Project I.D. 2788-01-00
West Waukesha Bypass
I-94 to WIS 59
Waukesha County

State of Wisconsin
Department of Natural Resources
(Return to appropriate DNR District/Area Office)

State / Federal Application for Water Regulatory Permits and Approvals

Form 3500-53 (R 4/01)

PLEASE COMPLETE BOTH PAGES 1 & 2 OF THIS APPLICATION. PRINT OR TYPE. The Department requires use of this form for any application filed pursuant to Chapter 30, Wis. Stats. The Department will not consider your application unless you complete and submit this application form. Personally identifiable information on this form will not be used for any other purpose, but it must be made available to requesters under Wisconsin's open records law (s. 19.31-19.39, Wis. Stats.].

1.	Applicant (Individual or corporate name) Wisconsin Department of Transportation		2. Agent/Contractor (firm name)
	Address 141 NW Barstow Avenue		Address
	City, State, Zip Code Waukesha, Wisconsin 53187	Fire Number	City, State, Zip Code
	Telephone No. (Include area code) Ben Eruchalu (262) 548-6896 Doug Cain (262) 548-5603	Tax Parcel Number	Telephone No. (Include area code)

3. If applicant is not owner of the property where the proposed activity will be conducted, provide name and address of owner and include letter of authorization from owner. Owner must be the applicant or co-applicant for structure, diversion and stream realignment activities.

Owner's Name | Address | City, State Zip Code

4. Is the applicant a business ☐ Yes ☒ No
If YES, is the permit or approval you are applying for necessary for you to conduct this business in the State of Wisconsin?
☐ Yes ☐ No
If YES, please explain why (attach additional sheets if necessary):

5. Project Location City of Waukesha, City of Pewaukee, Town of Waukesha
Fire Number _____ Tax Parcel Number _____
Waterway's: Pebble Creek, unnamed tributaries to Pebble Creek
County Waukesha County
Govt. Lot__OR Range T6N, R19E, Sections 5, 6, 7, 8 and 17
T7N, R19E, Sections 29, 30, 31, and 32

6. Adjoining Riparian (Neighboring Waterfront Property Owner) Information
See Attached Table

7. Project Information (Attach additional sheets if necessary)

(a) Describe proposed activity (include how this project will be constructed)
See attached pages.

(b) Purpose, need and intended use of project
See attached pages

(c) I have applied for or received permits from the following agencies: (Check all that apply)
☐ Municipal ☐ County ☐ Wis. DNR ☐ Corps of Engineers

(d) Date activity will begin if permit is issued: March 2016 – December 2017

(e) Is any portion of the requested project now complete? ☐ Yes ☒ No
If yes, identify the completed portion on the enclosed drawings and indicate here the date activity was completed:

I hereby certify that the information contained herein is true and accurate. I also certify that I am entitled to apply for a permit, or that I am the duly authorized representative or agent of an applicant who is entitled to apply for a permit. Any inaccurate information submitted may result in permit revocation, the imposition of a forfeiture(s) and requirement of restoration.

Signature of Applicant(s) or Duly Authorized Agent: Benedict Sundahl — Date Signed: 7/6/15

LEAVE BLANK – FOR RECEIVING AGENCY USE ONLY		
Corps of Engineers Process No.	Wisconsin DNR File No.	
Received By	Date Received	Date Application Was Complete

PROJECT INFORMATION

The Wisconsin Department of Transportation (WisDOT) is proposing an expansion of County TT, locally known as Meadowbrook Road (north of Summit Avenue/WIS 18) and Merrill Hills Road (south of Summit Avenue), to a four-lane divided roadway on the west side of the City of Waukesha in Waukesha County (Figure 1). The project area is located in ***T6N, R19E, Sections 5, 6, 7, 8 and 17 and T7N, R19E, Sections 29, 30, 31, and 32.*** Termini for the 5-mile project are I-94 on the north and the intersection of WIS 59 and County X on the south. The project includes parts of the ***City of Waukesha, the City of Pewaukee, and the Town of Waukesha.***

The West Waukesha Bypass corridor study began under the **Project I.D. 2788-01-00**.

- ***North of Rolling Ridge Drive***, Meadowbrook Road is already a four-lane divided road and ***will not*** be reconstructed as part of this project.
- **Meadowbrook Road** will be reconstructed from the Rolling Ridge Drive intersection to Summit Avenue.
- ***South of Summit Avenue***, Merrill Hills Road ***will be reconstructed*** to Madison Street.
- ***South of Madison Street***, a roadway ***will be constructed on new alignment*** to the intersection of WIS 59 and County X (Figure 2).
- The ***segment of Meadowbrook Road and Merrill Hills Road to be reconstructe*****d** is a two-lane undivided road.

Project - COE 404 Permit Applications

Information in this application is based on ***60 percent design plans*** Waukesha County completed for the entire corridor. Final design will begin while this application is being reviewed.
Changes in impacts to Waters of the U.S. (as a result of Final design) will be coordinated with the Army Corps of Engineers (COE).

Three construction projects are proposed along the 5-mile project corridor.

City of Waukesha

- Will finalize design/reconstruction of ***Meadowbrook Road (between Rolling Ridge Drive and Northview Road)***. The City has no federal funds associated with final design and construction of their Project, so they have ***no assigned WisDOT Project I.D.***
- Construction of the city's segment is scheduled to begin in early 2016.

Waukesha County

- Will finalize design/reconstruction of the ***Meadowbrook Road and Merrill Hills Road*** segment **(*between Northview Road and Kisdon Hill Drive)***. It should be noted that the Kisdon Hill Drive to Summit Avenue design and construction projects have been given different WisDOT I.D. numbers than the Summit Avenue to Northview Road design and reconstruction.
- Design I.D.'s **2788-00-02 & 2788-02-00, Construction I.D.'s 2788-00-72 & 2788-02-70**
- Construction is scheduled to begin in early 2016.

Wisconsin DOT

- Will finalize design/reconstruction of the ***Kisdon Hill Drive to the south project terminus*** segment.
- Design project I.D. **2788-00-01, Construction project I.D. 2788-00-71.**
- Construction is scheduled to begin in fall 2016.

Waters of the U.S. Impacts/Type of Permits - The City of Waukesha, Waukesha County and Wisconsin DOT Construction projects have different levels of impacts on Waters of the U.S. that require different Section 404 permits from the Army Corps of Engineers.

This application, where relevant in text or table, will provide information by referencing the separate construction project ID's, in an effort to clarify and to segregate both impacts related to

the entire project (as described in the Final Environmental Impact Statement – Final FEIS), and impacts associated with individual construction projects.

It is anticipated that fewer impacts to wetlands/Waters of the U.S. for the City of Waukesha and Waukesha County construction projects, will result in issuance of a regulatory General Permit (GP) issued by the COE prior to construction. The higher level of wetland/Waters of the U.S. impacts in the WisDOT segment requires an Individual Permit (IP).

The ***City of Waukesha***, lacking federal funds for construction, will independently apply to the COE for a separate 404 permit prior to construction of their Project. In addition to the reconstruction of Meadowbrook Road, the City is also proposing a flood mitigation project. The proposed mitigation improvement would incorporate a new 60-inch storm sewer pipe in Meadowbrook Road from the Woodbridge Lane intersection south to Lancaster Drive, then east on Lancaster Drive to a stormwater detention pond to be constructed in the undeveloped city park in the northeast quadrant of the Northview Road/Meadowbrook Road intersection. The proposed project would be constructed concurrent with the Meadowbrook Road reconstruction to minimize disturbance to adjacent neighborhoods.

The existing stormwater runoff that drains to the Pewaukee Lake watershed will be maintained as part of this project, with the proposed 60-inch pipe providing additional conveyance south in larger storm events. This would entail construction of a detention basin on the undeveloped city park. SEWRPC is delineating wetlands in the undeveloped park. Wetland avoidance and minimization efforts will be conducted as part of the project's design phase.

This application provides details about the flood mitigation project available at the time this application is being prepared for submittal. Additional information will be provided in the City of Waukesha's separate COE 404 permit application.

PURPOSE AND NEED

This section summarizes the Purpose and Need for the West Waukesha Bypass and the City of Waukesha's flood mitigation project described in the Project Information section. The complete Purpose and Need Statement for the West Waukesha Bypass can be found in Section 1 of the project's 2014 Final EIS.

PURPOSE of the proposed West Waukesha Bypass is to:

- Provide a safe and efficient north-south arterial roadway on the west side of the City of Waukesha to finalize the long-planned circumferential route around Waukesha.
- The proposed route would ***not only accommodate growing traffic volumes*** along the corridor; but would also ***address*** and improve roadway ***deficiencies*** - ***tight curvatures, steep hills, narrow lanes, and lack of roadway shoulders.***

NEEDS for the project include:

- Traffic demands, safety concerns, existing roadway deficiencies, system linkage, project history, and regional/local transportation and land-use planning.
- Project needs that factor most heavily into the proposed improvements to County TT, (that will affect wetlands and other waters of the U.S.) are ***traffic demand, safety concerns, and existing roadway deficiencies***. These primary three need factors are summarized below.

Traffic Demand

Study area traffic information in the Final EIS was obtained from WisDOT counts and SEWRPC's regional traffic model which considers existing and planned land use and development trends. Highlights of Waukesha County's and WisDOT's traffic analysis include the following:

- Traffic volumes on County TT for 2035 would be 23 to 56 percent higher than 2009 volumes (Table 1).
- Existing traffic along County TT ranges from 8,320 to 14,830 vehicles per day (vpd) and is expected to reach 13,000 to 20,000 vpd in 2035.

- The ***highest existing volumes along County TT are between Northview Road and Summit Avenue***

Table 1 - Existing and Design Year Traffic Comparison

Roadway Segment	Existing Traffic 2009 AADT (vpd)	Future Traffic 2035 AADT (No Build) (vpd)	% Increase (2009–2035)
Silvernail Road–Northview Road	14,590	18,000–20,000	23–37
Northview Road–Summit Avenue	14,830	19,000	28
Summit Avenue–Madison Street	12,430	16,000	29
Madison Street–MacArthur Road	11,750	15,000	28
MacArthur Road–Sunset Drive	8,320	13,000	56
Sunset Drive: County TT to County X	12,760	18,000	41
County X: Sunset Drive to WIS 59	24,850	29,000	17

- ***Trucks account for 6-8 percent of the traffic volume in the study corridor.*** Truck traffic varies from 1,140/day at the north end of the project to 1,565/day at the south end. In 2035, truck volumes are expected to increase to 1,330 trucks/day at north end of the corridor (a 17% increase) and 1,830/day at the south end (a 17% increase).
- Level of service (LOS) measures a road's ability to handle traffic demand; it is measured on an "A" to "F" scale with "A" being free-flow traffic and "F" being stop and go. WisDOT standards recommend no worse than a midrange LOS D for suburban/urban areas (like the project). If County TT were not expanded, Rolling Ridge Drive to Summit Avenue would degrade to LOS E by 2035; also, the Summit Avenue to Madison Street segment would be nearly LOS E. In addition, between Madison Street and MacArthur Road, County TT would fail to reach mid-level LOS D in 2035. County TT intersections with Summit Avenue and Madison Street would operate at LOS F in 2035.

Safety

Highway safety is measured by the frequency (number) and severity of crashes (traffic volumes and roadway deficiencies can contribute to a road's crash rate). Highlights of the safety analysis include the following:

- ***Over a 7-year period (2007-2013) there were 500 crashes in the study area.*** Of that total, 379 involved property damages, 120 were injury related, and 1 fatality. In 2014, a second fatality occurred on County TT.
- ***Study area crash rates exceeded statewide average rates for similar roads on every segment except between Rolling Ridge Drive and Summit Avenue***. (**bold** numbers in Table 2). Waukesha County updated crash severity summaries (within the study area) in 2014 to determine if crash numbers and severity were comparable to 2007- 2009 crash data. ***Both number and severity of crashes are relatively consistent across all the years***.

Table 2 - Total Crash Rates 2007–2009 excluding deer (per 100 million vehicle miles)

Segment	2007–2009 Total Crashes	Segment Crash Rate	2008 Statewide Crash Rate
County TT: Rolling Ridge Drive to Summit Avenue	37	135	160
County TT: Summit Avenue to Sunset Drive	70	**257**	160
Merrill Hills Rd: Sunset Drive to WIS 59	6	**304**	257
Sunset Drive: County TT to County X	64	**415**	160
County X: Sunset Drive to WIS 59	43	**226**	160

Roadway Characteristics and Deficiencies

Roadway deficiencies in the study area contributing to the crash rates include:

- **Four substandard horizontal curves**. Substandard curves are more difficult to negotiate safely without reducing speed
- **19 hills along the corridor exceed the maximum preferred grade of 5 percent**
- **17 of those hills do not meet the recommended design speed**
- ***10 hills on County TT (exceeding recommended maximum grade) have crash rates that exceed the statewide average rate***
- **Numerous locations along the corridor fail to meet minimum guidelines for stopping sight distance.**
- **Locations with substandard stopping sight distance on County TT** (between Summit Avenue and Sunset Drive) **do not meet the recommended design speed and exceed the statewide crash rate**

PURPOSE OF THE PROPOSED CITY OF WAUKESHA FLOOD MITIGATION PROJECT

The City of Waukesha has developed a comprehensive stormwater management plan that addresses areas of known flooding and presents plans for mitigation. The study has identified areas where stormwater flooding is occurring city-wide, evaluated areas where improvements to the existing stormwater infrastructure would mitigate the impact of the flooding, evaluated causes of stormwater flooding city-wide, and evaluated improvement alternatives to the stormwater infrastructure to mitigate flooding impacts. The project activities described in the Project Information section would address flooding issues identified in the city's stormwater management plan.

COMPARISON OF ALTERNATIVES

As part of developing the West Waukesha Bypass EIS, Waukesha County, WisDOT, and FHWA conducted an Alternatives Analysis to identify the alternative that would address project need while avoiding or minimizing impacts to Waters of the U.S. to the extent practicable. The alternatives being evaluated were presented to the public and were assessed to determine their environmental impacts. The alternatives analysis, which is documented in detail in Section 2 of the project's Final EIS, determined that there is no practicable alternative to discharging fill into the wetlands and other Waters of the U.S. with the preferred alternative. This subsection summarizes the alternatives analysis, including the reasons why alternatives were eliminated.

The initial range of alternatives considered includes the following:

- **No-Build Alternative—**No safety or capacity improvements; only maintenance and minor improvements would be proposed. This alternative serves as a baseline for comparison to the build alternatives.
- **Transportation Demand Management—**This alternative strives to reduce number of auto trips through increased transit ridership and other strategies.
- **Transportation System Management—**Alternative includes measures (such as signal coordination and intersection improvements) to maximize efficiency and usage of the highway system to in an effort to alleviate or postpone the need for capacity expansion.
- **Build Alternatives--**Preliminary range of alternatives developed in the context of regional transportation plans: to include various forms of community involvement, and public informational meetings. These alternatives were grouped into three corridors, from E to W (**Figure 3**):
    - **County T Corridor** (County T/ Grandview Boulevard/Moreland Boulevard/ Genesee Road) — the alignment would utilize existing streets to connect I-94 and WIS 59.

