. The outcome is a freeway right through our (used to be beautiful green space) . What a shame that neighborhoods are being destroyed.

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107. Name: Christine Janssen on Mar 24, 2011
Comments: I do believe improvements should be sufficient.

We travel on Meadowbrook/TT/Merrill Hills often enough, and it's not that bad....worst spot is Madison/Meadowbrook. That stop definitely needs improvements-not fun at busy times of the day. I don't see what the true, ultimate goal of a 4 lane highway would be. I don't really think it will get anyone to hwy 59 much faster. Costs would far outweigh benefits. Money could be used more efficiently.

I really like the idea of connecting the 2 Trails. Seems more worthwhile and beneficial to the community than 4 lane hwy.

108. Name: Jean Michalowski on Mar 24, 2011
Comments: NO BUILD . IMPROVE!

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109. Name: Daniel Grenz on Mar 24, 2011
Comments:

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110. Name: Lorenzo Majewski on Mar 24, 2011
Comments:

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111. Name: Dave Rebro on Mar 24, 2011
Comments: Not only am I strongly against the imminent increased noise, water, light, air pollution, and the health and longevity of residents concerns, I can't believe, during these tough economic times, we are going to spend upwards of 53 million dollars of City, County, and State tax money on this project.

Don't forget, recent improvements to HWY 83, St. Paul, HWY T all help to provide alternative routes around Western Waukesha city/county.

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112. Name: Janine Wildt on Mar 24, 2011
Comments:

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113. Name: David Wildt on Mar 24, 2011
Comments:

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114. Name: Anonymous on Mar 25, 2011
Comments: As a taxpayer I could definitely find better ways to spend $53 million dollars. This so called bypass doesn't' bypass anything, it only allows Target, Wal-Mart and other large retailers to get more customers, not to mention lowering their cost of getting merchandise delivered via large 18 wheeler semis on a regular basis! Our hard earned tax dollars are going to support those with money so they can make more money.

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115. Name: Sharon Ohlis on Mar 25, 2011
Comments: the money would be better spent on road improvements in Waukesha.

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116. Name: Hector J Sanchez on Mar 25, 2011
Comments:

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117. Name: Karen Tredwell on Mar 25, 2011
Comments:

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118. Name: Milton Rebro on Mar 25, 2011
Comments: I support a "No build improve! ", option

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119. Name: Joyce Rebro on Mar 25, 2011
Comments: I support a "No build.improve !" option.

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120. Name: Frank Rebro on Mar 25, 2011
Comments:

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121. Name: Carolyn Rebro on Mar 25, 2011
Comments:

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122. Name: Mildred Waehner on Mar 26, 2011
Comments:

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123. Name: Lawrence Rebro on Mar 26, 2011
Comments: This is so ridiculous! If the city and county of Waukesha truly do have a plan to implement this project that was designed 61 years ago, then all affected homes should be purchased at full value and all prior property taxes should be refunded because all

building permits were issued under false pretense. De-mapping is the only recourse to resolve this issue!

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124. Name: Brian Baumler on Mar 26, 2011
Comments: We do not need to build a new road. We need to improve the existing the existing road.

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125. Name: Karen Catura on Mar 26, 2011
Comments:

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126. Name: Anonymous on Mar 26, 2011
Comments: Please vote against the project.

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127. Name: Bonnie Dall on Mar 26, 2011
Comments: There is already to much traffic on Meadowbrook Rd.

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128. Name: Jan Pace on Mar 26, 2011
Comments: They will be opening up a big bag of WORMS if they make it 4 lane. Put Turn Lanes in and fix the Stop lights so they don't hang in the middle of the road so ice hits your wind sheils and put in turn signals. WE WANT SOUND BEARERS. IIKE WHAT THEY HAVE BY MEADOW BROOK SCHOOL.

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129. Name: Steven MPopek on Mar 27, 2011
Comments: Hey DOT, how about repairing the existing roads we have instead of adding more worthless projects like this one,and adding more expensive to the taxpayers.This isn't going to enhance anything except more problems to the environment! How about listening to science for a change,and the taxpayers! Dump this project NOW!!

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130. Name: Nancy Mullen on Mar 27, 2011
Comments: The proposed bypass does not bypass Waukesha - it cuts right through major residential areas of Waukesha disrupting the lives of thousands of Waukesha residents. If you need a bypass put it somewhere that's not so disruptive to Waukesha families please.

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131. Name: Patrick H. Hultman on Mar 27, 2011
Comments:

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132. Name: Stacy Schuster on Mar 27, 2011
Comments: Keep truck and highway traffic out of suburban residential areas!

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133. Name: John Durham on Mar 27, 2011
Comments:

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134. Name: Timothy L Wulf on Mar 27, 2011
Comments: You would build a bypass to run past a Grade School? Really? I s\ask we explore other, more current options.

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135. Name: James F Waehner on Mar 27, 2011
Comments:

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136. Name: Marion Golemgeske on Mar 28, 2011
Comments:

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137. Name: Laura Smolinski on Mar 28, 2011
Comments: I can see the road from my bedroom and with the current 2-lane road already the noise of the limited number of semi trucks coming through causes an eleveated sound level & some vibration (and there is another house between my house and the road) even with windows closed in the winter months... a 4-lane road would bring more semi trucks & much more unwanted noise to the residential neighborhoods along the route. Also there is an elementary school in addition to the many residential houses and families ~ safety is a big concern too.

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138. Name: Patricia A Sennott on Mar 28, 2011
Comments: I live on the corner of Meadowbrook and Northview Rd. The traffic congestion and noise is almost intolerable in our home. My sons who have bedrooms facing east are awakened as early as 4am with semi-truck and other traffic as it is now. Please do not increase the amount of traffic with this construction unless you want to consider buying our home. You have impacted the

value of our home enough!

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139. Name: Jason Smolinski on Mar 28, 2011
Comments: I support the 'Improve, NO BUILD' option

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140. Name: Nanette M Breidenbach on Mar 28, 2011
Comments:

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141. Name: William & Ann Schultheis on Mar 28, 2011
Comments:

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142. Name: Jeremiah Bleskan on Mar 28, 2011
Comments:

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143. Name: Greg Somppi on Mar 28, 2011
Comments: Would really like to know who is benefitting from this Bypass. If it took 61 years to decide to build it how good of an idea could it have been.

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144. Name: Paula, Marcus Tennant on Mar 28, 2011
Comments:

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145. Name: Brian Hemann on Mar 29, 2011
Comments:

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146. Name: Michael Baniel on Mar 29, 2011
Comments: do not support the construction of the bypass. the funds are needed elsewhere.

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147. Name: Kristen Jacobson on Mar 29, 2011
Comments:

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148. Name: Jaime Anderson on Mar 29, 2011
Comments:

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149. Name: Carol Fadrowski on Mar 29, 2011
Comments: We do not believe this bypass is necessary for the lovely neighborhood it has become. If the state has so much extra money, why don't they use it for something that is really needed. I thought money was tight at this time. At least that is what we are told!

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150. Name: Tom Peterson on Mar 30, 2011
Comments:

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151. Name: Lora Jendrusiak on Mar 30, 2011
Comments:

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152. Name: Andrea Dorantes on Mar 31, 2011
Comments:

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153. Name: Paul on Mar 31, 2011
Comments:

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154. Name: Tasha Brauhn on Mar 31, 2011
Comments:

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155. Name: Dan St Martin on Mar 31, 2011
Comments:

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156. Name: Dennis Breidenbach on Mar 31, 2011
Comments:

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157. Name: Melissa Pehl on Mar 31, 2011
Comments:

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158. Name: Barbara Renkas on Mar 31, 2011
Comments: Something that was planned so long ago....needs to be changed to suite the present circumstance. Please stop this plan.