- **County TT Corridor—** For decades, this corridor has been the focus for planning the West Waukesha Bypass. Waukesha County and the public developed three alternatives in this corridor (TT1, TT2, TT3). All would utilize the County TT alignment between I-94 and Summit Avenue.
- **County SS Corridor—** A new roadway would extend south from the County SS Interchange with I-94. Waukesha County developed four alternatives in the County SS corridor (SS1, SS2, SS3, SS4).

South of the Wisconsin & Southern Railroad, most County TT and County SS corridor alternatives have multiple connections to the WIS 59/ County X intersection (**Figure 3**). See below.

- **Far West Alternative—**The Far West Alternative would follow Town Line Road from Sunset Drive to WIS 59. WIS 59 would be improved from Town Line Road to County X.
- **Long D-X Alternative—** The Long D-X Alternative would follow Sunset Drive (County D) from Town Line Road to County X, than follow County X to the WIS 59/County X intersection.
- **Golf Course West Alternative—**The Golf Course West Alternative would be on new alignment from the RR to WIS 59, passing between Merrill Hills Country Club and a subdivision west of the golf course. WIS 59 would be improved between an intersection with the new road and County X.
- **Golf Course East Alternative—**The Golf Course East Alternative would follow Merrill Hills Road from Sunset Drive to WIS 59 and WIS 59 from Merrill Hills Road to County X.
- **USEPA Far West Alternative—** The USEPA Far West Alternatives follow the same alignment - they bisect Waukesha School District property and cross a large wetland complex associated with Pebble Creek north of the railroad tracks. These alternatives require a new crossing of the Glacial Drumlin State Trail and the Wisconsin & Southern Railroad. Between the railroad crossing and Sunset Drive in the Town of Genesee, the three alternatives diverge.
- **Corps of Engineers Alternative——** In summer of 2011, the Corps of Engineers suggested an alternative that could be used with TT3; this alternative would follow the Golf Course West alignment from the railroad to Sunset Drive. At Sunset Drive the alignment turns east and follows Sunset Drive to County X. This alternative could intersect Sunset Drive at a T-intersection, or a curvature installed to provide free-flow movement of traffic.
- **Sunset-to-County X Alternative—**The Sunset-to-County X Alternative would cross a farm field on new alignment south of the Wisconsin & Southern Railroad before tying into Sunset Drive near the Pebble Creek crossing. From there it follows Sunset Drive and County X to the County X/WIS 59 intersection (**Figure 4**).
- **Pebble Creek Alternative—**The Pebble Creek Alternative follows the mapped Waukesha bypass route in regional, county and city plans. It would cross wetlands, floodplain, and primary environmental corridor between Sunset Drive and the County X/WIS 59 intersection (**Figure 4**).

  Three sub alternatives were developed: the Pebble Creek Mapped Route, Pebble Creek West, and Pebble Creek Far West (**Figure 5**). South of the Wisconsin & Southern Railroad, the Pebble Creek Alternatives would: sever a farm in the northeast quadrant of the Merrill Hills Road/Sunset Drive intersection, cross Sunset Drive and use the Pebble Creek corridor to reach the WIS 59/County X intersection. The Pebble Creek Mapped Route is aligned farther east (closer to Pebble Creek and its wetland complex) than the other two sub alternatives (which are aligned at the west edge of primary environmental corridor on the farm north of Sunset Drive and west of the Pebble Creek wetland complex south of Sunset Drive.)

Initial Screening of Alternatives

The initial range of alternatives were evaluated and screened in terms of meeting the purpose and need. Also evaluated were: construction costs; input from local governments, resource agencies, the CSS advisory group, and public information meetings; and minimization of impacts to natural and built environments.

No-Build Alternative

- Minimal environmental effects and construction cost.
- Fails to address project purpose and need with respect to safety concerns, existing highway deficiencies, and future traffic demand.
- Not a feasible alternative, but serves as a baseline for comparison to Build Alternatives.

Transportation Demand Management Alternative

- Minimizes environmental impacts and costs less than the Build Alternatives
- Fails to address project purpose and need
- Not a reasonable alternative; eliminated from consideration as a stand-alone alternative.

Transportation System Management Alternative

- Minimizes environmental impacts and costs less than the Build Alternatives
- Fails to fully address project purpose and need
- Not a reasonable alternative; eliminated from consideration as a stand-alone alternative.

Build Alternatives

The screening of the initial Build Alternatives north of the Wisconsin & Southern Railroad are summarized in Table 3; screening of the initial "connector" alternatives south of the RR are summarized in Table 4.

TABLE 3 - Evaluation of Initial Build Alternatives North of Wisconsin & Southern Railroad

Segment	Alternatives	Retained/ Eliminated	Key Reasons for Elimination
County SS Corridor	SS1, SS2, SS3, SS4	Eliminated	Farmland, wetland, Retzer Nature Center, and displacement impacts, inconsistent with regional planning or local ROW preservation; would not prevent a need to add capacity to County TT.
County T Corridor	T1	Eliminated	Would not prevent the need to add capacity to County TT, inconsistent with regional and local planning, residential displacements
County TT Corridor	TT1	Eliminated	Would require relocating segments of Pebble Creek south of Madison Street
County TT Corridor	TT2	Retained	
County TT Corridor	TT3	Eliminated	Much increased wetland impacts south of the RR; DNR opposed new crossing of cold water segment of Pebble Creek ; greater impacts to School District parcel W of Co. TT

TABLE 4 - Evaluation of Initial Connector Alternatives South of Wisconsin & Southern Railroad

Alternative	Retained or Eliminated	Key Reasons for Elimination
Far West Alternative	Eliminated	Elimination of the County SS1 alternative; most residential displacements of south alignments.
Long D/X Alternative	Eliminated	Elimination of the County SS1 alternative; high environmental corridor and floodplain impact
Golf Course West Alternative	Eliminated	Elimination of County SS, County TT1, and County TT3 alternatives; high number of residential displacements; majority new ROW required
Golf Course East	Retained	
USEPA Far West Alternative	Eliminated	Bisects School District property; new crossing of Glacial Drumlin State Trail and RR; affects wetland complex adjacent to Pebble Creek and wetlands near WIS 59
Corps Engineer Alternative	Eliminated	Impacts to wetland and primary environmental corridor north of the RR. Requires a new crossing of Pebble Creek
Sunset-County X Alternative	Retained	

TABLE 4 - Evaluation of Initial Connector Alternatives South of Wisconsin & Southern Railroad

Alternative	Retained or Eliminated	Key Reasons for Elimination
Pebble Creek Far West & West Alternative	Retained	
Pebble Creek originally mapped Alternative	Eliminated	Greatest natural resource impacts of Pebble Creek Alternatives. 21 acres of wetland impacts between railroad and WIS 59

Further Development and Refinement of Alternatives

Following the process of narrowing of County T, County TT, and County SS alternatives down to Alternative TT2 and three connecting routes (Golf Course East Alternative, Pebble Creek Alternatives, Sunset-to-County X Alternative) south of the Wisconsin & Southern Railroad (**Figure 6**), Waukesha County further evaluated 2- and 4-lane roadway cross sections. They then focused on which options would meet project purpose and need while minimizing environmental impacts to the extent practicable.

Four cross sections were evaluated for Alternative TT2 and the three connecting alternatives:

- 2-lane on existing alignment alternative with limited intersection improvements (following existing County TT and Sunset Drive) 2-lane on existing alignment alternative with full intersection improvements (following existing County TT and Sunset Drive)
- 2-lane off-alignment alternative with full intersection improvements (following mapped bypass route)
- 4-lane off-alignment alternative (following mapped bypass route)

***In addition to the 2-lane and 4-lane cross section alternatives, Waukesha County evaluated a 2-lane alternative referred to as the No.Build.Improve Alternative*.** This alternative is similar to the 2-lane alternatives developed by Waukesha County, but is treated as a separate alternative.

All 2-lane cross section alternatives, including the No.Build.Improve Alternative, with Alternative TT2 and the remaining connectors south of the Wisconsin & Southern Rail were eliminated from further consideration because they would not provide enough capacity for forecast (2035) traffic volumes, and the 2-lane alternatives were determined to be less safe than 4-lane cross section. The 4-lane cross section was retained for further evaluation.

Additional Screening of Alternatives South of Wisconsin & Southern Railroad

At the start of the final screening step, the 4-lane divided Golf Course East Alternative, Sunset-to-County X Alternative, the Pebble Creek West Alternative, and the Pebble Creek Far West Alternative remained under consideration. Below is a summary of the screening decisions that lead to the selection of the Pebble Creek West Alternative as the preferred alternative.

Golf Course East Alternative

The Golf Course East Alternative included an option to widen along the east side of Merrill Hills Road to avoid Merrill Hills Country Club, and an option to widen into the Country Club to minimize impacts on residences on the east side of the road. This alternative would have the least impact on natural resources, however, it was eliminated from consideration due to the high number of residential displacements (7 or 12 with the west option, 12 with the east option), neighborhood impacts, potential displacement of Merrill Hills Country Club, impact to a potential historic property, $13 million to $15 million higher cost, and inconsistency with local and regional plans.

Sunset-to-County X Alternative

Waukesha County and WisDOT eliminated the Sunset-to-County X Alternative because of its transportation, socioeconomic, and environmental impacts summarized below.

- The road safety audit determined the Sunset-to-County X Alternative would have a 14 percent higher risk of crashes than the Pebble Creek Alternatives because of the additional turning movements at the Sunset Drive/County X intersection and the proposed Sunset Drive/Merrill Hills Road intersection.

- Displace 7 residences south of the Wisconsin & Southern Railroad
- Create a noise impact at about 15 residences south of the Wisconsin & Southern Railroad.
- Acquire 2.4 acres from the City of Waukesha's Pebble Creek Park and 1.8 acres of Waukesha County's Pebble Creek Greenway.
- Eliminate a 0.2-acre population of state threatened seaside crowfoot.

Pebble Creek Far West Alternative

The Pebble Creek Far West Alternative, which joins the Pebble Creek West Alternative at the Hawthorne Hollow Drive cul-de-sac, shares most of the characteristics of the Pebble Creek West Alternative.

Distinguishing differences between the two alternatives are impacts to wetlands and impacts to upland forest. The ***Pebble Creek Far West Alternative has 4.8 acres of wetland impacts as compared to the 9.4 acres with the Pebble Creek West Alternative. Each wetland would affect nine wetlands all of which are ADID*** (Table 5). Being located higher on the slope than the Pebble Creek West Alternative, the ***Pebble Creek Far West Alternative would require a 25-foot cut immediately south of Sunset Drive and affect more upland forest (U-18 [NW]) within the primary environmental corridor (9.7 acres) than the Pebble Creek West Alternative (4.1 acres).***

While the Pebble Creek Far West Alternative would affect fewer acres of wetland than the Pebble Creek West Alternative south of the Wisconsin & Southern Railroad (4.8 acres vs. 9.4 acres) and have less impact on the wetland 8 fen (0.02 acre vs. 0.35 acre) about 2.4 acres of the 4.6-acre wetland impact difference is to low quality farmed wetlands north of Sunset Drive, and it is likely that the unaffected portion of wetland 8 will continue to function as a fen.

Table 5 – Wetland Impacts Summary

		Alternatives	
Functional Value	**Wetland Type**	**Pebble Creek West (acre)**	**Pebble Creek Far West (acre)**
W-13 (ADID wetland). No functional value rated as high.	Atypical (farmed) wetland	1.2	0.7
W-12 (ADID wetland). No functional value rated as high.	Fresh (Wet) Meadow and atypical (farmed) wetland	2.5	0.6
W-11 (ADID wetland). Floral diversity, wildlife habitat, fishery habitat, stormwater attenuation, water quality protection, groundwater, and aesthetic, recreation, and education rated as high.	Shallow Marsh, Southern Sedge Meadow, Fresh (Wet) Meadow, Wet-Mesic Prairie, Shrub-Carr (willow thicket) and second growth Southern Wet to Wet-Mesic Lowland Hardwoods	0.9	0.4
W-9 (ADID wetland). Floral diversity, wildlife habitat, fishery habitat, water quality protection, and groundwater rated as high.	Southern Sedge Meadow, Fresh (Wet) Meadow, Shrub-Carr, and second growth, Southern Wet to Wet-Mesic Lowland Hardwoods	1.0	0.5
W-8 (ADID wetland). Groundwater rated as high.	Sedge Fen and second growth Southern Wet to Wet-Mesic Lowland Hardwoods	0.4	less than 0.05
W-7 (ADID wetland). Groundwater rated as high.	Fresh (Wet) Meadow, Shrub-Carr (willow thicket), and second growth, Southern Wet to Wet-Mesic Lowland Hardwoods	0.2	
W-6 (ADID wetland). No functional value rated as high.	Second growth Southern Wet to Wet-Mesic Lowland Hardwoods		Less than 0.05
W-5 (ADID wetland). No functional value rated as high.	Second growth Southern Wet to Wet-Mesic Lowland Hardwoods	0.3	0.2
W-4 (ADID wetland). Floral diversity, wildlife habitat, fishery habitat, water quality protection, groundwater rated as high.	Shallow Marsh, Southern Sedge Meadow, atypical (mowed) wetland, Fresh (Wet) Meadow, and second growth Southern Wet to Wet-Mesic Lowland Hardwoods	1.1	1.1

Table 5 – Wetland Impacts Summary

		Alternatives	
Functional Value	**Wetland Type**	**Pebble Creek West (acre)**	**Pebble Creek Far West (acre)**
W-1(ADID wetland). Wildlife habitat, fishery habitat, water quality protection, groundwater rated as high.	Shallow Marsh, Fresh (Wet) Meadow, Shrub-Carr, and second growth Southern Wet to Wet-Mesic Lowland Hardwoods	1.8	1.3
Total		**9.4**	**4.8**

Based on the reports, surveys and studies by ornithologists, arborists, and wetland biologists from the DNR, SEWRPC, consultants and other agencies both wetland 8 (the fen) and forest interior habitat are important resources. According to SEWRPC, wetland 8 is of medium/low quality, whereas according to Wisconsin Department of Natural Resources, the adjacent upland hardwood forest is of an exceptionally high quality. In DNR's memo concurring with SEWRPC's findings of the importance of interior forest habitat in general and the high quality interior forest habitat within the Pebble Creek Far West Alternative, it states "the forest interior habitat is especially valuable because of its proximity to Pebble Creek and sustains Red- Headed Woodpecker *Melanerpes erythrocephalus,* a State of Wisconsin Special Concern species, and Pileated Woodpecker *Dryocopus pileatus,* a spring/fall migrant species within the Waukesha urbanized area." The Pebble Creek West Alternative will allow both wetland 8 (the fen) and the forest interior habitat to remain viable. The roadway profile for the Pebble Creek West Alternative has been placed such that construction will not interfere with groundwater near wetland 8. This will allow groundwater to continue to maintain function of the unaffected portion of the fen. Therefore the Pebble Creek West Alternative minimized the impacts to the medium/low quality fen and retains a high quality upland interior forest bird habitat. In contrast, the Pebble Creek Far West Alternative reduces the impacts to this fen but will eliminate the interior forest bird habitat, which would be a significant adverse effect.