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159. Name: Bonnie Cambronero on Apr 01, 2011
Comments:

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160. Name: Ryan Anderson on Apr 01, 2011
Comments:

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161. Name: Anonymous on Apr 01, 2011
Comments:

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162. Name: Anonymous on Apr 01, 2011
Comments:

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163. Name: Kay Frei on Apr 01, 2011
Comments:

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164. Name: Candace Bering on Apr 01, 2011
Comments:

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165. Name: Karen Birschbach on Apr 01, 2011
Comments: We live just off Meadowbrook Rd and even though there does need to be some sort of improvement as to letting cars onto Meadowbrook from side roads, a Major Roadway is a bad decision due to the immediate location of homes and schools. There seems to be a lot more traffic on Meadowbrook which makes it difficult to turn onto that road. If there is a Major Roadway put in it will not only add to the already horrible noise factor and pollution factors, but make it difficult for homeowners to sell already existing homes along and near that roadway.

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166. Name: Anonymous on Apr 02, 2011
Comments:

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167. Name: Anonymous on Apr 02, 2011
Comments:

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168. Name: Reto Frei on Apr 02, 2011
Comments:

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169. Name: Anonymous on Apr 02, 2011
Comments: Besides all the damage it will do to wetlands, etc., which are bad enough, please look at the "bypass" on the east side of Waukesha. It is a horrible, congested corridor full of stoplights. It does not get you anywhere quickly. The current west corridor does the job without all the congestion & ugly development. Please save all that money & just leave things the way they are.

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170. Name: Bob Rbar on Apr 03, 2011
Comments:

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171. Name: Anonymous on Apr 04, 2011
Comments:

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172. Name: MARK KUSCH on Apr 04, 2011

Comments: NO BUILD, NOT NEEDED, WILL DESTROY THE NEIGHBORHOOD.

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173. Name: Charlene Lemoine on Apr 04, 2011
Comments:

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174. Name: Anonymous on Apr 04, 2011
Comments:

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175. Name: James Pace on Apr 04, 2011
Comments: It is a waist of money they let the area build up to much we should have another 2 lane by Hwy SS to Hwy 59.
IT SHOULD OF NEVER BEEN BUILT BY MEADOWBROOK SCHOOL

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176. Name: Kristine Scheel on Apr 04, 2011
Comments:

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177. Name: Heidi Krenz on Apr 05, 2011
Comments: I am in favor of the improvement but NOT for a major trunk highway. This is a community of wonderful neighborhoods, families, meadowbrook school on the corner and so much more. People move to this area because it is so desirable. This would not be good to bring all of the traffic, noise and pollution to these neighborhoods. Most of all there are tons of KIDS in this area and we need to keep them safe.

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178. Name: Steven Krenz on Apr 05, 2011
Comments: Not a good idea at all. Families will not want to stay in this area or move to this area. We moved to this area because it was such a great place for families. We want it to stay that way.

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179. Name: Anonymous on Apr 05, 2011
Comments:

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180. Name: Anonymous on Apr 15, 2011
Comments:

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181. Name: Dave Culp on Apr 15, 2011
Comments:

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182. Name: Suzanne Schalig on Apr 15, 2011
Comments:

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183. Name: Kathryn Harrington on Apr 15, 2011
Comments:

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184. Name: Lisa Berg on Apr 15, 2011
Comments:

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185. Name: Dave Nader on Apr 15, 2011
Comments:

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186. Name: Steven D. Schmuki on Apr 16, 2011
Comments:

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187. Name: Daniel Gray on Apr 18, 2011
Comments:

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188. Name: Kay Perkins on Apr 20, 2011
Comments:

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189. Name: Laurie Longtine on Apr 21, 2011

Comments:

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190. Name: Frank S. Kinateder on Apr 26, 2011
Comments: Don't build, we don't need anymore roads!

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191. Name: Pearl Schwanz on Apr 28, 2011
Comments: This so called bypass is really not needed .Only twice a day is there a rush of cars and not any kind of back-up or delay.The improvements printed on the flyer would make the flow even better and save many millions of dollars for taxpayers.

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192. Name: Patrick Rollo on May 05, 2011
Comments: Again, why did we spend millions of dollars to turn X into a 4 lane highway and now you want to spend millions more to build the exact same road less than 500 yards west of X. This is why the state and federal budgets are so far in debt. Please stop....we do not have a taxing problem in this country we have a spending problem and it starts in our own back yard!

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193. Name: Deborah T Rollo on May 05, 2011
Comments: Please save our wetlands, this is not needed or wanted in it's present form. Fix the existing roads and save millions for things we need more than a 4 lane 25mph road that does not accomplish what it was intended for.

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194. Name: David Dobke on May 05, 2011
Comments: The Pebble Creek and it's entire corridor (including the proposed Pebble Creek west) need to be retained in their current state to protect Waukesha' suburban/rural appeal. We can become another dingy small city with propper planning that is currently proposed.

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195. Name: Todd Jensen on May 25, 2011
Comments: As someone that has followed the alternative route during countless commutes, I do not see a need for a new four-lane highway.

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196. Name: Patricia Bielke on May 25, 2011
Comments:

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197. Name: Gerald Ottone on May 25, 2011
Comments:

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198. Name: William Moore on May 25, 2011
Comments:

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199. Name: Rose M. Reinders on May 25, 2011
Comments: This "no build" option is a no brainer especially in this down economy. Road improvement is an important aspect of this route to ease some of the traffic, but not a complete makeover. Thank you.

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200. Name: Joy O. Wall on May 25, 2011
Comments:

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201. Name: Dave Rasmussen on May 26, 2011
Comments:

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202. Name: Christine Zapf on May 26, 2011
Comments: Please conserve any wetland area by re-routing and minimizing the road building. This is an area that is already paved enough. Thank you.

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203. Name: Calvin Gander on May 27, 2011
Comments:

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204. Name: Mary Antunes on Sep 06, 2011
Comments:

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205. Name: Tcsxismbjs on Dec 19, 2011

Comments: drlWFB kqtguztbcnhe, owbmqptdrhqh, qlkdwtysgzso, http://faueexfihtnq.com/

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206. Name: Paul Shedivy on Feb 26, 2012
Comments:

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207. Name: Robert J Johnson on Feb 27, 2012
Comments: Have 170 acre farm, corn and

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208. Name: Jeffrey R Johnson on Feb 29, 2012
Comments: born and raised on pebble creek farms and the road project as proposed would destroy the homestead. move the project west or scrap it.

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209. Name: Rose M Reinders on Mar 18, 2012
Comments: This project is wasteful, both in money and environmental costs especially in this economy. The better solution is to improve the existing road, but not to build a new wasteful bypass. Thank you.

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210. Name: Eugene Ganiere on Mar 19, 2012
Comments:

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211. Name: Catherine Ganiere on Mar 19, 2012
Comments: I agree with the following quote from the Waukesha County Environmental Action League and that the no build with improvements to the current 2 lane road is the best financial option, the best environmental option and should reduce accidents which is the main reason to build the 4 lane bypass.

From the Waukesha County Environmental Action League:
â€œA common reason given for building the West Waukesha Bypass (other than its been on the map for over 40 years) is that it will improve safety. We're busy digging into the accident reports and wondered about that statement. Here's some of what we found.
We analyzed reports from 2008 thru 2011 that cover the entire length of the proposed west bypass expansion from i94 to Hwy 59 along Medowbrook/TT, Sunset, and St Paul.
During the 4 year time period there were 74 auto accidents (that's what was sent to us). That's a little under 19 per year. 32 or 43% of the 74 accidents were low speed rear end collisions. These were mostly due to inattention or icy roads at stops. 5 accidents or 6.7% were due to alcohol. These were the most serous multicar accidents. Two or three of the accidents were caused by inattention where the drivers right tires went onto the right shoulder and then the driver swerved into oncoming traffic.
This makes 54% of the accidents caused by inattention, icy roads, or alcohol. We didn't read one report that attributed an accident to a hill, or a blind spot, or a curve in the road! Kind of gets you thinking doesn't it....could traffic accident statistics be used to justify expanding a road when they actually point to the opposite conclusion?â€

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212. Name: Gregory Siragusa on Jun 23, 2012
Comments: Stop lights are amazing things; especially at Hwy TT and Madison!