Just south of Sunset Drive is the large upland hardwood forest that is part of a primary environmental corridor. SEWRPC assessed the upland forest in September 2013 and characterized it as second growth southern dry-mesic hardwood. SEWRPC identified 17 species of native hardwood in the corridor that would be affected by the Pebble Creek West and Far West alternatives, including four oak species, ash, sugar maple, elm, two hickory species, black walnut and white cedar. Overall, ***93 plant species were identified. Twenty-two percent of the plant species are non-native. The upland woods provide a buffer for the adjacent Pebble Creek wetland complex and habitat for a range of mammals and herptiles.***

According to DNR forestry staff this is an exceptionally high quality woods that has been actively managed (brush removal, tree planting, selective cutting) by the owner for the *past 20 years in the DNR's Managed Forest Lands Program*. ***The upland forest is valuable from the DNR forestry management perspective not only because of the quality of the woodlands, but also because of the relative scarcity of such woodlands in the Pebble Creek Watershed.***

SEWRPC also mapped the interior forest habitat of U-18(NW) in September 2013. Forest interior habitat is defined as that portion of the forest canopy 300 feet or more from the forest's edge with 70 percent or more forest cover and an essentially closed canopy. Some bird species are particularly sensitive to this interior forest habitat, including interior forest breeding birds. ***Twenty-four interior forest breeding birds have been confirmed or listed as probable in southeast Wisconsin, including one endangered, three threatened and two special concern species. Thirty-one bird species were heard or observed during the September 2013 field visit. There is a 1.3-acre interior forest habitat in U-18(NW). The state special concern red-headed woodpecker was observed in this woods in September 2013.***

Interior forest habitat is important because there is less likelihood of cowbirds preying on the nests of song birds in the forest interior. Interior forest breeding birds have declined over the past 40-50 years. Many factors have contributed to the decline, including cowbird nest parasitism and buckthorn invasions, however the loss and fragmentation of forests appears to be the major factor.

While larger forest interior areas are more likely to support interior nesting birds, SEWRPC's November 2013 assessment of the importance of interior forest habitat found that ***smaller forest interior fragments, even as small as 0.5 acre, provide important foraging habitat and refuge for migrating interior forest birds.*** Small interior forest fragments become particularly important in southeast Wisconsin where interior forest habitat is limited. The interior forest bird breeding habitat south of Sunset Drive is one of two such stands in the study area, totaling about 3 acres. There are 21 such stands in the Pebble Creek watershed, totaling 76 aces (SEWRPC 2013).

Because the Pebble Creek Far West Alternative would be located higher on the wooded slope than the Pebble Creek West Alternative and would require a cut up to 25 feet deep and extending upslope for 300 feet. Large retaining walls would be required with the alternative to maintain the integrity of the cut slope. As a result of the deep cut and associated side slope, ***the Pebble Creek Far West Alternative would affect 9.7 acres of the primary environmental corridor woodland and result in the loss of 94 percent of the interior forest habitat.*** Less than 0.1 acre of forest interior habitat would remain. The Pebble Creek West Alternative would impact 4.1 acres of primary environmental corridor woodland west of Pebble Creek south of Sunset Drive. The Pebble Creek West Alternative would directly impact a small area of the interior forest habitat, and it would bring about one acre of the 1.3-acre interior forest habitat within 300 feet of the forest edge, reducing its value as songbird nesting habitat. Minimization measures would restore the remaining interior forest area to about 0.5 acre, noted by SEWRPC as the smallest area that can provide habitat for interior forest birds.

The value of interior forest habitat that would be lost with the Pebble Creek Far West Alternative, coupled with the relative similarity between the Pebble Creek West and Far West alternatives in impacts to ADID wetlands led Waukesha County and WisDOT to select the Pebble Creek West Alternative as the preferred alternative rather than the Far West Alternative. Remnant interior forest habitat stands such as the one along the Pebble Creek Far West Alternative that are located within the urban-agricultural matrix of the Lake Michigan migratory bird flyway are particularly important to resident and migratory bird species.

On May 5, 2014, the COE concurred with Pebble Creek West as the preferred alternative, noting the Pebble Creek West Alternative represents the agency's least environmentally damaging practicable alternative. The USEPA provided their concurrence on May 7, 2014.

DESCRIPTION OF PROPOSED ACTIVITY

Waukesha County and WisDOT are proposing to expand County TT from a 2-lane road to a 4-lane divided roadway between I-94 and the WIS 59/County X intersection. General improvement concepts include the following:

- Construct two additional lanes and a median on Meadowbrook Road and Merrill Hills Road between the Rolling Ridge Drive and Madison Street. County TT is a 4-lane divided road between I-94 and Rolling Ridge Drive and will not be reconstructed.
- Between Madison Street and the Wisconsin & Southern Railroad, construct a 4-lane divided road on new alignment to minimize driveway connections and residential impacts along existing Merrill Hills Road south of Kame Terrace.
- Construct a 4-lane divided road between the railroad and the WIS 59/County X intersection on new alignment. South of Sunset Drive, the new alignment would be routed through the Pebble Creek corridor west of Pebble Creek
- Reconstruct existing intersections along Meadowbrook Road and Merrill Hills Road to improve traffic operations and safety, and construct new intersections along the new alignment segment.
- Extend the existing bicycle and pedestrian path on the east side of Meadowbrook Road north of Summit Avenue to Sunset Drive. Extend the sidewalk on the west side of Meadowbrook Road north of Northview Road to Kame Terrace

As noted, the West Waukesha Bypass project is being designed and constructed in three segments, Rolling Ridge Drive to Northview Road (City of Waukesha), Northview Road to Summit Avenue (Waukesha County), and south Summit Avenue to the WIS 59/County X intersection (WisDOT). The city and county projects are scheduled to begin construction in 2016. The WisDOT project is scheduled to

begin in fall 2016. This Section 404 permit application describes activities in the City's, County's and WisDOT's project segments.

Proposed Activities for Current Permit Application

Key project design features that establish the physical impact footprint for the three project segments noted above are summarized below.

Rolling Ridge Drive to Northview Road

The proposed cross section between Rolling Ridge Drive and Northview Road will consist of four 12-foot-wide lanes[1] with a cross slope of 2%, 6-foot-wide paved outside shoulders (4-foot-wide paved, 2-foot-wide gutter pan), 2-foot-wide inside shoulder (2-foot-wide gutter pan), and a raised median 24 feet wide[2]. The 24-foot-wide median includes the 2-foot-wide gutter pan, and a 0.5-foot curb head in each direction of travel and a 19-foot-wide grass median[3].The proposed median width allows automobiles and larger vehicles to be sheltered from Meadowbrook Road traffic when waiting to cross the median at Woodridge Lane and Joanne Drive/Lancaster Drive.

On the west side of the road, the existing 5-foot-wide sidewalk will remain. The proposed 10-foot-wide multi-use trail will be typically located 8 feet off the east side of the reconstructed road.

The intersections along Meadowbrook Road will be redesigned to improve capacity and safety. The Rolling Ridge Drive and Northview Road intersections will remain signalized. The other two intersections will be two-way stop controlled.

In addition to the roadway work, two dry stormwater ponds are planned. One is located at approximately STA 362+00 to 363+00 RT, at the southeast corner of the reconstructed Woodridge Lane intersection. The second is located at approximately STA 348+75 to 349+75 RT, at the northeast corner of the reconstructed Lancaster Drive intersection. The dry ponds will receive the discharge from storm sewers in this segment. If the City of Waukesha constructs the flood mitigation project described in the Project Information section, it would eliminate the need for the dry ponds.

Northview Road to Sunset Drive

The proposed cross section between Northview Road and Sunset Drive will consist of four 12-foot-wide lanes[4] with a cross slope of 2%, 9.83- to 10-foot-wide outside shoulders (8-foot-wide paved, 2-foot-wide unpaved in rural sections and 8-foot-wide paved, 1.83-foot-wide gutter pan in urban sections), 5.83-foot-wide inside shoulders (4-foot-wide paved, 1.83-foot-wide gutter pan), and a raised median 30 feet wide[5]. The 30-foot-wide median includes a 5.83-foot-wide inside shoulder and gutter pan, a 0.67-foot curb head in each direction of travel and a 17-foot-wide grass median[6].

From Northview Road to Kame Terrace, there will be an 8-foot-wide terrace with a 5-foot-wide sidewalk on the outside southbound lane of reconstructed Merrill Hills Road where there is curb and gutter. The curb and gutter (urban section) will extend from about the Meadowbrook Corner Pump Gas Station (STA 287+46.75) to the north end of the project. South of the gas station, where there is a rural shoulder, there

[1] Through this section, the minimum lane width is 11 feet, and the desirable lane width is 12 feet. (FDM 11-20 Attachment 1.1 Urban Design Class 4, Note 5 for NHS Routes and Arterials and Collectors that are not Federally Designated Truck routes if truck and bus volumes exceed an average of 300/lane/day for divided roadways)

[2] FDM 11-20 Attachment 1.1 Urban Design Class 4 states the face-of-curb to face-of-curb width for each direction of the roadway must be a minimum of 28 feet and desirable 30-32 feet, when bike lanes are included. Face to face for each direction is currently 32' (2 12-foot lanes, 2' from face of curb to flange on each side, and an additional 4' on the outside for the shoulder).

[3] Minimum median width is 6 feet and the desirable is 14-30 feet (FDM 11-20 Attachment 1.1 Urban Design Class 4)

[4] Through this section the desirable lane width for a posted speed of 45 mph is 12 feet, no minimum value is given. (FDM 11-20 Attachment 1.5, Design Class UA3)

[5] FDM 11-20 Attachment 1.5, Design Class UA3 – (Developing Areas) desirable shoulder width 6-feet left, 10 feet right, Minimum – 1.8-feet left, 1.8-feet right

[6] Minimum median width is 30 feet, no desirable values are given (FDM 11-20 Attachment 1.5, Design Class UA3).

will be a 21-foot to 27-foot-wide ditch, with a 5-foot-sidewalk. Between Kame Terrace and Sunset Drive, WisDOT will grade for a sidewalk, but not construct it.

On the east side of reconstructed Merrill Hills Road, the existing ditch and multi-use trail would remain between Northview Road and Summit Avenue. Between Summit Avenue and Sunset Drive, the proposed 10-foot-wide multi-use trail will be located 8 feet off the east side of the reconstructed road when there is curb and gutter and 30 feet off the east side of the reconstructed road where there is a rural shoulder. The reconstructed road will pass over the Glacial Drumlin State Trail. A box culvert will carry the trail under the new roadway. A connection from the proposed multi-use path on the east side of Merrill Hills Road will be constructed to the Glacial Drumlin State Trail.

The intersections along Meadowbrook Road and Merrill Hills Road will be redesigned to improve capacity and safety. The Summit Avenue intersection will remain signalized and a signal will be added at the Madison Street intersection. All other intersections will be two-way stop controlled. MacArthur Road would be extended to the new off-alignment Merrill Hills Road. Cul-de-sacs will be constructed along existing Merrill Hills Road north and south of the two locations where the preferred alternative will cross the existing road.

In addition to the roadway work, the 48-inch pipe culvert at the unnamed tributary to Pebble Creek south of Northview Road will be extended to the west. The double pipe culvert for the unnamed tributary to Pebble Creek south of Madison Street will be replaced with a 2-cell box culvert, with each cell being 82-inches wide by 67-inches tall, in the approximate existing location to maintain current hydrology. More information about the new pipe culvert and box culvert is found in the Waters of the U.S. subsection. The triple pipe culvert that carries Pebble Creek under Meadowbrook Road just north of Summit Avenue will be extended approximately 190 feet to the west. The triple pipe culvert that carries Pebble Creek under Summit Avenue west of the Meadowbrook Road intersection will be extended approximately 40 feet to the north and 45 feet to the south. A dry stormwater pond is planned about 1,500 feet south of Northview Road (STA 324+50 to 326+25 RT) on the east side of Meadowbrook Road, about 150 feet from the proposed alignment. The dry storm water pond will receive discharge from the storm sewers.

Two new structures will be constructed at STA 178+25 to 180+25 over Pebble Creek west of the existing Pebble Creek bridge on Merrill Hills Road, one for the northbound lanes and one for the southbound lanes. The new structures would not have piers in Pebble Creek and would be wide enough to accommodate wildlife crossing under the bridge. The proposed structure design will be determined in the final design process.

Sunset Drive to WIS 59/County X Intersection

The proposed cross section between Sunset Drive and the WIS 59/County X intersection will consist of four 12-foot-wide lanes with a 2% typical cross slope, 10-foot-wide outside shoulders (8-foot-wide paved, 2-foot-wide unpaved), and a concrete barrier median designed to minimize wetland impacts. The 14-foot-wide median includes the 6-foot-wide inside shoulder in each direction of travel and the 2-foot-wide concrete barrier. WisDOT's standards for travel lane, shoulder and median width are the same as noted in the Northview Road to Sunset Drive segment. See footnotes 4 through 6 on the previous page.

The proposed roadway would cross Sunset Drive about 1,400 feet east of the existing Merrill Hills Road/Sunset Drive intersection. The proposed intersection with Sunset Drive will be signalized. There will be no intersections between Sunset Drive and the proposed WIS 59/County X intersection along the Pebble Creek corridor.

Between Sunset Drive and the Hawthorne Hollow cul-de-sac, drains would be installed as needed to allow groundwater in the wooded hillside to continue to flow toward the Pebble Creek wetland complex. A culvert will be installed to carry drainage from a subdivision pond and groundwater discharge near the cul-de-sac to the Pebble Creek wetland complex. To minimize impacts to a wetland complex (Wetland 4), WisDOT will construct a 250-foot land bridge to span most of Wetland 4.

WisDOT will construct a new signalized intersection with County X and WIS 59 about 375 feet north of the existing intersection. The new intersection would not include Saylesville Road, the south leg of the

existing intersection. Instead, Saylesville Road would be rerouted to intersect WIS 59 west of the County X/WIS 59 intersection. County X would be improved to a 4-lane divided roadway from just north of the Pebble Creek Bridge to the proposed intersection. The County X improvement will include two new bridges over Pebble Creek. The bridges will be designed to accommodate wildlife passage beneath the structure.

To minimize wetland impacts, no multi-use path or sidewalks are proposed in the Pebble Creek corridor south of Sunset Drive. Bicyclists would be accommodated in the 8-foot paved shoulder. However, on-road bicycle accommodations consisting of a minimum 5-foot-wide paved shoulder will be provided on all reconstructed portions of WIS 59, County X, and Saylesville Road. No off-road bicycle accommodations will be provided at these locations. New sidewalks will be constructed on portions of WIS 59, County X and Saylesville Road.

Road runoff in this segment will be treated with grass swales (ditches) and sediment traps at seven outfalls. Three sediment traps and outfalls will be located south of Sunset Drive, one will be located at the Sunset Drive intersection, two will be located south of the proposed MacArthur Road intersection and one will be located south of the Madison Street intersection. WisDOT is also considering constructing one or more small dry ponds. The decision whether to use dry ponds will be made during the final design phase.

WETLAND PERMIT ACTIVITIES

Wetland Delineations

SEWRPC wetland biologists performed wetland delineations on 32 wetlands in the project area in late summer and fall 2011 and spring 2012. A copy of SEWRPC's wetland report is found on the CD at the back of the project's Final EIS. The 2011/2012 wetland delineations identified the following wetland types: fresh (wet) meadow, riparian forested wetland, shallow marsh and southern wet to wet-mesic hardwoods, and shrub-carr and southern sedge meadow. The larger wetland complexes associated with Pebble Creek in the southern part of the project area are a mosaic of wetland types. The wetlands south of Sunset Drive are generally of higher quality, but some of that high quality wetland does extend immediately north of Sunset Drive.

SEWRPC also assessed the function and value of delineated wetlands using a Rapid Assessment methodology. The wetland functions and values were evaluated for floristic diversity, wildlife habitat, fishery habitat, flood and stormwater attenuation, water quality protection, shoreline protection, groundwater, aesthetics, recreation and education. A copy of SEWRPC's functional assessment of wetland values is found on the CD at the back of the Final EIS.

Wetland Impacts

The wetland impacts in this subsection are provide for each of the three construction projects. The type of wetlands affected in each of the three construction projects and their locations are found in Table 6 below. Additional wetland impact information, the location of wetlands in Table 6 and figures showing the preferred alternative's impact on the wetlands in Table 6 are found in Appendix A.
City of Waukesha (Meadowbrook Road between Rolling Ridge Drive and Northview Road*)*

Wetland Impact total - 0.003 acre. The preferred alternative would affect one wetland (W-32).

Waukesha County (Meadowbrook Road and Merrill Hills Road segment between Northview Road and Fiddlers Creek Drive, Construction I.Ds 2788-00-72 & 2788-02-70*)*

Wetland Impact total – 1.90 acres. The preferred alternative would affect seven wetlands (W-24 through W-31).

WisDOT (WIS 59/County X to Fiddlers Creek Drive [600 feet north of Madison Street] Construction project I.D. 2788-00-71)

Wetland Impact total – 13.25 acres. The preferred alternative would affect 21 wetlands (W-23 through W-1).

Table 6 – Wetland Impacts

Exhibit #	**SEWRPC**	**Long/Latitude**	**Station**	**Type**	**Impact**	**Debit W Type**	**Ratio**	**Debit**
	City of Waukesha – 2788-01-00 (For Information Only – Separate permit and banking)							
A2-2	*32*	Lat:43.0424; Lon:88.2854	NB Proposed Bypass 361+86 – 362+04 RT	SM, M	0.003		NA	NA
	Waukesha County – Project I.D.'s 2788-00-00/70; 2788-00-02/72							
A3-2 Figure 1	*31*	Lat.43.0318;Lon:-88.2859	Proposed W Bypass 322+32-325+41 LT/RT	RPF - Hardwood	0.210	M – Cull (ADID)	1.5	0.32
A3-2 Figure 2	*29*	Lat:43.0224;Lon:-88.2863	Bypass 288+36-290+22 LT US18 43+96-46+20 LT/RT	RPF-Hardwood	0.395	M – Cull (ADID)	1.5	0.59
A3-2 Figure 2	*28*	Lat:43.0219;Lon:-88.2860	SB Proposed W Bypass 286+98-288+13 LT	SM	0.038	M – Cull (ADID)	1.0	0.04
A3-2 Figure 3	*27*	Lat:43.0195;Lon:-882853	NB Proposed W Bypass 274+81-281+02 RT	WS SS SM	0.352 0.352 0.196	M – Cull (ADID)	1.2 1.2 1.0	0.42 0.42 0.20
A3-2 Figure 3	*26*	Lat:43.0199;Lon:-88.2861	SB Proposed W Bypass 279+34-280+63 LT	SM M	0.118 0.013	M –Cull (ADID)	1.0 1.0	0.12 0.01
A3-2 Figure 3	*25*	Lat:43.0175;Lon:-882857	NB Proposed W Bypass 270+67-271+32 RT	WS	0.083	M – Cull (ADID)	1.2	0.10
A3-2 Figure 3	*24*	Lat:43.0173;Lon:-882861	SB Proposed W Bypass 269+50-270+55 LT	WS	0.137	M – Cull (ADID)	1.2	0.16
Totals					**1.90**			**2.38**

Table 6 – Wetland Impacts

Exhibit #	*SEWRPC*	Long/Latitude	Station	Type	Impact	Debit W Type	Ratio	Debit
	Wisconsin DOT – Project I.D.'s Design 2788-00-01, Construction I.D. 2788-00-71							
A4-2 Figure 1	*23*	Lat:43.0105;Lon:-88.2864	NB Proposed W Bypass 244+85-245+56 RT	RPF - Hardwood	0.020	M – Cull (ADID)	1.5	0.03
A4-2 Figure 1	***22 (ADID)***	Lat:43.0127;Lon:-88.2864	SB Proposed W Bypass 243+57-252+68 LT	Meadow SM	0.123 1.107	M – Cull (ADID)	1.0 1.0	0.12 1.11
A4-2 Figure 2	*21*	Lat:42.9960;Lon:-88.2906	MacArthur Rd 51+82-55+22	Farmed wetland	0.280	M – Cull (ADID)	1.0	0.28
A4-2 Figure 2	*20*	Lat:42.9962;Lon:-88.2924	NB Proposed W Bypass 188+02-188+81 RT	Farmed wetland	0.010	M – Cull (ADID)	1.0	0.01
A4-2 Figure 2	*19*	Lat:42.9963;Lon:-88.2915	MacArthur Rd 51+82-55+22	SM SS	0.144 0.016	M – Cull (ADID)	1.0 1.2	0.15 0.02
A4-2 Figure 2	*18*	Lat:42.9955;Lon:-88.2916	NB Proposed W Bypass 185+48-186+73 RT	M	0.180	M – Cull (ADID)	1.0	0.18
A4-2 Figure 3	***17 (ADID)***	Lat:42.9947;Lon-88.2910	Proposed W Bypass 183+43-176+67	M SM	0.855 0.095	M – Ryan (ADID)	1.0 1.0	0.86 0.10
A4-2 Figure 3	***16 (ADID)***	Lat:42.9942;Lon:-88.2906	Proposed W Bypass 183+43-176+67	M RPE Opnwater	0.360 0.180 0.060	M – Ryan (ADID)	1.0 1.3 1.0	0.36 0.23 0.06
A4-2 Figure 3	***15 (ADID)***	Lat:42.9935;Lon:-88.2892	NB Proposed W Bypass 175+20-176+41	RPF (SS,SM)	0.110	M – Cull (ADID)	1.5	0.17
A4-2 Figure 4	***14 (ADID)***	Lat:42.9931;Lon:-88.2891	NB Proposed W Bypass 171+99-174+89	Wet Mesic Prairie	0.350	M – Ryan (ADID)	1.0	0.35
A4-2 Figure 4	***13 (ADID)***	Lat:42.9925;Lon:-88.2881	Proposed W Bypass 165+41-172+45	Farmed wetland	1.180	Fen (ADID)	1.0	1.18
A4-2 Figure 4	***12 (ADID)***	Lat:42.9899;Lon:-88.2846	Bypass 154+06-161+75 WB Sunset 52+12-53+19	Farm wet M	2.00 0.50	M – Ryan (ADID)	1.0 1.0	2.00 0.50
A4-2 Figure 5	***11 (ADID)***	Lat:42.9888;Lon:-88.2822	WB Sunset 54+18-63+00	WS SS SM RPF	0.310 0.300 0.150 0.150	Fen (ADID)	1.2 1.2 1.2 1.5	0.37 0.36 0.18 0.23
A4-2 Figure 5	***9 (ADID)***	Lat:42.9884;Lon:-88.2823	EB Sunset Drive 52+96-63+00	RPF M SS WS	0.392 0.392 0.098 0.098	Fen (ADID)	1.5 1.2 1.2 1.2	0.59 0.47 0.12 0.12
A4-2 Figure 5	***8 (ADID)***	Lat:42.9882;Lon:-88.2834	NB Proposed W Bypass 149+32-152+08	**Fen**	**0.350**	**Fen (ADID)**	**1.0**	**0.35**
A4-2 Figure 6	***7 (ADID)***	Lat:42.9869;Lon:-88.2819	NB Proposed W Bypass 141+83-147+06	M WS	0.140 0.060	Fen (ADID)	1.2 1.2	0.17 0.07
A4-2 Figure 6	***5 (ADID)***	Lat:42.9848;Lon:-88.2800	NB Proposed W Bypass 132+79-135+54	WS	0.340	M – Ryan (ADID)	1.2	0.41
A4-2 Figure 6	***4 (ADID)***	Lat:42.9834;Lon:-88.2788	Proposed Bypass 125+27-130+52	WS SM	0.678 0.452	Fen (ADID)	1.2 1.2	0.81 0.54
A4-2 Figure 7	***3 (ADID)***	Lat:42.9824;Lon:-88.2720	NB Genesee Rd. 60+91-61+80 RT	M	0.004	Fen (ADID)	1.2	0.01
A4-2 Figure 7	***1 (ADID)***	Lat:42.9814;Lon:-88.2740	Bypass 112+29-117+24 SB Genesee. 55+85-57+56	RPE M SM	1.144 0.308 0.308	Fen (ADID)	1.3 1.2 1.2	1.49 0.37 0.37
Totals					**13.25**			**14.74**
Bypass Totals					**15.15**			**17.12**

Mitigation Debits: Cull Parcel(ADID) 4.45 acres; Ryan parcel (ADID) 4.87; Fen (ADID) 7.36 acres

Wetland Avoidance/ Minimization

Wetland Avoidance

Because there are segments of the preferred alternative and other reasonable Build Alternatives along County TT and Sunset Drive where there are wetlands/wetland complexes adjacent to the roads and, in places, on both sides of the roads, it is not possible to avoid wetland impacts completely. Additional capacity provided by the preferred alternative is needed to improve mobility, traffic flow and safety.

Although alignments south of Sunset Drive were considered during the corridor study (for example, the Golf Course East Alternative) that avoided wetland impacts, they did not sufficiently address purpose and need or had other impacts or engineering issues deemed unacceptable. Alignments with notable wetland impacts, such as the historically mapped route adjacent to Pebble Creek were eliminated from further consideration (see Final EIS Section 2). The No Build Alternative would avoid wetland impacts, however, this alternative is not a viable course of action because it would fail to address purpose and need.

Minimize Wetland Impacts

Minimizing potential wetland impacts was a major focus throughout the corridor study and preliminary design process. Due to the preferred alternative's proposed capacity expansion, which for a portion of the road utilizes the horizontal alignment of the existing roadway, avoidance of wetland impacts was not a feasible option. However, design modifications helped reduce the footprint of this proposed project on wetlands.

Minimizing wetland impacts was a factor in developing and screening of the preliminary alternatives. The Build Alternatives described in Section 2, including the preferred alternative (Pebble Creek West), incorporated alignment shifts where practicable to minimize impacts to wetlands. Wetland minimization measures are described in Table 7 below by construction project.

Table 7 - Potential Wetland Minimization Measures

Wetland No.	Exhibit No.	Station Location	Avoidance/Minimization Measures
City of Waukesha Project – Rolling Ridge Drive to Northview Road			
32	A2-2	361+86 to 362+04 Waukesha Bypass	No avoidance/minimization alternative
Waukesha County Project – Northview Road to Fiddler's Creek Drive			
31	A3-2 Figure 1	322+32 to 325+41 Waukesha Bypass	Steepened side slopes to 3:1
29	A3-2 Figure 2	288+36 to 290+22 Waukesha Bypass 43+96 to 46+20 Summit Ave	Steepened side slopes; Off of Bypass – 3:1/ Off of Summit Ave – 3:1
28	A3-2 Figure 2	286+98 to 288+13 Waukesha Bypass	Steepened side slopes; Rural - 4:1/Urban –3:1
27	A3-2 Figure 3	274+81 to 281+02 Waukesha Bypass 51+37 to 53+07 Summit Ave	Steepened side slopes to 3:1
26	A3-2 Figure 3	279+34 to 280+63 Waukesha Bypass	Steepened side slopes to 4:1
25	A3-2 Figure 3	270+67 to 271+32 Waukesha Bypass	Steepened side slopes to 3:1
24	A3-2 Figure 3	269+50 to 270+55 Waukesha Bypass	Steepened side slopes to 3:1
WisDOT Project – Fiddler's Creek Drive to WIS 59			
23	A4-2 Figure 1	244+85 to 245+56 Waukesha Bypass	Steepened side slopes to 3:1
22 (ADID wetland)	A4-2 Figure 1	243+57 to 252+68 Waukesha Bypass	Steepened side slopes to 3:1
21	A4-2 Figure 2	51+82 to 55+22 MacArthur Road	Steepened side slopes to 2.5:1
20	A4-2 Figure 2	188+02 to 188+81 Waukesha Bypass	Steepened side slopes to 2.5:1
19	A4-2 Figure 2	51+82 to 55+22 MacArthur Road	Steepened side slopes to 2.5:1
18	A4-2 Figure 2	185+48 to 186+73 Waukesha Bypass	Steepened side slopes to 2.5:1
17 (ADID wetland)	A4-2 Figure 3	183+43 to 176+67 Waukesha Bypass	Steepened side slopes to 3:1