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213. Name: Alisa Dargiewicz on Jun 25, 2012
Comments:

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214. Name: John Wisnieski on Jul 31, 2012
Comments:

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215. Name: Gregory Siragusa on Sep 25, 2012
Comments: We live in a beautiful part of a beautiful county. This idea was a bad one from it's start. We obviously don't need this 4-lane expansion, if it were agood idea we could not live with why is it more than 50 years old? NO EXPANSION or risk loosing our quality of life.

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216. Name: Alexis La Joie on Nov 10, 2012
Comments: No build! Improve! I have grown up in this area and am moving back. All the items mentioned in the no build, improve plan are what we have been saying we need all along as the road and community has expanded. The improve plan is grown from the needs of those who live here and use the road daily and understand the history of the areas development. The by-pass is a dated, outmoded solution brought forth by those who do not even live here or who do not understand the history or needs of the community as a whole.

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217. Name: Gabriele LaJoie on Nov 10, 2012
Comments:

218. Name: Stratton McAllister on Nov 10, 2012
Comments:

219. Name: Kristy Spellman on Nov 10, 2012
Comments:

220. Name: James Hansen on Nov 10, 2012
Comments:

221. Name: Mary Ann Voss on Nov 10, 2012
Comments:

222. Name: Dennis Voss on Nov 10, 2012
Comments:

223. Name: Mac Krause on Nov 10, 2012
Comments:

224. Name: Sarah Dubberly on Nov 10, 2012
Comments:

225. Name: Jesse Dubberly on Nov 10, 2012
Comments: I do not believe that all options have been explored to mitigate the quality of life impacts to residents along the proposed bypass route.

226. Name: Patrick Spellman on Nov 10, 2012
Comments:

227. Name: Robert A Meurer on Nov 10, 2012
Comments: Install roundabout at the intersection of Madison and TT - NO LIGHT, NO STOP SIGN. Minimal traffic from west would make this a more efficient control.

228. Name: Joanna Vohnoutka on Nov 11, 2012
Comments:

229. Name: Mary Dahmer on Nov 11, 2012
Comments:

230. Name: Margie Ahler on Nov 11, 2012
Comments: "No build"

231. Name: Dave Stas on Nov 11, 2012
Comments:

232. Name: James & Janet Pace on Nov 11, 2012
Comments: THIS SHOULD NOT BE PUT PAST MEADOWBROOK SCHOOL or the Church School. When this was designed Meadowbrook school was only a 3 room school. Now it is a14 class room. Now it is only 25 Miles a Hr.This was over 55 or 56 years ago now it is all built up. What is wrong with the county Board. This is no longer a by Pass.

233. Name: Brian R. Borucki on Nov 11, 2012
Comments: Who is really behind this Bypass nonsense? The Bypass is not needed, the impact on the environment and local ecosystems are at stake here. Why the DNR is not helping stop this is beyond me. This is a DOT money grab that will destroy lives and cost taxpayers millions when our country is currently trillions of dollars in debt. All we get are bureaucrats who want to spend money we don't have to take us further into debt so they in turn gain more control. No consideration is given to the lives, homes or taxpayer's needs, simply greed and government blind waste trying to make it look like they are helping, they are not. Modest improvements are all that is needed, not a new golden cow!!! .

234. Name: Patricia A. Borucki on Nov 11, 2012
Comments: Please stop this Bypass, it is not needed nor do we have the money in this time of economic decay!

235. Name: Joan Fritzler on Nov 11, 2012
Comments: This bypass it not needed. I travel this route often and have no problems with the current route layout.

236. Name: Peter J. Borucki on Nov 11, 2012
Comments: I will be coming home from the Army within the year. Received Purple heart in Afghanistan fighting for our country and seeing my comrades and close friends die besides me. Yet, you can somehow find money to throw away on projects like this when you are in the process of defunding the Military, cutting our pay, and throwing us out like trash so you can build an needless road. You all are a disgrace!

237. Name: Kurt Huemmer on Nov 11, 2012
Comments: Use funds to improve the current roads, and then concentrate on the water supply situation!

238. Name: Robin Mickler on Nov 11, 2012
Comments:

239. Name: Luke Schnitzler on Nov 11, 2012
Comments: no building!

240. Name: Patricia Sennott on Nov 11, 2012
Comments: Please do not build this bypass. Our home has already had enough negative impact with the increased traffic flow.

241. Name: Mike Hultman on Nov 11, 2012
Comments: We oppose the bypass and the negative impact that it will have on our neighborhood, property value and quality of life.

242. Name: Anonymous on Nov 11, 2012
Comments:

243. Name: Marion I. Golemgeske on Nov 11, 2012
Comments: I advocate a "No Build. Improve!" alternative.

244. Name: Diana Felsmann on Nov 11, 2012
Comments:

245. Name: Albert & Nancy Pipke on Nov 11, 2012
Comments: We are TOTALLY against the West Waukesha bypass. We feel it wll hurt the Vernon Marsh & our environment, not to mention wasting tons of money on an unneeded project.

246. Name: Victoria Nelson on Nov 11, 2012
Comments:

247. Name: Eric Nelson on Nov 11, 2012
Comments:

248. Name: James Bestor on Nov 11, 2012
Comments: I agree, conceptually, with a plan that would expand existing facilities to help alleviate current congestion but limit the impact on the surrounding neighborhoods. I am not supporting the plan in the current form.

249. Name: Marilyn Ford on Nov 12, 2012
Comments: I strongly agree with this proposal to stop the
4 lane by pass.

250. Name: Mark Ford on Nov 12, 2012
Comments: Strongly endorse this approach

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251. Name: Mark Nilsen on Nov 12, 2012
Comments: The proposals are over 20 years old. The city has expanded west since then. The proposed bypass goes through the center of well-populated areas. Consider a bypass further west, such as from Hwy SS

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252. Name: Kay Poquette on Nov 12, 2012
Comments:

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253. Name: Anonymous on Nov 12, 2012
Comments: Add left turn signals at TT and Summit intersection to improve traffic flow. Also, improvements are needed to TT and Madison.

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254. Name: Anonymous on Nov 12, 2012
Comments: Don't destroy the quiet country atmosphere

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255. Name: Roberta Boczkiewicz on Nov 12, 2012
Comments:

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256. Name: Deb Baker on Nov 12, 2012
Comments:

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257. Name: Kristen Ribar on Nov 12, 2012
Comments:

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258. Name: Matt Gordon on Nov 12, 2012
Comments:

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259. Name: Anonymous on Nov 12, 2012
Comments:

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260. Name: Karen L. Catura on Nov 12, 2012
Comments:

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261. Name: Wayne And Betty Barnett on Nov 12, 2012
Comments: We do not want the bypass

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262. Name: Dan Brooks on Nov 12, 2012
Comments: spend money on schools

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263. Name: James H Gill on Nov 12, 2012
Comments: It,s really sad when the people that make up city and county government, let all this land be developed for the purpose of residential properties so people can build their homes to secure a safe life for their families and to protect some of our valuable natural wonders, to now turn around after what 60 years and say we need a major development for a new road. This proposed bypass looks more like a freeway. I can see some minor changes, but to build this freeway through this beautiful area is a sin.

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264. Name: James H Gill on Nov 12, 2012
Comments: It,s really sad when the people that make up city and county government, let all this land be developed for the purpose of residential properties so people can build their homes to secure a safe life for their families and to protect some of our valuable natural wonders, to now turn around after what 60 years and say we need a major development for a new road. This proposed bypass looks more like a freeway. I can see some minor changes, but to build this freeway through this beautiful area is a sin.