Table 7 - Potential Wetland Minimization Measures

Wetland No.	Exhibit No.	Station Location	Avoidance/Minimization Measures
16 (ADID wetland)	A4-2 Figure 3	183+43 to 176+67 Waukesha Bypass	Steepened side slopes to 2.5:1
15 (ADID wetland)	A4-2 Figure 3	175+20 to 176+41 Waukesha Bypass	Steepened side slopes to 3:1
14 (ADID wetland)	A4-2 Figure 4	171+99 to 174+89 Waukesha Bypass	Steepened side slopes to 2.5:1
13 (ADID wetland)	A4-2 Figure 4	165+41 to 172+85 Waukesha Bypass	Steepened side slopes to 2.5:1
12 (ADID wetland)	A4-2 Figure 4	155+54 to 161+75 Waukesha Bypass	Steepened side slopes to 2.5:1
11 (ADID wetland)	A4-2 Figure 5	154+06 to 154+66 Waukesha Bypass 52+12 to 63+00 Sunset Drive	Steepened side slopes to 3:1 along Sunset Drive, 2.5:1 along bypass
9 (ADID wetland)	A4-2 Figure 5	52+96 to 63+00 Sunset Drive	Steepened side slopes to 3:1
8 (ADID wetland)	A4-2 Figure 5	149+32 to 152+08 Waukesha Bypass	Steepened side slopes to 2.5:1; Barrier median narrowed the width of the preferred alternative; Eliminated proposed off road multi-use path and sidewalk
7 (ADID wetland)	A4-2 Figure 6	141+83 to 147+06 Waukesha Bypass	Steepened side slopes to 3:1; Barrier median narrowed the width of the preferred alternative; Eliminated proposed off road multi-use path and sidewalk
6 (ADID wetland)	A4-1 Figure 2	141+41 to 141+98 Waukesha Bypass	No impact
5 (ADID wetland)	A4-2 Figure 6	132+79 to 135+54 Waukesha Bypass	Steepened side slopes to 2.5:1; Barrier median narrowed the width of the preferred alternative; Eliminated proposed off road multi-use path and sidewalk
4 (ADID wetland)	A4-2 Figure 6	125+27 to 130+52 Waukesha Bypass	Steepened side slopes to 2.5:1; Proposed land bridge will avoid placing fill in the wetland; Barrier median narrowed the width of the preferred alternative; Eliminated proposed off road multi-use path and sidewalk
3 (ADID wetland)	A4-2 Figure 7	60+91 to 61+80 Genesee Road	Steepened side slopes to 2.5:1
1 (ADID wetland)	A4-2 Figure 7	112+29 to 117+24 Waukesha Bypass 50+00 to 57+56 Genesee Road	Steepened side slopes to 3:1; Barrier median narrowed the width of the preferred alternative; Eliminated proposed off road multi-use path and side road

Beyond the specific wetland minimization measures within WisDOT's segment of the project, Waukesha County, WisDOT and the City of Waukesha will investigate measures in the final design phase to minimize wetland impacts throughout the corridor, such as keeping roadway sideslopes as steep as practicable and using equalizer pipes to maintain wetland hydrology.

Waukesha County, WisDOT and the City of Waukesha will apply best management practices during construction to further minimize wetland impacts. The best management practices would include measures such as protecting adjacent wetlands with silt fence outside of the wetland boundaries prior to earth disturbing activities, restoring fill slopes adjacent to wetlands with seed and erosion control matting soon after final grading, and employing other erosion control measures to minimize sedimentation and siltation into adjacent wetlands. In addition, stormwater runoff from impervious surfaces will be collected and conveyed to dry ponds or treated by other means prior to discharge to a wetland or stream.

Mitigation

Karla Leithoff will submit this section directly to the Army Corp of Engineers this week.

WATERS of U.S. PERMIT ACTIVITIES

Stream crossing activities within the WisDOT and Waukesha County project segments are summarized below. There are no stream crossings in the City of Waukesha segment. Stream crossings include the expanded County X bridge over Pebble Creek, the new bridge over Pebble Creek west of the existing Merrill Hills Road bridge, the box culvert carrying an unnamed tributary to Pebble Creek under the preferred alternative south of Madison Street, the extended culvert pipes carrying Pebble Creek under Meadowbrook Road and Summit Avenue, and the extended culvert pipe carry an unnamed tributary to Pebble Creek under Meadowbrook Road south of Northview Road. Table 8 describes the project's impacts to Waters of the U.S., and Table 9 includes information about culverts conveying Waters of the U.S. and other drainages in the preferred alternative corridor. The location of the Waters of the U.S. and the culvert pipes discussed in Tables 8 and 9 are shown in the design sheets in Appendix A.

WisDOT Segment (Project I.D. 2788-00-71)

The proposed County X improvements will replace the existing County X bridge with two new bridges over Pebble Creek. The existing County X structure (B-67-038) over Pebble Creek is a 1-span prestressed concrete girder structure with an overall length of 58 feet and a deck width of 44 feet. The existing structure does not have in-stream piers. The proposed northbound structure (B-67-314) will be a single span prestressed concrete girder structure with no instream piers. The new structure will be approximately 44 feet wide to accommodate the wider roadway. The proposed southbound structure (B-67-315) will be a single span prestressed concrete girder structure with no instream piers. The new structure will be approximately 44 feet wide to accommodate the wider roadway. The length of the northbound and southbound structures will be determined during the upcoming final design phase. The structures will be designed so that they can accommodate a wildlife crossing adjacent to Pebble Creek. The proposed structure design will be refined in the final design process.

At this point in the design process, no fill material (granular fill or riprap) is expected to be placed below the ordinary high water mark (OHWM) during construction of the new northbound and southbound structures. This issue will be resolved during the final design phase.

Two new structures will be constructed at STA 178+25 to 180+25 over Pebble Creek west of the existing Pebble Creek bridge on Merrill Hills Road, one for the northbound lanes and one for the southbound lanes. The design of the proposed northbound structure (B-67-354) and southbound structure (B-67-355) will be determined during the upcoming final design phase. The structures will be designed so they can accommodate a wildlife crossing adjacent to Pebble Creek. The proposed structure design will be refined in the final design process.

During the final phase, WisDOT will determine whether fill material (granular fill or riprap) will be placed below the OHWM during construction of the new northbound and southbound structures.

The double pipe culvert for the unnamed tributary to Pebble Creek south of Madison Street will be replaced with a 200-foot-long 2-cell box culvert, with each cell being 82-inches wide by 67-inches tall, in the approximate existing location to maintain current hydrology (Table 9). To accommodate the wider roadway, the proposed box culvert would be extended to the west beyond the limits of the existing pipe culvert. It is likely that equipment would be placed in the stream channel to remove the existing pipe culvert and construct the box culvert. Some method of dewatering the construction area would likely be required, even when streamflow is lowest. The potential area of disturbance to the stream bed of the unnamed tributary to Pebble Creek and quantity of fill below the OHWM will be determined during the final design phase.

County Segment (Project I.D.'s 2788-00-72 & 2788-02-70)

The triple pipe culvert that carries Pebble Creek under Meadowbrook Road just north of Summit Avenue will be removed and replaced with a new triple culvert pipe that will be extended approximately 190 feet to

the west of the existing culvert (Table 9). The triple pipe culvert that carries Pebble Creek under Summit Avenue west of the Meadowbrook Road intersection will also be removed and replaced with a new triple culvert pipe that will be extended approximately 40 feet to the north and 45 feet to the south. Because the pipe culverts that convey Pebble Creek are triple culverts it may be possible to divert flow into one pipe while the others are extended. Regardless of how the construction area is dewatered, some temporary damming of the stream may be required. Some amount of channel grading is expected to occur upstream and downstream of the proposed culvert pipe extensions to accommodate the proposed configuration. In addition, equipment would be used in the stream channel to remove and replace the triple pipe culvert. The potential area of disturbance to the Pebble Creek and quantity of fill below the OHWM will be determined during the final design phase.

In addition, the 48-inch culvert pipe at the unnamed tributary to Pebble Creek south of Northview Road will be extended about 80 feet to the west of the existing culvert (Table 9). The extension would be in the same location to maintain stream flow. As with the culvert pipe extension along Pebble Creek, the construction area may be dewatered in some manner. Some amount of channel grading will likely occur to accommodate the proposed configuration, and equipment may be used in the stream channel to extend the proposed culvert pipe.

The potential area of disturbance to the stream bed of the unnamed tributary to Pebble Creek and quantity of fill below the OHWM will be determined during the final design phase.

Table 8 - Waters of the U.S. Impacts*

Waters of the U.S.	Creek/Tributary below OHWM	Fill/Type (acre)	Debit Ratio	Debit
Area 1 (unnamed tributary to Pebble Creek south of Northview Road)	Sta. 323+45, 34' L Center Waukesha Bypass	X.XX acres (X.XX CY/LF) **Aquatic bed**		
Area 2 (Pebble Creek – Meadowbrook Road crossing)	Sta. 290+13, 45' L Center Waukesha Bypass	X.XX acres (X.XX CY/LF) **Aquatic bed**		
Area 3 (Pebble Creek – Summit Avenue crossing)	Sta. 44+29, 44' R Center Sta. 44+76, 48' L Center Summit Avenue	X.XX acres (X.XX CY/LF) **Aquatic bed**		
Area 4 (unnamed tributary to Pebble Creek south of Madison Street	Sta. 244+52, 100' L Center Sta. 245+29, 90' R Center Waukesha Bypass	X.XX acres (X.XX CY/LF) **Aquatic bed**		
Area 5 (new crossing of Pebble Creek north of Glacial Drumlin State Trail)	Sta 178+73, 49' R Center Sta. 179+37, 49' L Center Waukesha Bypass	X.XX acres (X.XX CY/LF) **Aquatic bed**		
Total "Waters of the U.S." Impacts __ acres and Total Debit __ acres				

* Project design of drainage structures is not complete enough to determine impacts

Table 9 – Waukesha Bypass Culverts

WAUKESHA BYPASS CROSS CULVERT PIPES						
			Diameter			
Wetland No.	**Location**	**Length (ft)**	**Proposed**	**Existing**	**Proposed Material**	**Remarks**
1	116+20 – WB **WisDOT**	240	2 – 42"	None	CPRC	Road on new alignment
5	134+15 – WB **WisDOT**	175	30"	None	CPRC	Road on new alignment
None	141+10 –WB **WisDOT**	175	2 – 36"	None	CPRC	Road on new alignment

Table 9 – Waukesha Bypass Culverts

WAUKESHA BYPASS CROSS CULVERT PIPES						
			Diameter			
Wetland No.	**Location**	**Length (ft)**	**Proposed**	**Existing**	**Proposed Material**	**Remarks**
12	156+00 – WB **WisDOT**	270	48"	None	CPRC	Road on new alignment
12	159+75 – WB **WisDOT**	240	24"	None	CPRC	Road on new alignment
26 & 27	279+80 – WB **County**	190	30"	15"[7]	CPRC	Connects W-26 and W-27
29	290+00 – WB **County**	195	1 – 72" 2 – 48"	1 – 72" 2 - 48"	CPRC	Culvert Extension – Pebble Creek
31	323+45 – WB **County**	80	48"	48"	Concrete	Culvert Extension - Pebble Creek Tributary
29	44+50 – Summit Ave **County**	North – 40 South - 45	3 – 58" x 36"	3 – 58" x 36"	Metal	Culvert Extension – Pebble Creek
WAUKESHA BYPASS CROSS CULVERT BOX						
			Size			
Wetland No.	**Location**	**Length (ft)**	**Proposed**	**Existing**	**Proposed Material**	**Remarks**
23	245+00 **WisDOT**	200	2 Cells – 82" x 67"	2 Pipes – 87" x 63"	Concrete	Pebble Creek Tributary

Construction in or near waterways will be performed in accordance with WisDOT's *Standard Specifications for Highway and Structures Construction* (WisDOT 2016). Waukesha County's and WisDOT's best management practices to control erosion will be installed before erosion prone construction activities begin. Construction at stream crossings would be conducted during low or normal flow periods and comply with all federal and state laws, local ordinances, and regulations. WisDOT and Waukesha County will ensure that culvert extensions or replacements associated with the project are designed and constructed to ensure adequate passage of fish and other aquatic organisms at the crossings to help mitigate negative impacts associated with the project, consistent with FHWA Aquatic Organism Passage guidelines.

ADDITIONAL BACKGROUND INFORMATION
ENVIRONMENTAL DOCUMENT SUMMARY

As noted in the Agency Coordination subsection below, the Corps of Engineers and DNR agreed to be co-operating agencies, and the U.S. EPA, Southeastern Wisconsin Regional Planning Commission, and the City of Pewaukee agreed to be participating agencies for the West Waukesha Bypass Study. Cooperating and participating agencies were provided an opportunity to concur in project purpose and need, the range of alternatives considered in the Draft EIS, and the preferred alternative identified for the Final EIS.

- ***In November 2010, the Corps of Engineers concurred in project purpose and need and the U.S. EPA concurred in December 2010.***
- ***The City of Pewaukee concurred in the range of alternatives considered in May 2011. The Corps of Engineers and the U.S. EPA concurred in June 2012.***
- The Draft EIS was approved by FHWA on October 19, 2012. It was then distributed to state and federal review agencies and made available to the public. The Federal Register notice of availability was published on October 26, 2012. A public hearing was held on November 13, 2012.

In March 2013, the DNR concurred in selection of the single alternative north of the Wisconsin & Southern Railroad and the Pebble Creek West Alternative south of the railroad as the preferred alternative. In May 2014, the Corps of Engineers and the U.S. EPA concurred.

The Final EIS was approved by FHWA on September 11, 2014 and distributed to state and federal review agencies. The Federal Register notice of availability was published on September 19, 2014.

[7] There is an existing 15" CMCP connecting Wetlands 26 and 27 about 40 feet north of the proposed culvert.

The final Record of Decision (ROD) which completes the EIS process was approved by FHWA on January 20, 2015. Copies of the ROD were provided to the Corps of Engineers, DNR, and U.S. EPA because these agencies had comments on the Final EIS that were addressed/resolved in the ROD. Copies of FHWA approval sheets for the Draft EIS, Final EIS, and ROD are provided in **Appendix B.** Copies of all environmental documents are available at the WisDOT Southeast Region office and at Waukesha County Department of Public Works. As noted in the Agency Coordination subsection below, the Corps of Engineers and DNR agreed to be co-operating agencies, and the U.S. EPA, Southeastern Wisconsin Regional Planning Commission, and the City of Pewaukee agreed to be participating agencies for the West Waukesha Bypass Study. Cooperating and participating agencies were provided an opportunity to concur in project purpose and need, the range of alternatives considered in the Draft EIS, and the preferred alternative identified for the Final EIS.

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SUMMARY OF KEY ENVIRONMENTAL FACTORS

Key environmental factors, in addition to those discussed previously (wetlands, stream crossings, erosion control and stormwater management) are summarized below. More detailed information is available in Section 3 of the 2014 Final EIS.

Land Use

Land use between I-94 and Northview Road is dense residential development served by City of Waukesha services. Between Northview Road and Summit Avenue there are a mix of uses. East of Meadowbrook Road are single-family residences and a large multi-unit apartment complex. At the Summit Avenue intersection there is a commercial development anchored by a Sentry grocery store. West of Meadowbrook Road is a mix of single family residences and a large wooded area and farmland. Between Coldwater Creek Drive and Summit Avenue is a mix of commercial and institutional uses. Between Summit Avenue and Madison Street land use is a mix of residential, institutional, commercial, and open space. South of Madison Street, land use transitions from mostly suburban residential with limited agricultural land and recreational open space to large blocks of agricultural land, recreational open space (Retzer Nature Center), and less dense residential development. Along the preferred alternative south of Sunset Drive, the land use is open space adjacent to Pebble Creek.

Future land use changes in the project area would be limited to agricultural land or undeveloped uplands according to land use plans. Planned land uses include suburban density residential development and a school campus on the farmland owned by the Waukesha School District.

Residential and Business Displacements

Five residences, three north of the Wisconsin & Southern Railroad and two south of it, will be displaced. The preferred alternative will not displace any businesses. (Residential displacements will be fully compensated in accordance with state and federal relocation laws and regulations that provide for just compensation including acquisition price, replacement dwelling costs, moving expenses, and locating comparable residences.)

Any septic tanks, drain fields, or wells on acquired properties would be abandoned in accordance with state regulations and local zoning standards. Waukesha County will survey all buildings that will be demolished to determine whether asbestos or lead paint is present. All appropriate and applicable engineering and regulatory controls will be followed during the handling and disposal of asbestos-containing material and lead-based paint. Before a contractor demolishes a building that may contain or is known to contain asbestos, the contractor must notify DNR and the Wisconsin Department of Health and Family Services at least 10 working days before starting the work.

Farmland

Farming is a declining land use countywide. Within the project corridor, there is a limited amount of agricultural land immediately adjacent to County TT. There is agricultural land on the west side of County TT between Summit Avenue and Northview Road and on both sides of County TT between Madison Street and Sunset Drive. The preferred alternative would affect six farms and one property that grows trees and shrubs acquiring about 37 acres from the seven properties. It will also displace two farm residences. The displaced farm residences are located on the east side of County TT south of Madison Street. About half of the farmland would be acquired from one farm operation on the east side of County TT south of Madison Street (across from Kame Terrace) and in the northeast quadrant of the County TT/Sunset Drive intersection. Both parcels would be severed.

Threatened and Endangered Species

Information on threatened and endangered species that are or may be present in the West Waukesha Bypass study area was obtained from the U.S. Department of the Interior Fish and Wildlife Service (USFWS) website, DNR, SEWRPC, and Great Lakes Ecological Services, which conducted a review of rare reptiles for the project under contract to Waukesha County. Waukesha County also had its biologist (Mike Bourquin, Conservation Biologist) do a field survey in July 2013. The field survey located one state listed species, the seaside crowfoot *(plant) that was identified by SEWRPC while delineating wetlands south of the Wisconsin & Southern Railroad.*

The full list of federal and state species that may be present in the project corridor (or have suitable habitat) is found in Section 3.19 of the 2014 Final EIS. ***In May 2014, the USFWS indicated that the project would have no impact on the Poweshiek skipperling, a small butterfly. In June 2015, the DNR stated that the Northern Long-eared Bat would not be located in the project area.*** See Appendix C. ***During SEWRPC's wetland delineations and Waukesha County's field review, no federally-protected species were identified.***

In April 2014, a representative from the DNR Endangered Resources Program notified Waukesha County that effective January 2014, the Butler's garter snake, Blanding's turtle, Prairie Indian plantain and Yellow gentian were delisted from state threatened status and are now listed as species of special concern. ***The little brown bat uses a study-area bridge as a roosting site from mid-May through mid-September. The DNR Bureau of Endangered Resources also stated that they see no long-term impact to the little brown bat as a result of the project after construction is completed. With the exception of the seaside crowfoot (plant), which was located by SEWRPC and Waukesha County, and the little brown bat, which was located by SEWRPC, no other state-protected species were identified during field investigations.***

To avoid potential impacts to state-protected fish and mussel species, WisDOT and Waukesha County will avoid in-stream work between March 15 and June 1 (dates may be modified in consultation with DNR). WisDOT and Waukesha County also will re-inspect the County TT and County X bridges over Pebble Creek during design. ***If swallow nests are present, no disturbance will be allowed between May 1 and August 30 of the construction year.*** If construction conflicts with the

swallow nesting period, WisDOT will implement measures to avoid impacts or prevent swallows from nesting on the structures.

Historic and Archeological Resources

Archaeological investigations in the project area were coordinated in accordance with the Guidelines for Public Archaeology in Wisconsin, as revised. The project's archaeological fieldwork survey report was concurred in the State Historic Preservation Office (SHPO) in June 2011. ***The archaeological fieldwork conducted in 2010 identified two archaeological sites. The preferred alternative would not affect either site. See Section 3.24 of the 2014 Final for more information.***

Historic properties were investigated to identify possible historically significant structures within the area of potential effect of the project area. ***Nine properties were surveyed, of which one is listed on the National Register (Sebina Barney House). Of the other eight a determination of eligibility was prepared for one (Ward Brown Farmstead), and the State Historic Preservation Office (SHPO) concurred that it is eligible for listing on the National Register.*** The other seven properties did not warrant determinations of eligibility. The State Historic Preservation Office (SHPO) determined the design of the only Build Alternative north of the railroad and the Pebble Creek Alternative, as presented in the Draft EIS would adversely affect both properties. ***Waukesha County and WisDOT redesigned the Build Alternative adjacent to the Ward Brown Farmstead such that FHWA and SHPO concurred there would be no impact to the historic integrity of the property.***

The Draft EIS design would not have displaced the ***Sabina Barney House***, however, it would have acquired 0.2 acre from the property. Waukesha County's and WisDOT's redesign of Saylesville Road adjacent to the property eliminated right-of-way acquisition, grading or other construction within the historic property boundary. ***In spite of the redesign, SHPO stated the expansion of Saylesville Road (County X) as part of the project would alter what remains of the rural historic character of the property. As mitigation for the adverse impact to the property Waukesha County and WisDOT shifted the alignment of Saylesville Road so it would not be as close to the Sebina Barney House as originally planned***. The design was also modified to preserve the owners' ability to turn left into and out of their driveway. ***As further mitigation, SHPO, FHWA, WisDOT and Waukesha County have agreed to take photos to document the Sebina Barney House, provide vegetative screening and write a summary of the Waukesha County National Register-listed properties that do not already have a summary on SHPO's website.***

Park and Recreation Areas

Section 3.26 of the Final EIS lists the park and recreation areas within the project area. ***The preferred alternative would affect two public parks, Kisdon Hill Park (0.8 acre) and Retzer Nature Center (0.4 acre) and Good Times Day Camp (0.03 acre), a private facility.***

The preferred alternative will cross the Wisconsin & Southern Railroad at-grade. WisDOT will construct a box culvert under the proposed road to accommodate the Glacial Drumlin State Trail. Merrill Hills Road will no longer cross the trail; it would become a cul-de-sac on either side of the railroad tracks. ***Removing the road crossing from the Glacial Drumlin State Trail will improve safety for trail users and accomplish a long-standing DNR goal of eliminating the at-grade crossing.***

Hazardous Materials

The preferred alternative between the north project terminus and the Wisconsin & Southern Railroad will affect three potentially contaminated sites recommended for further analysis. The sites include two residences and a gas station with underground storage tanks. Both railroad crossings (one existing, one former) are within this part of the project area. ***South of the railroad, the preferred alternative will affect one of the potentially contaminated sites recommended for further analysis, a former industrial site.*** Two residences will be relocated south of the railroad. Relocated buildings might have asbestos containing material (ACM), lead-based paint, mercury switches, polychlorinated biphenyls, fuel oil tanks, and other potentially hazardous materials.

If further investigation indicates there would be involvement with contaminated soil during construction of the preferred alternative, the DNR and other affected parties will be notified of the results. Waukesha County and WisDOT will work with concerned parties to ensure disposition of

any petroleum contamination to the satisfaction of the DNR, the WisDOT Environmental Services Section, and FHWA before acquisition of any questionable site, and before advertising the project for construction. For removal of structures with ACM, the construction contract special provisions will include Standard Special Provision (STSP) 203-005 requiring ACM abatement under contract bid item 203.0210s.

Noise

The West Waukesha Bypass project meets FHWA's definition of a Type 1 project for the purpose of noise impact evaluation. Type 1 projects involve construction of a roadway on new location, substantial alteration of the horizontal alignment or vertical profile of an existing highway, or the addition of traffic lanes including through lanes and auxiliary lanes. Existing and future traffic noise for sensitive noise receptor locations (homes and public use lands) was modeled using FHWA's Traffic Noise Model (TNM 2.5). The results of the noise analysis indicated noise impacts will occur in the I-94 to Summit Avenue segment. Seven noise receptors representing about 45 residences would experience a noise impact. In the Summit Avenue to railroad section two noise receptors representing 10 residences would experience a noise impact. No noise impacts would occur along the Pebble Creek West Alternative.

Based on the noise analysis, WisDOT evaluated noise barriers along the corridor. WisDOT intends to incorporate feasible and reasonable noise barriers into the project. Four of the seven barriers evaluated meet the definition of feasible and reasonable. One barrier is located on the west side of Meadowbrook Road north of Northview Road, another is located near the apartment complex on the east side of Meadowbrook Road north of Summit Avenue. The other two barriers are located on both sides of Merrill Hills Road just north of Madison Street. A final decision on the installation of abatement measures will be made upon completion of final design and through the public involvement process, which will solicit the viewoints of residents and property owners benefitted by the construction of the feasible and reasonable noise barriers. The noise generated by construction equipment would vary greatly, depending on equipment type, duration of operation, and distance from adjacent development. Typical noise levels may occur in the 75 dBA to 95 dBA range at a distance of 50 feet. Adverse effects of construction noise will be localized and temporary in nature.

Air Quality

The road network in the project area is within Southeastern Wisconsin Intrastate Air Quality Control Region no. 239. Waukesha County is in attainment status for five of the six criteria pollutants, and was redesignated in April 2014 to a maintenance area for particulate matter ($PM_{2.5}$). The project is included in the *Regional Transportation System Plan for Southeastern Wisconsin: 2035* (SEWRPC 2006) and SEWRPC's 2013–2016 Transportation Improvement Program (SEWRPC 2012). SEWRPC, the region's metropolitan planning organization, completed a regional conformity analysis for ozone and PM2.5.

Based on the air quality analysis completed for the proposed improvements, the project will not contribute to any violation of the National Ambient Air Quality Standards, and Mobile Source Air Toxic emissions will decrease with the preferred alternative.

AGENCY COORDINATION

Coordination with agencies during the West Waukesha Bypass study was done under environmental coordination procedures established in the 2005 federal transportation bill, SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users). Section 6002. This process provided an opportunity for agencies, local officials and others to participate in the environmental review process by:

- ***Providing input on information*** being prepared for the environmental document, ***the need for the proposed improvements***, ***alternatives*** being considered, ***potential impacts***, ***mitigation***, and ***other environmental aspects***.
- This environmental process ***also provided an opportunity for agencies, local officials and others to become cooperating or participating agencies***. Cooperating and participating agencies were ***provided an opportunity to concur in project purpose and need***, the ***range of alternatives considered in the Draft EIS***, and ***the preferred alternative identified for the Final EIS***.

- The ***Corps of Engineers and DNR agreed to be cooperating agencies***, and the ***U.S. EPA, Southeastern Wisconsin Regional Planning Commission, and the City of Pewaukee agreed to be participating agencies***. FHWA invited 12 Native American tribes to participate in the study, however, no tribes responded. Key agency correspondence is found in Appendix C.

Waukesha County, WisDOT, and the project's cooperating and participating agencies have continued to work together during the preliminary engineering design phase to ensure that impacts to natural resources have been avoided and minimized where practical.

PUBLIC INVOLVEMENT

Waukesha County, WisDOT and FHWA implemented an extensive public involvement program for the West Waukesha Bypass Corridor Study.

- ***Meetings were held*** with neighborhood, community, environmental, business and other stakeholder groups.
- ***Waukesha County used a community sensitive solutions (CSS) approach*** to assist in identifying transportation issues and concerns, environmental constraints, and other factors that should be considered in developing potential improvement alternatives.
- ***An advisory group was established at the outset of the study to engage a representative cross section of stakeholders in the decision-making process***.
- Five CSS workshops were held during preparation of the Draft EIS.
- ***Open house public information meetings were held*** in May, July and August 2010 and February 2011. A public hearing was held on November 13, 2012. Newsletters announcing the public information meetings were sent to local officials, elected officials, state and federal agencies, adjacent property owners, and other interests and stakeholders.
- ***Waukesha County issued press releases before each public information meeting. Information about the public information meetings and other project information was posted on Waukesha County's web site at www.waukeshabypass.org***.
- Waukesha County also held numerous meetings with local officials during development and refinement of the alternatives and preparation of the EIS.

STORMWATER AND EROSION CONTROL

Erosion control and storm water management will be executed in accordance to Wisconsin Administration Code TRANS 401: Construction Site Erosion Control and Storm water Management for the State and County construction projects. Erosion control and storm water management within the City of Waukesha project segment will follow requirements provided in Wisconsin Administrative Code Chapter NR 151 (Runoff Management).

Erosion control and storm water management measures proposed for this project include ditch checks, grass-lined flat bottom ditches, rock filter bed, erosion bales, temporary and permanent seeding, sod placement, silt fence, erosion mats, riprap, and inlet protection.

Erosion Control Implementation Plan

The construction contractor is required to prepare an Erosion Control Implementation Plan (ECIP) that includes erosion control commitments made in the project's engineering design phase. The construction plans and contract special provisions must include the specific erosion control measures agreed on by WisDOT in consultation with DNR, who reviews the ECIP.

Stormwater Management Plan

Conceptual Stormwater management plans were prepared by Gremmer & Associates for the preferred alternative corridor. One plan covered the South project (WisDOT- WIS 59/County X to 600 feet north of Madison Street) and the North project, Section 1 (County - 600 feet north of Madison Street to north of Northview Road). The other plan covered the North Project, Section 2 (City). South of Kame Terrace, the goal is to reduced post construction Total Suspended Solids (TSS) by 80 percent when compared to conditions with no runoff management. North of Kame Terrace, the goal is to reduce post construction TSS by 40 percent.

The objective of the overall stormwater management plan for the Waukesha Bypass is to control the quantity of runoff and enhance water quality by removing TSS. To accomplish this, roadway runoff will be directed to grass swales where possible, and dry stormwater ponds will be constructed to reduce peak runoff from the increased pavement areas. Mainline storm sewer is used where grass swales are not accessible to the storm sewer outlets. Interceptor ditches outside of the improved street/sidewalk are used to limit flow to the system and for operational icing concerns.