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265. Name: Mary B Curt on Nov 12, 2012
Comments: we do not need this bypass.The quality of life in this area would be changed forever.Roundabouts are hazardous especially at night,largevehicals and diesel engine semis cause more air pollution and noise will increase.we do not need this expensive project.

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266. Name: Hyman Feldman on Nov 12, 2012
Comments: We need to get this stopped NO need for this. Have attended most of the meeting at Resiner center and was told we did not have any input, Have attended public meeting and these where a joke. They need to talk to the resident that live on tt or Meadowbrook or back on to those roads.

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267. Name: Jeff Gifford on Nov 12, 2012
Comments: No Build ! Improve !

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268. Name: James Young on Nov 12, 2012
Comments: This bypass should have been built before all the development on the west side, to build it now is wrong, the only ones benefiting from this are the people who live south, east and west of sunset drive. The traffic flow will be so bad my neigbors and myself will not be able to leave or come back to Kisdon Hill Drive. Lets just make minor improvements to what we have and no dam roundabout just look at the albatross built on Hy 83 or Hy 18.

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269. Name: Denise Baldwin on Nov 12, 2012
Comments:

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270. Name: Denise Baldwin on Nov 12, 2012
Comments:

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271. Name: Anonymous on Nov 12, 2012
Comments:

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272. Name: Steve Pruett on Nov 12, 2012
Comments:

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273. Name: Anonymous on Nov 13, 2012
Comments:

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274. Name: Julie Pruett on Nov 13, 2012
Comments:

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275. Name: Mark Bingen on Nov 13, 2012
Comments: To bypass a city, the road needs to go around the city not through it! Please reconsider the current proposed route.

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276. Name: Tracy Noble on Nov 13, 2012
Comments:

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277. Name: Andrea Begotka on Nov 13, 2012
Comments:

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278. Name: James Bartz on Nov 13, 2012
Comments:

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279. Name: Rajesh Krishnan on Nov 13, 2012
Comments: I second no build option

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280. Name: Gretchen Harris on Nov 13, 2012
Comments:

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281. Name: Pratik Shah on Nov 13, 2012
Comments: Noise and safety for kids (as new roads will be very close to my backyard) are the main concern about this project and looks like project team is not giving any priority to it.

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282. Name: Jill Ester on Nov 13, 2012
Comments: This is a stupid location. By the time it will be finished there would be too much traffic and basically worthless as this is already a mini-bypass which goes by several businesses which already create traffic flow issues. To make it 4 lane would just make

traffic worse. If people want to connect go east from the southwest side they should use the hwy 59 bypass or hwy 83.

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283. Name: Meghan L Roman on Nov 13, 2012
Comments:

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284. Name: Hurbie Harris on Nov 13, 2012
Comments: Why Merrill Hills Road? Why now? People chose these neighborhoods for main reasons (child friendly environments, nature, close to schools, etc). Building a bypass will only diminsh the reasons why people were attracted to the area. I pictured a time where my children could ride their bicycles to school not a time that they would being playing a real-life game of Frogger to cross a four-lane bypass!

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285. Name: Kelly Schwab on Nov 13, 2012
Comments:

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286. Name: Jeff Schwab on Nov 13, 2012
Comments:

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287. Name: Anonymous on Nov 13, 2012
Comments: I say no to this monsterous project which will drastically and negatively impact the quality of life for the people who live along the proposed bypass route. Do we really need a $50+ million road that bypasses nothing? Improvements are needed not a free-way.

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288. Name: Susan S. Saliga on Nov 13, 2012
Comments: In addition, I would not want to see a roundabout considered as an alternative to improving traffic flow.

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289. Name: Leslie J Gifford on Nov 13, 2012
Comments:

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290. Name: Thomas C Martin on Nov 13, 2012
Comments: I strongly agree with this petition statement. Reasonable and responsible decision making by the four involved government entities is called for now. The critical two lane/four lane decision time is arriving very soon. The right decision is CLEARLY to leave the two lane footprint and make appropriate IMPROVEMENTS. Don't WASTE an enormous amount of taxpayer money on a four lane highway that is unnecessary.

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291. Name: Carol A. Vanderveldt on Nov 13, 2012
Comments: I am in full agreement with the above options!

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292. Name: James P. Vanderveldt on Nov 13, 2012
Comments: I agree with the above options!

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293. Name: Anonymous on Nov 13, 2012
Comments: As a homeowner that will be greatly impacted by this project, I urge you to consider a no build/Improve option.

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294. Name: Christine Mary March on Nov 13, 2012
Comments: Please consider leaving TT as it is rather than a 4 lane highway. A stop light allowing motorists and pedestrians to get safely in and out of Kisdon Hill Drive would be imperative...especially when school buses and city buses could not maneuver a round-a- bout without taking away more land from the area.

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295. Name: Kirsten Gifford on Nov 13, 2012
Comments:

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296. Name: Matthew R Gifford on Nov 13, 2012
Comments:

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297. Name: Anonymous on Nov 14, 2012
Comments: This is an unnecessary expenditure. Improve existing traffic lanes.

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298. Name: Jeff Harding on Nov 14, 2012
Comments: My wife and I moved into one of the neighborhoods just off of Meadowbrook Rd this summer. Having lived on the East Side of Milwaukee since getting married, we were ready to leave the noise and congestion behind and move to a more peaceful and safe area where we would be able to start a family and raise our kids. We looked forward to getting out and enjoying the local parks and nature preserves that a more rural and quiet setting offers. And we feel we've found a great place in which to do this - a place that feels like home. Not a place where you hear the constant noise of traffic, where the fresh air is ruined by the smog from semis, where you have to worry about high-volume, high-speed traffic running through residential neighborhoods where kids are playing and riding their bikes. That is not the setting we intended on moving into when we moved here.

And all of that is before mentioning that it would be a colossal waste of taxpayer money - and for what, to shave a minute or two off a commute time?

No, there are better and far less expensive options to improve any perceived traffic concerns than building a bypass. I sincerely hope that this project does not move forward. "No Build. Improve."

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299. Name: Bonnie Dall on Nov 14, 2012
Comments: Ask yourself, would like these kind of revision being done in front of your home? Most likely not. Please consider another route.

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300. Name: Jennifer Ann Smith on Nov 14, 2012
Comments:

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301. Name: James Whitstone on Nov 14, 2012
Comments: Please help save the wonderful property where I reside, and the local wetlands

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302. Name: Sarah Atkielski on Nov 14, 2012
Comments:

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303. Name: AmyLee Disler on Nov 14, 2012
Comments: please lets save homes, land and our earth! not to mention money can be spent on other things!

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304. Name: Christopher Whitstone on Nov 14, 2012
Comments: My relatives live on one of the few houses that will need to bed torn down. Their family is the original owners. It's a very unique house and piece of property. Please do take it from them to same people 3 minutes of drive time.

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305. Name: Phillip Whitsotne on Nov 14, 2012
Comments:

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306. Name: Anonymous on Nov 14, 2012
Comments: I don't think need to spend the money to put the bypass in to save travel time.

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307. Name: Jeremy J Disler on Nov 14, 2012
Comments:

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308. Name: Kaylee Stuempges on Nov 14, 2012
Comments:

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309. Name: Ann Stuempges on Nov 14, 2012
Comments:

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310. Name: Anonymous on Nov 14, 2012
Comments:

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311. Name: Kyle Bukowski on Nov 14, 2012
Comments:

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312. Name: Jennifer Pugh on Nov 14, 2012
Comments:

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313. Name: Josie Cusma on Nov 14, 2012
Comments:

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314. Name: Jean Weidman on Nov 14, 2012
Comments:

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315. Name: Lauren Melberg on Nov 14, 2012
Comments: There is absolutely no reason we need this bypass and to take out my friend's house as well? Sickening.