Stormwater facilities will also be designed to preserve existing drainage patterns to the extent practicable. Within this general framework, the following are project specific details affecting the design of the stormwater facilities:

- Stormwater ponds will generally be dry ponds due to planning concerns regarding thermal impacts to the receiving Pebble Creek.
- Considerations for a wet pond at STA 297+00 LT was evaluated but a flat-bottom treatment swale was used due to ROW constraints and proximity to a private stormwater pond.
- Storm sewer discharging in close proximity to wetlands will use outlet pipe sediment traps of a standard size as an effective means for small drainage areas with a limited footprint (minimal or no wetland impacts).
- In some locations, storm sewer was included when determined that swales would not fit within ROW constraints due to adjacent residences.
- Permanent ditch checks and catch basins (inlets with sumps) are not included within TSS; but will be evaluated for areas currently without treatment.
- Sections of roadway classified as "New" have a 2-year peak quantity (flow) requirement (from south project limit to Kame Terrace). However, quantity control at pond locations will be implemented regardless of highway classification. In addition, outfall locations within the new road section will be evaluated for quantity control at individual outfalls (based on both quantity of water and receiving waterway – i.e. stream, farm field, municipal sewer, etc).

CONSTRUCTION

The West Waukesha Bypass project will widen County TT/Merrill Hills Road/Meadowbrook Road from Kame Terrace to Rolling Ridge Drive and be new alignment from WIS 59 to Kame Terrace. ***The project will be divided into three segments:***

- ***South Project; ID 2788-00-71 WisDOT (WIS 59/County X to 600 feet north of Madison Street)***; ***Construction scheduled for late 2016/2017***. Construction will be completed in four stages. In each stage, at least one lane of traffic will be provided for each direction along County TT/Merrill Hills Road. Some side roads are expected to have detours for portions of the construction project.
- ***North Project, Section 1; ID 2788-02-70/2788-00-72 WisDOT and Waukesha County (600 feet north of Madison Street to north of Northview Road)***; ***Construction scheduled for 2016***. Construction will be completed in four stages, in each stage one lane of traffic will be provided for each direction along County TT/Merrill Hills Road/Meadowbrook Road.
- ***North Project, Section 2; City of Waukesha Project (north of Northview Road to Rolling Ridge Drive)***; ***Construction scheduled for 2016***. Construction will be completed in four stages. In each stage one lane of traffic will be provided for each direction along County TT/Meadowbrook Road.

It should be noted that required side road improvements associated with the construction projects above will also be completed in stages.

Construction activities will include but are not limited to excavation, grading, paving, structure construction, storm sewer, culvert extensions, signals, lighting, pavement marking, and permanent signing.

FIGURES

APPENDICES

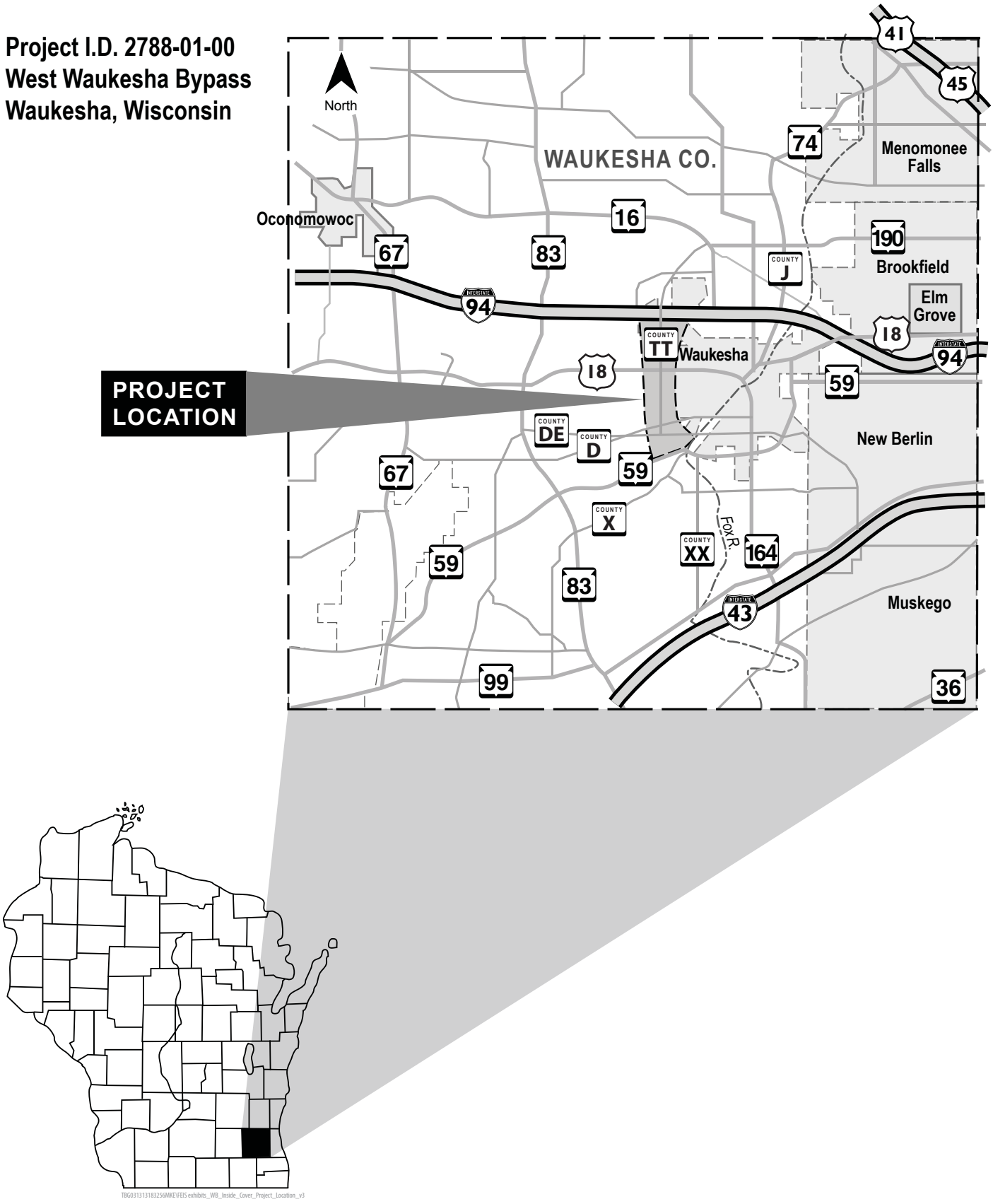
Appendix A. Wetland Figures

Appendix B. Environmental Document Cover Sheets

Appendix C. Agency Correspondence

ADDITIONAL REPORTS

Project I.D. 2788-01-00
West Waukesha Bypass
Waukesha, Wisconsin



TBG03131318325GMKE\FEIS exhibits_WB_Inside_Cover_Project_Location_v3

Figure 1
Project Location Map

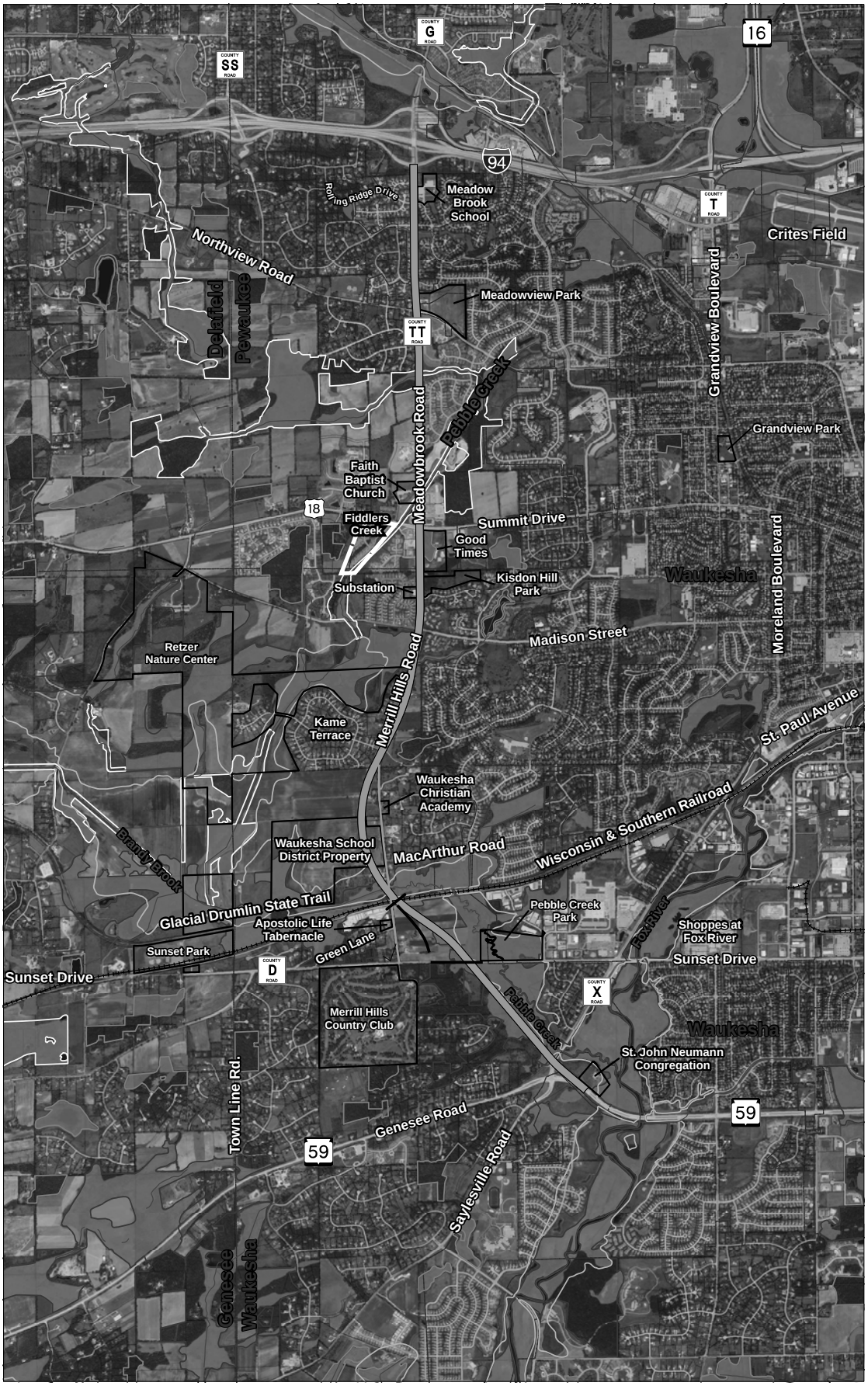


Figure 2

Preferred Alternative

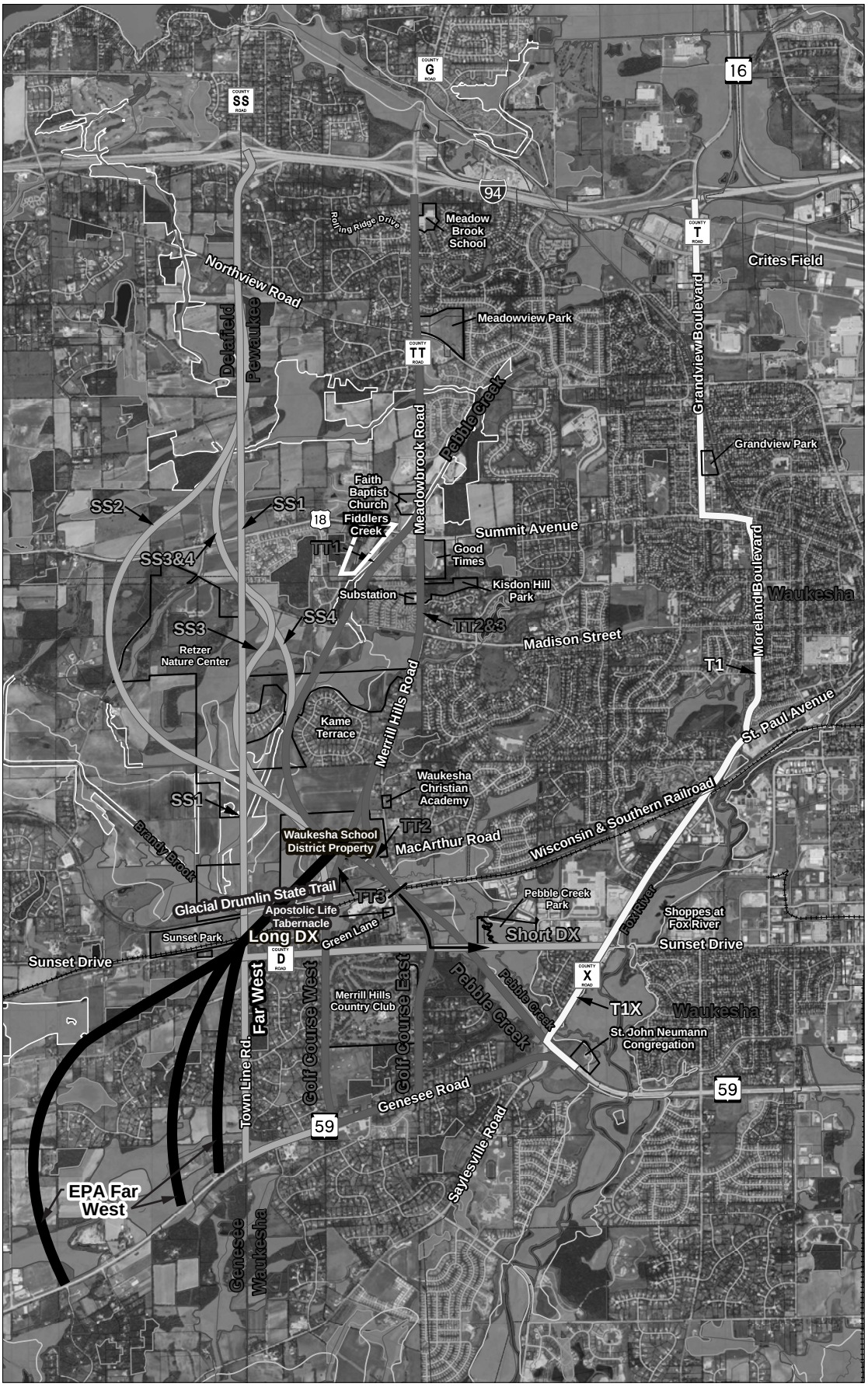


Figure 3

Initial Range of Build Alternatives
County T Corridor, County TT Corridor, and County SS Corridor