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316. Name: Jeff Erdmann on Nov 14, 2012
Comments: I was not able to tonight's public hearing due to scheduling conflicts. The last hearing I went to, I was told that the commission was building natural barriers and walls to block sound and protect there area, including a special bridge near MeadowBook School. Though they had no specific plans at that time. I was told they were working on plans for that and to ensure rainwater collection and runoff would not be an issue. I completely agree that an improvement of the roads similar to what is in place now from the freeway south to Rolling Ridge Rd would be more than adequate. Allow for greater capacity, but restrict speeds and the need for a full bypass becomes obsolete.

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317. Name: Dana Johnson on Nov 14, 2012
Comments:

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318. Name: Stacy Schuster on Nov 14, 2012
Comments:

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319. Name: Scott Mittelsteadt on Nov 14, 2012
Comments: Building more highways does nothing but encourage more cars and traffic. This is the 21st century. Waukesha County needs to start exploring alternatives to the automobile and encouraging dramatic reductions in vehicle miles travelled. Driving alternatives will preserve neighborhoods, wild places, recreation land, air quality, and avoid an increased burden on the tax base. Bypass the bypass!!

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320. Name: Randy Dippmann on Nov 14, 2012
Comments:

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321. Name: Christopher Stepanski on Nov 14, 2012
Comments: Let's fix our existing infrastructure before we go spending the kids college money on new roads.

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322. Name: Anonymous on Nov 14, 2012
Comments:

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323. Name: Megan L on Nov 14, 2012
Comments:

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324. Name: Diana Campbell on Nov 14, 2012
Comments: this is not needed!! spend this money improving the roads we do have!

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325. Name: Anonymous on Nov 14, 2012
Comments: Enough development exists there. If you don't like the commute, move.

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326. Name: Michaeel L. Pollich on Nov 14, 2012
Comments:

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327. Name: Suzanne Zehnpfennig on Nov 14, 2012
Comments: this is just not needed! the money could be used elsewhere!

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328. Name: Anthony DeBates on Nov 14, 2012
Comments: There are few businesses along the proposed bypass that would benifit. Most of the current traffic is morning and afternoon "rush hour" from the residential neighboorhoods. There is little traffic the rest of the day.
If the city must have a bypass, improve the Hwy X / St Paul / 164 route. A good portion of that route is already 4 lanes, there are more businesses and there is less residental housing.

329. Name: Barbara Helling on Nov 14, 2012
Comments:

330. Name: Steven Nicola on Nov 14, 2012
Comments:

331. Name: Jennifer Reinke on Nov 14, 2012
Comments: I fully understand that our area is growing and notice the traffic has increased, but feel there should be other alternatives looked into so as to not disturb our peaceful neighborhood, maintain our great quality of life that we currently have in this community. Adding more noise and pollution is not the answer!

332. Name: Kristine Scheel on Nov 14, 2012
Comments:

333. Name: Amy Delby on Nov 14, 2012
Comments:

334. Name: Jennifer Smith on Nov 14, 2012
Comments:

335. Name: Anonymous on Nov 14, 2012
Comments:

336. Name: Ed Dvorscak on Nov 14, 2012
Comments: poor planning is evident here....no 'quick fixes'

337. Name: Holly Kania on Nov 15, 2012
Comments:

338. Name: Charlene Sivyer on Nov 15, 2012
Comments:

339. Name: Judith K Felsmann on Nov 15, 2012
Comments:

340. Name: Scott Reynolds on Nov 15, 2012
Comments:

341. Name: Steve Weidman on Nov 15, 2012
Comments: We do not need more constuction.
Leave some nature.

342. Name: Jason Dvorscak on Nov 15, 2012
Comments:

343. Name: Christy Dvorscak on Nov 15, 2012
Comments:

344. Name: Duane Budelier on Nov 15, 2012
Comments: They Still do not seem to take into account the housing problem , possible depreciation of the housing, the potential for less people to go to downtown businesses, and most importantly the childrens safety. What i would like to know, if some how this goes through in spite of the neighborhood being against it, Who do we sue when the first child is injured. Who do we sue if our housing depreciates. Who do we impeach or make sure they lose their office because this is against the will of the people. I will be there to make sure that the politician that has backed this is not reelected. .

345. Name: Nathan Schettler on Nov 15, 2012
Comments:

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346. Name: John Schirmacher on Nov 16, 2012
Comments:

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347. Name: Daniel Sonnemann on Nov 16, 2012
Comments: I live in a subdivision that has clear vision to this current road and drive it everyday. It does not need to be a 4 lane road. This is going to destroy property values and my desire to live in the current location with a hwy that close to my house.

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348. Name: Gary Beier on Nov 16, 2012
Comments:

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349. Name: Don Beveridge on Nov 16, 2012
Comments: West Waukesha bypass is totally unnecessary and won't do what was intended.

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350. Name: Karine Close on Nov 17, 2012
Comments: I support the "No Build.Improve!" option

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351. Name: Maggie Sonnemann on Nov 17, 2012
Comments: We recently moved into heritage hills at TT and Madison. I am terribly dissapointed in hearing the possibility of this bypass. I drive these roads daily and do not see the need whatsoever. Not to mention the increased noise, polution, safety and of course increased taxes and decreased property values that will come from this! The entire stretch is residential and should ABSOLUTELY BE STOPPED!!!

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352. Name: Karen Sodemann on Nov 17, 2012
Comments:

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353. Name: Jon Sodemann on Nov 17, 2012
Comments:

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354. Name: Jeff Baldwin on Nov 18, 2012
Comments:

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355. Name: Milton Rebro on Nov 18, 2012
Comments: I'm completely against The West Waukesha bypass
project.It is an outdated plan that serves no purpose.

*I support the "NO BUILD.IMPROVE" option.*

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356. Name: Lee Ward on Nov 18, 2012
Comments: Stop the four lane. It goes right through my neighborhood.

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357. Name: Jay Pace on Nov 19, 2012
Comments: This bypass would have been great 20 years ago but you dragged your butts,move it down hyw. 59 to hyw 83 to 94 it will help more people and business and will give you more bang for our buck!

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358. Name: Sandy Ward on Nov 19, 2012
Comments:

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359. Name: Dan Ward on Nov 19, 2012
Comments:

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360. Name: Jeffrey M. Gonyo on Nov 19, 2012
Comments:

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361. Name: Abby Bartz on Nov 19, 2012

Comments: To Whom it May Concern:

I am completely against the plans to build a 4 lane highway.

I believe that is horribly irresponsible to follow any plans that were created over 50 years ago. Think of all of the wonderful changes that have happened in the last 50 years. I thought our state motto "Forward" is appropriate to quote. We need to move Forward and not rely on plans of the past. We have to think of the future of the children that live, play and learn in this area. There are two schools and one kids' camp on this route. Do you want children playing and learning next to a 4 lane highway? Building a 4 lane highway does not keep the children of this community safe, and does not create a better place for them to live and grow.

I also think it is fiscally irresponsible to spend this amount of money on "cement". There are so many other programs that could benefit from these funds or improvements that could be made to other areas of the county. Our state has called for it's citizens to become more fiscally responsible this year, and I think that begins with the country representatives re-evaluating how they choose to spend their tax-payers' money. Think about people that live in the community not infrastructure.

Additionally, I live in the Pebble Creek Subdivision and creating a 4 lane highway will make it almost impossible for me to safely leave my subdivision on foot, on bike, or even in my car.

Also, by creating a 4 lane highway you will see speeding increase significantly. Recently the speed limit was changed to 25 mph right off of I-94 by Rolling Ridge Drive. The sign posted states radar enforced. However, no one actually drives 25 mph. Additionally, when you enter Waukesha on Sunset, the speed limit is 35 mph; no one drives 35 mph. If you double the number of lanes you will increase the number of speeding motorists, and therefore create an unsafe environment for any person wishing to run, walk, or bike.

Finally, I am against creating a 4 lane highway because I don't want to see more pollution. I don't want to hear traffic (that's why I moved out of Milwaukee). I don't want to smell the diesel or exhaust from more trucks or excess cars. I don't want to have the trash blow into my neighborhood or see even more litter on the side of the road.

Sincerely
Abby Bartz

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362. Name: Sandra Hunziker on Nov 19, 2012
Comments:

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363. Name: Mehgan Tebo on Nov 19, 2012
Comments:

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364. Name: Anonymous on Nov 20, 2012
Comments: Do not ruin our neighborhood!

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365. Name: Elizabeth Carleton on Nov 20, 2012
Comments: i live in Kame Terraces, and this is going to be a disaster. i think it should be improved, but not to the extent they want to do it.

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366. Name: Dawn Ovokaitys on Nov 20, 2012
Comments: Related to this matter our household supports the "No Build, Improve Only" option only.

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367. Name: Anonymous on Nov 21, 2012
Comments:

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368. Name: Debra Valdivieso on Nov 21, 2012
Comments:

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369. Name: Jorge Valdivieso on Nov 21, 2012
Comments:

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370. Name: Ernabelle Madushaw on Nov 21, 2012
Comments: Don't build this bypass. Improve what is already there Besides harming the landscape, it will also cause more air pollution from the increased usage.

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371. Name: Caryl McAllister on Nov 21, 2012
Comments:

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372. Name: Sally & Mark Pass on Nov 22, 2012
Comments:

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373. Name: Robert A. Meurer on Nov 22, 2012
Comments:

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374. Name: Anonymous on Nov 22, 2012
Comments:

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375. Name: Bharathwaj Muthuswamy And Deepika Srinivasan on Nov 22, 2012
Comments: We just moved into the Heritage Hills neighborhood and fully support this petition.

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376. Name: David Hammer on Nov 22, 2012
Comments: There is no question that improvements are needed for better safety and access along the current Meadowbrook road corridor. Sight lines, shoulders, sidewalks/bike paths between the I-94 interchange and Summit Ave. (Hwy 18) seem to be fine, although certain intersections need some improvement. If this type of design would be extended from Hwy 18 to Sunset, it would certainly help address both the safety and access issues.

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377. Name: Sherry Meurer on Nov 24, 2012
Comments:

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378. Name: Anonymous on Nov 25, 2012
Comments:

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379. Name: Tammara Wolfgram on Nov 25, 2012
Comments:

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380. Name: Michelle Hewitt on Nov 25, 2012
Comments:

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381. Name: Pamela Towers on Nov 25, 2012
Comments: It will affect the bike path that so many cherish and comes from miles away to ride. This will will hurt a lot of the recreational tourism for this state. For what purpose ? Is it worth it?

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382. Name: Gabriele LaJoie on Nov 26, 2012
Comments:

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383. Name: Caryl McAllister on Nov 27, 2012
Comments:

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384. Name: Thomas Schlueter on Nov 27, 2012
Comments: Having been a resident here for going on seven years, through observation and reading, I see few justifiable reasons for the bypass, especially in light of the cost.

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385. Name: Thomas Schlueter on Nov 27, 2012
Comments: Having been a resident here for going on seven years, through observation and reading, I see few justifiable reasons for the bypass, especially in light of the cost.

---

386. Name: Steven E Poquette on Nov 27, 2012
Comments: The proposed 4 lane bypass is ill considered. There are no stop lights proposed for the Kame Terraces subdivision entrance.

I support improving the current road (County TT), widening the lanes and adding left turn lanes.

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387. Name: Anonymous on Nov 27, 2012
Comments:

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388. Name: Lisa Bixby on Nov 27, 2012
Comments: This project has been on the books for 25 years. Its time has come and gone. 59 is the bypass, and can be upgraded. Additionally, the steep hill from I-94 to the crest on TT is a hazard for trucks in the winter. If they leave 94 turning left, they have an immediate hill to climb.. This move will not be conducive to through truck traffic.

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389. Name: Andi Leston on Nov 27, 2012
Comments:

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390. Name: Nicole Rogers Schmirler on Nov 27, 2012
Comments: Seriously! This does not offer any benefits, rather, creates more headaches and increased cost of living. We already live in one of the most expensive counties in Wisconsin, so I don't appreciate politicians deciding to spend my tax dollars towards a project that will yield very little benefits! Leave this alone!

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391. Name: Gail Hyde on Nov 27, 2012
Comments: Please keep our neighborhood a safe place for pedestrians and families!

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392. Name: Melissa Kalt, MD on Nov 27, 2012
Comments:

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393. Name: Tracey Tran on Nov 27, 2012
Comments:

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394. Name: Anonymous on Nov 28, 2012
Comments:

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395. Name: Adam Leston on Nov 28, 2012
Comments:

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396. Name: Anonymous on Nov 28, 2012
Comments:

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397. Name: Karen Birschbach on Nov 29, 2012
Comments: We cannot afford to pay any higher taxes. The traffic on Meadowbrook is out of hand. We need to divert the traffic off of G and / or we need additional stop lights on that road. It is nearly impossible to turn onto County G off of Coldwater Creek Dr. when the traffic is high. We need a stop light at that intersection. So bottom line is this is too costly and will not help with traffic merging onto Hyw G.

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398. Name: Dianne Dagelen on Nov 29, 2012
Comments: Wisconsin currently has a budget deficit for Transportation. It would be expedient and appropriate and fiscally responsible to make needed improvements, but not to re-construct the West Waukesha by-pass project, which so many taxpayers do not want or need.

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399. Name: Sue Reimund on Nov 29, 2012
Comments: Please do not construction the West Waukesha ByPass . It is not needed and will distroy the enviomment and wildlife.

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400. Name: Grace Kalt on Nov 30, 2012
Comments: I oppose the Waukesha Bypass on Meadowbrook Road.

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401. Name: Monica Skwierawski on Nov 30, 2012
Comments:

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402. Name: Anonymous on Nov 30, 2012
Comments:

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403. Name: Pam Schoenecker on Nov 30, 2012
Comments:

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404. Name: Whsclassof49 on Nov 30, 2012
Comments: What will the people in the town of Waukesha think when they decide to connect from Hy 59 to 43 a shot right past the West High School.ON X How many of the County board have even drove from I94 to Sunset Dr.. The county BOARD JUST THINKS BECAUSE IT WAS 60 YEARS IN THE MAKING AND THEY LET EVERY THING BUILD UP THAT IT SHOULD GO IN NOW.
Are the City of Waukesha that bought the City of Pewaukee's old Fire Station on the corner of Northview and Meadowbrook going to make that business and than buy all the houses along from I94 to Hwy 59 & 43 IS THIS THE NEXT MOVE..
This is a waste of OUR money on our taxes. Fix what we got up and leave it a 2 lane. GO WEST NOT INBETWEEN 2 CITIES

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405. Name: WHSCLASSOF49 on Nov 30, 2012
Comments: The county had a meeting at North High School and said that you could put your thoughts on the WestBYPASS in by Dec 10. Than they voted on the 28th before these were all in and the DNR report was in.. How many of the board have actualey drove from I94 to Sunset Dr.. This was proposed 60 years ago and they left everything build up now they want the children in the schools in the rout not to be safe.What is the City of Waukesha doing with the old City of Pewaukee Fire Station?? Is this going to be all Business and are they going to buy the houses up along the way.? They are so gun ho to see that the shoping center has been sold.
How are they going to put a bridge to Meadowbrook school? Apparentley they are going to do away with the left turn or are they terring down the wall. To make it 4 lane with no turn.. Town of Waukesha better watch this for the next will be Hy59 to Hy 43 right down HY X past West High School.
They should go way out WEST and put a 4 lane in. Not between Citiy of Waukkesha and City of Pewaukee.
BUT THEY ARE JUST GOING TO SHOVE THIS DOWN OUR THROATS..
HOPE THEY HAVE A DIFFERENT ENGINER THEN WHAT MOKWONAGO HAD WHAT DID IT COST US TAX PAYERS TO REDO THE ROUNDABOUT.
Fix what we got .

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406. Name: Steve Arttus on Nov 30, 2012
Comments:

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407. Name: Charlie Kalt on Nov 30, 2012
Comments: I oppose the waukesha by pass on Meadowbrook road.

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408. Name: Anonymous on Nov 30, 2012
Comments: I really dont want that high way!

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409. Name: Jenna on Dec 01, 2012
Comments: No thank you!!!!!!

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410. Name: Howard Timm on Dec 01, 2012
Comments: I agree that this is ridiculous. The only way to solve it is to go further west, away from the residential and school areas.

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411. Name: Tricia Timm on Dec 01, 2012
Comments: Do not put a 4-lane highway through my backyard. This is not what I bargained for when I moved here 2.5 years ago. Please update the road and make the improvements but you can keep the highway! Don't you realize that things have changed in 60 years since this idea was first hatched??!!

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412. Name: Grace Kalt on Dec 01, 2012
Comments: I oppose the waukesha bypass.

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413. Name: J Michael Hibbard on Dec 02, 2012
Comments: No build please just improve.

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414. Name: Anonymous on Dec 02, 2012
Comments: Please stop the expansion of the bypass. Not only will this increase our taxes but it will destroy important wetlands.

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415. Name: Daniel Becker on Dec 02, 2012
Comments: stupid!

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416. Name: Mark Brannin on Dec 03, 2012
Comments:

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417. Name: Jaci Wagner on Dec 03, 2012

Comments: I support the "No Build, Improve" option regarding the Waukesha Bypass.

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418. Name: Mark Wagner on Dec 04, 2012
Comments: I support a no build, improve program. 4 lanes will devalue properties, create more traffic and noise.

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419. Name: Karen D. Poser on Dec 04, 2012
Comments: Please reconsider the devastating impact this highway will have on the environment and qualitiy of country life in Waukesha. After successfully living without this highway for 50 years, surely it shows that Waukesha can grow and thrive without this bypass.

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420. Name: Anonymous on Dec 05, 2012
Comments: NO BYPASS PLEASE!!

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421. Name: Cindy And Tom Bernier on Dec 05, 2012
Comments: No expansion. Revamp Madison only with stop light, no round about

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422. Name: Teresa Ryan on Dec 05, 2012
Comments:

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423. Name: Mark And Debbie Kusch on Dec 05, 2012
Comments: do not build bypass!

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424. Name: Linda Hink on Dec 05, 2012
Comments: Improve and maintain current roads and add turn signals where needed.

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425. Name: Mike Plaski on Dec 05, 2012
Comments:

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426. Name: LuAnn Plaski on Dec 05, 2012
Comments:

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427. Name: Anonymous on Dec 05, 2012
Comments:

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428. Name: David Raasch on Dec 05, 2012
Comments:

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429. Name: Carol Raasch on Dec 05, 2012
Comments:

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430. Name: Connie Panawash on Dec 05, 2012
Comments:

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431. Name: Anonymous on Dec 05, 2012
Comments:

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432. Name: Debra on Dec 05, 2012
Comments: The by-pass is not needed. The man hours and funds that have been put into this study could and should have been better utilized on other projects. I do not know how or when this got started, but it needs to end. NO BY-PASS

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433. Name: Richard Panawash on Dec 05, 2012
Comments:

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434. Name: Margaret Dunn-Watson on Dec 05, 2012
Comments:

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435. Name: Emabelle Madushaw on Dec 06, 2012
Comments: This petition is well thought out. Don't ruin our beautiful county with too many roads.

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436. Name: Cathy Ganiere on Dec 06, 2012
Comments: The 'No Build Improve' the current 2-lane must be reopened for review. I oppose the West Pebble Creek 4-lane option for the many reasons.

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437. Name: Julie Husted on Dec 06, 2012
Comments:

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438. Name: Cathy Ganiere on Dec 06, 2012
Comments:

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439. Name: Mark Pass on Dec 07, 2012
Comments: the community does not need the bypass and we certainly do not need to underwrite improvements for future land developers

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440. Name: Dawn Stanislawski on Dec 07, 2012
Comments:

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441. Name: Jenifer Van Able on Dec 07, 2012
Comments: No need to spend the hard earned tax dollars and destroy the environment.

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442. Name: Mark Frey on Dec 08, 2012
Comments:

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443. Name: Justin Peters on Dec 08, 2012
Comments:

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444. Name: Scott on Dec 09, 2012
Comments: Please don't spend money we don't have on a project we don't need. No Build. Improve.

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445. Name: Michael Tracy on Dec 09, 2012
Comments:

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# Waukesha West Bypass the Bypass
## "No Build. Improve" Petition

| Signature | Address | e-mail |
|---|---|---|
| Gene Ganiere | S36 W26580 GENESEE RD | GENO-G@WI.RR.COM |
| GENE GANIERE | | |
| [illegible] | | |
| David A. Dolke | W66 S3374 Hazelwood Pl | |
| Christine Janssen | 287 Jacquelyn Dr | |
| [illegible] | Waukesha WI 53188 | |
| [illegible] | S32W26620 Hawthorne Hollow | |
| Alison Whitstone | Waukesha, WI 53189 | |
| [illegible] | W276S2202 Fenway Dr S | / |
| [illegible] | W266 S3399 HAZEL WOOD | JSTOCKING6674@WI.RR.COM |
| ANDREW SORBY | 3126 ROLLINGRIDGE DR | 262 544 0688 |
| [illegible] | WAUK WI 53188 | |
| Kelly Kirk-Braluch | 623 S. University Dr. 53188 | |
| CHRIS SKERVEN | 808 Huntley Ct Waukesha 53188 | |
| Elaine J. Tripp | 3111 Rolling Ridge Dr Waukesha 53188 | elaine.tripp@sbcglobal.net |
| Mark Kusch | W270 N298 ARROWHEAD TRAIL WAUKESHA | |
| Chuck Wiedeman | S27 W29545 JARMON RD, WAUKESHA, WI 53188 | |
| [illegible] | S22 W27429 FENWAY DR S WAUKESHA, WI 53189 | GMLAY@MSN.COM |
| DOUGLAS M. BRUNET | W275 S2271 LACUSTRINE WAY WAUKESHA WI 53188 | BRUNETDMB@GMAIL.COM |
| LINDA M. BRUNET | W275 S2271 LACUSTRINE WAY WAUKESHA, WI 53188 | BRUNETLMB@GMAIL.COM |
| [illegible] | S29 W27388 Green Ln Waukesha 53189 | JDWISKI@SBCGLOBAL |
| John ~~Wisniewski~~ Wisnieski | | |

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# Waukesha West Bypass the Bypass
## "No Build. Improve" Petition

| Signature | Address | e-mail |
|---|---|---|
| Lyle Golemgeske | W270 N235 Lyle's Dr | |
| Lyle Golemgeske | Waukesha 53188 | |
| Marion I. Golemgeske | W270 N235 Lyles Drive | |
| MARION I. GOLEMGESKE | Waukesha WI 53188 | |
| Janet Glade | 831 W2611 Sunset Dr | |
| Janet Glade | Waukesha, WI 53189 | |
| Janet Pace | W370 N195 Amorhead Court Waukesha WI 53188 | |
| Deborah T. Rolle | 531 W26897 Sunset Drive | |
| Kathleen P. Martin | 3112 Kisdon Hill Dr | |
| Kathleen P Martin | Waukesha 53188 | |
| Julie Baumler | S22W27543 Kane Ct | |
| Julie Baumler | Waukesha WI 53188 | |
| P. Whitstone | S32W26620 Hawthorne Hollow Dr | stonecreek@wi.rr.com |
| Patricia Whitstone | Waukesha, WI 53189 | |
| Angela Whitstone | S32W26620 Hawthorne Hollow Dr | |
| Angela Whitstone | Waukesha, WI 53189 | |
| Steven Hammer | S33W26902 Hawthorne Hollow Dr 53189 | quatehammers@yahoo.com |
| SCOTT JONES | S32W26320 Bob Bell CT WAUKESHA WI 53189 | srjones@wi.rr.com |
| Jim Hopper | 115C East Sutton Pl 53188 | jshopper@wi.rr.com |
| Nancy Bolzer | S46W25785 Red Oak Ct Waukesha 53189 | |
| STEVE RAASCH | W266S3410 Hazelwood Pl Waukesha, WI 53189 | mmraaschestudents.wisc.edu |
| Thomas Springer | W269S3550 Merrill Hills Rd Waukesha, WI 53189 | |

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## "No Build. Improve" Petition

| Signature | Address | e-mail |
|---|---|---|
| Marilyn Hayashi | 3400 Turnberry Lake Dr | mchayashi406 @ SBC Global.Net |
| Marilyn Hayashi | | |
| Jim Tiderman | 529 W27171 Green La | — |
| Jim Tiderman | | |
| BOB TALLINGER SR | 533 W26758 HAWTHORNE HOLLOW DR | |
| Robert J Tallinger Sr | | |
| FRANK ANSSEN | 2817 Jacquelyn Dr | |
| | | |
| ROBERT DUERWACHTER | 1516 WEST END RD | |
| | | |
| Bob Ersenach | 1708 Tallgrass Circle | |
| Bob Ersenach | Wksh 53188 | |
| Joan Hardy | | |
| Buzz (L. B) Hardy | 1800 N Prospect, Apt E Milw 53202 | buzz_hardy@yahoo.com |
| Joan DeStasio | 300 Kisdon Hill Ct. | |
| JOAN DeStasio | ~~300 Kisdon~~ | JdeStasio@wi.RR.com |
| Patrick Zallo | S31 W26897 SUNSET DR | PZallo@WI.RR.COM |
| Howard Timm | 119 Jersey Cir Waukesha 53188 | htimm@wi.rr.com |
| Howard Timm | | |
| Lynda A Bodis | 522 W.27261 KAMETER. | jbodis@sbc |
| LYNDA A. BODIS | WAUKESHA, WI 53188 | global.net |
| James A Bodis | ↓ | |
| JAMES BODIS | 522 W.27261 KAMETER. WAUKESHA, WI 53188 | jbodis@sbc global.net |

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## "No Build. Improve" Petition

| Signature | Address | e-mail |
|---|---|---|
| Kristen L. Ribar | 2904 Mary Ann Ct Waukesha WI 53188 | kribar@wi.rr.com |
| Mac Krause | 3208 Rolling Ridge Dr. Waukesha, WI | mackrause@wi.rr.com |
| Matt Gordon | 2905 Skyline Ct. Waukesha, WI | skeetz_mg@yahoo.com |
| Michael Metcalf | 2508 Lancaster Dr. Waukesha | michael.Metcalf@micorp.com |
| (Joseph Arnold) | 2802 Brookridge Ct. S, Waukesha WI 53188 | jwarnold20@gmail.com |
| Kurt Huemmer | 3200 Ridgeline Drive | KHUEMMER@WI-RR.com |
| Linda Janecke | 2812 Rolling Ridge Dr | linda.janecke@phci.org |
| Bonnie Dall | 2708 Meadowbrook Rd. | bdall001@wi.rr.com |
| CAROL MOHANTY | W274N474 Hilltop dr | CLMOHANTYRN@gmail.com |
| JOHN MOORE | 2820 EMSLIE DR | JJHOOLE@ATT.NET |
| Karen Catura | N2W27139 Lyles Dr Waukesha | Kcatura@gmail.com |
| Rose Reinders | 1155 Simon Dr. Brookfield | antrose30@hotmail.com |
| Donna Goodrich | 3783 S. Shady Lane New Berlin | donnagoodrich@wi.rr.com |
| JOHN WELLFORD | 635 Oxford Rd Waukesha WI 53186 | LJWELL@SBCGLOBAL.NET |
| BOB TALLINGER | 5339 W. Hawthorne Milwaukee WI | |
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# Waukesha West Bypass the Bypass
# "No Build. Improve" Petition

| Signature | Address | e-mail |
|---|---|---|
| S Apker | 1813 Chapinnall Dr | Waukesha WI 53189 |
| [illegible] | 5806 Riverside Dr | Greendale, Wis 53129 |
| [illegible] | 5203 Roberts Dr | Greendale, WI 53129 |
| Richard M. Smith | 1128 Oxford Rd Wksh 53186 | None |
| J. Henry H. Gach | 9320 N. Valley/Wh Run Hills | — |
| Alexis Hassenbuber | 92108 Chicago Rd, Oak Creek, WI | |
| Sally Pass | 404 Westminster Drive Waukesha | |
| Mark Ross | 404 Westminster Drive Waukesha | rmoishe18@yahoo.com |
| Jim Bouman | 1907 Easy St Wauk 53188 | Jim.Bouman@gmail.com |
| Steven Pepper | 21265 Weyer Rd 53072 | stevenmackp@wi.rr.com |
| John Goodrich | 3753 Sahoyla Ln Berlin Waukesha, WI | |
| Krista Nilz | 2740 Brighton Drive 53188 | nelr0352@uwm.edu |
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# Waukesha West Bypass the Bypass
## "No Build. Improve" Petition

| Signature | Address | e-mail |
|---|---|---|
| [illegible] | 506 Lake St, Waukesha | linkeng@tds.net |
| [illegible] | [illegible] | [illegible] |
| [illegible] | 710 Oak Ridge CT, Waukesha | FRANKKrafterbie@Hotmail.com |
| [illegible] | P.O. Box 152 Hartland WI 53033 | jmganey0164@cox.com |
| [illegible] | 1240 Highpoint Ln 53189 | charlkimore@att.net |
| [illegible] | 207 Kisdon Hill Ct | J611@Wi.RR.Com |
| [illegible] | 219 Jersey Circle | LSCHNECK41@GMAIL.com |
| Donald R Beverdge | 1081 Hawthorne Place #G Pewaukee 53072 | dbev33@yahoo.com |
| Karen Keature | N2W27139 Lyles Dr Waukesha 53188 | Keature@gmail.com |
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| Signature | Address | e-mail |
|---|---|---|
| [illegible] | 2843 Coventry Ln. | twstrumpet@yahoo.com |
| Julie Downs | W278N1184 WOODSIDE DR | sdowns@wi.rr.com |
| [illegible] | 2804 Ridgeline Circle | mchultman@hotmail.com |
| Pearl Schwamy | N3W 27282 Arrowhead Tr. Waukesha, WI 53188 | Phone - 262-542-3718 |
| Jon Pace | Arrowhead Tr. 262-547-2034 ← activist | |
| [illegible] | [illegible] | |
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# Waukesha West Bypass the Bypass
# "No Build. Improve" Petition

| Signature | Address | e-mail |
|---|---|---|
| Pam Nader | 3122 Rolling Ridge | Ph. 549-5385 |
| Diane Luty | 3127 Rolling Ridge | 549-3224 |
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# Waukesha West Bypass the Bypass
# "No Build. Improve" Petition

| Signature | Address | e-mail |
|---|---|---|
| Helen Knauer | 1022 S. 98th St. | Knauerhelen@att.net |
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