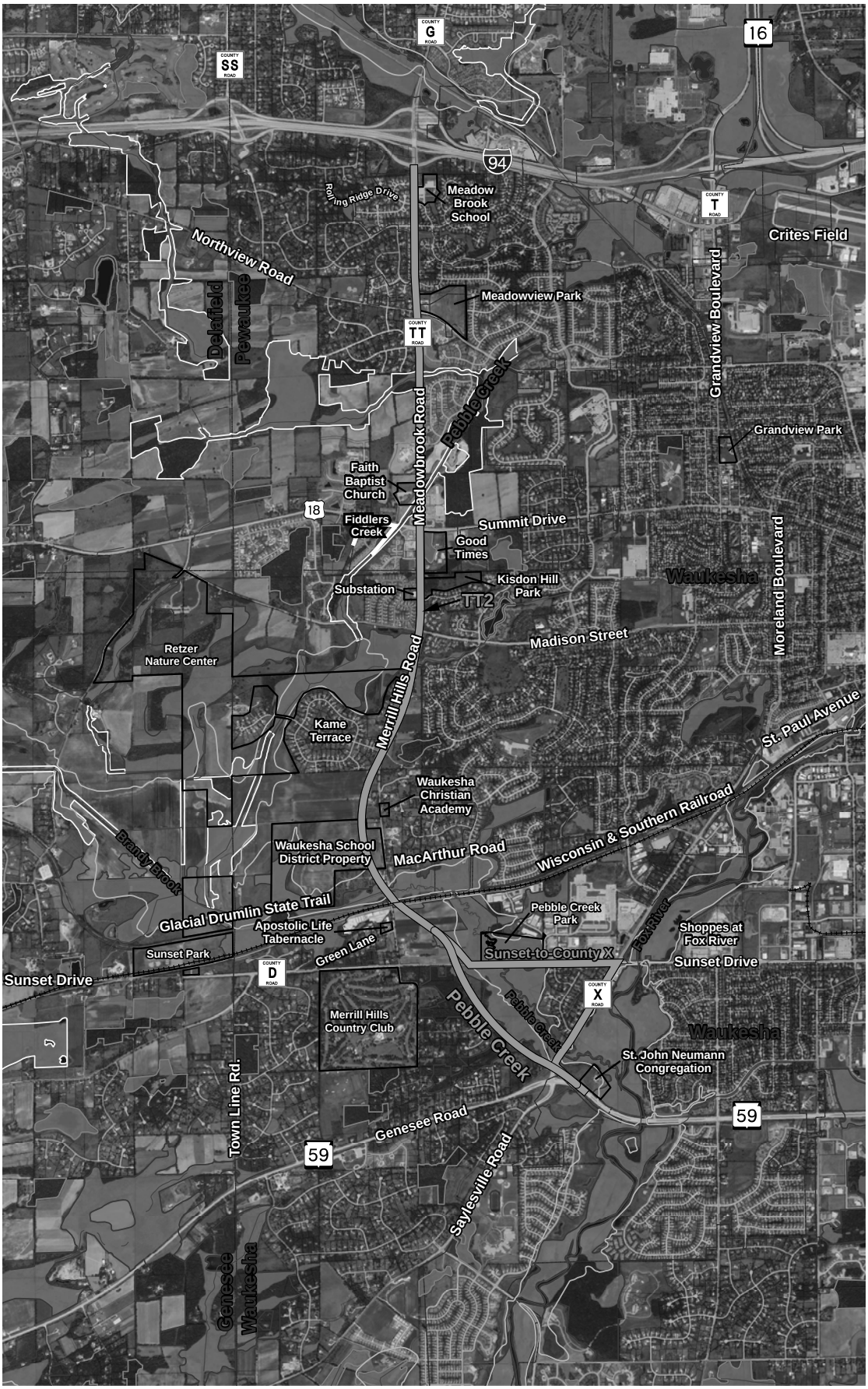


Figure 4

Alternatives Remaining After Initial Screening

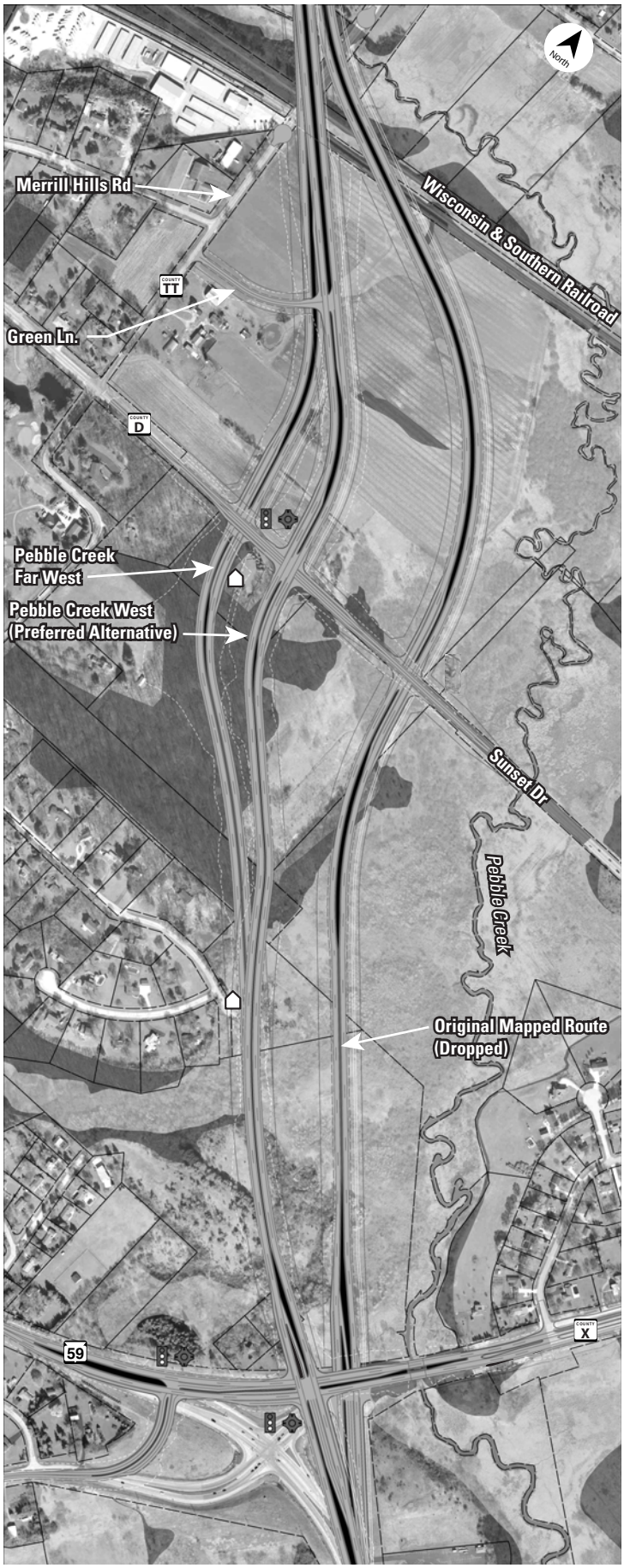


Figure 5

Pebble Creek Alternatives

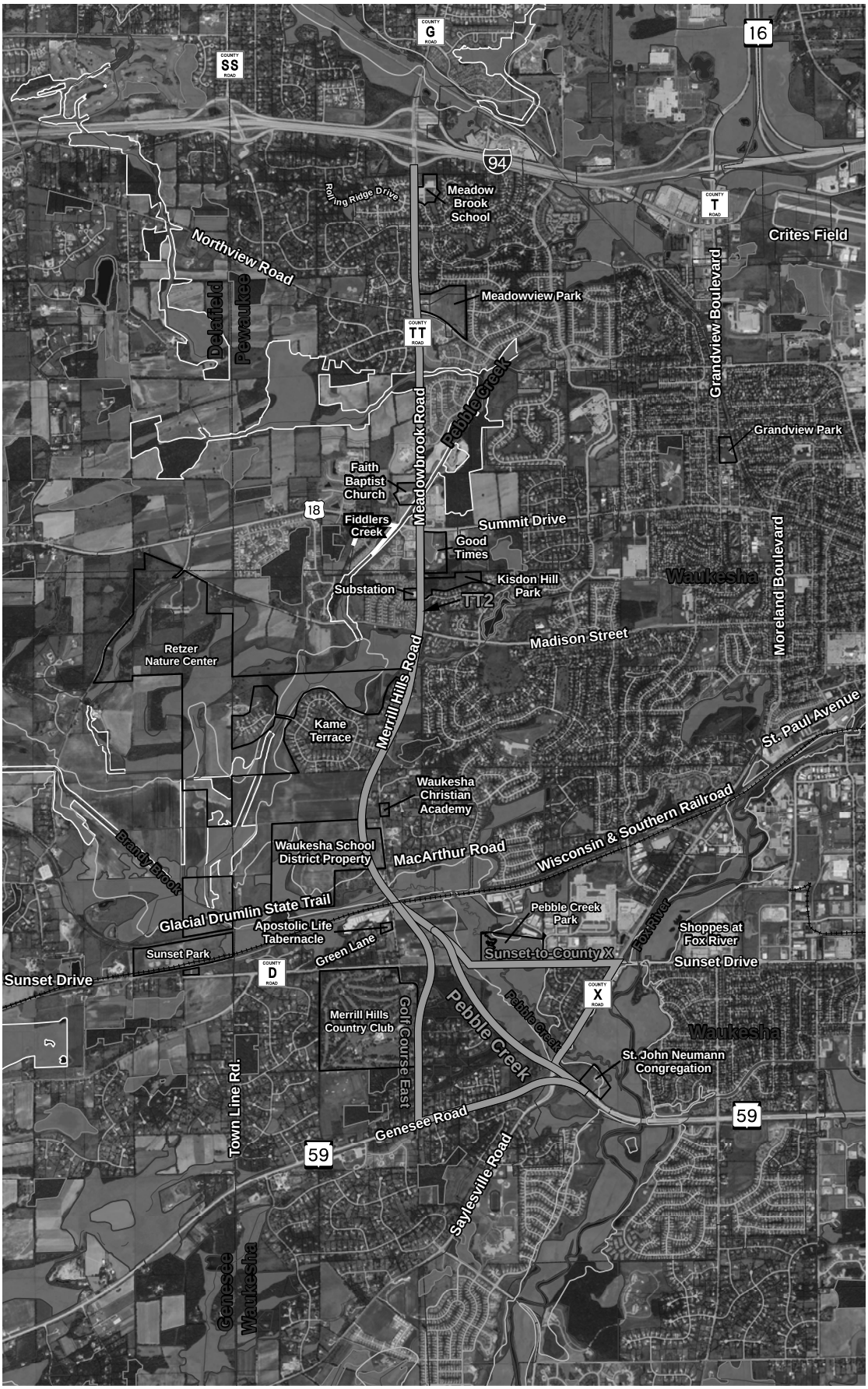
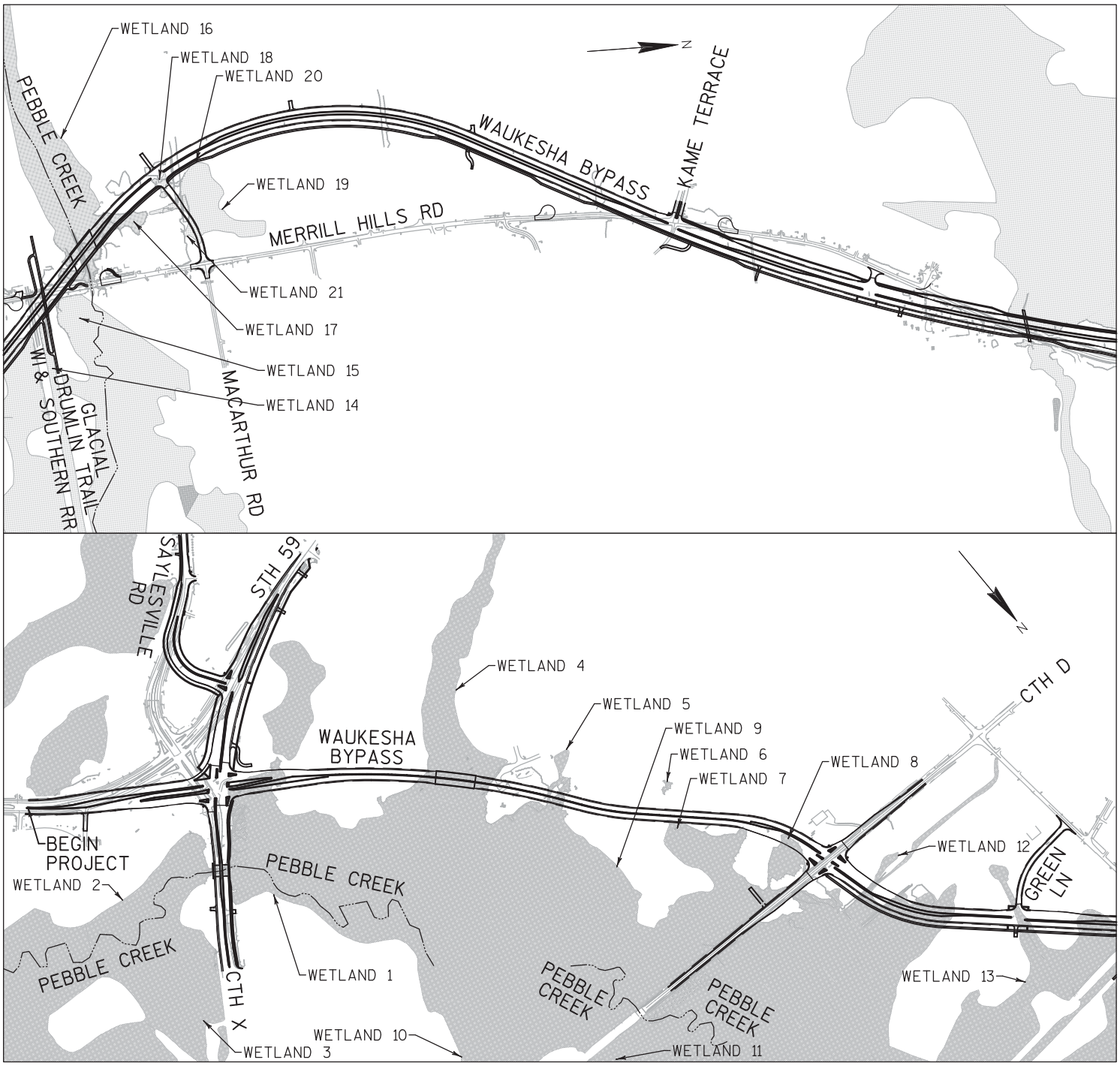


Figure 6

Alternatives Remaining After Initial Screening

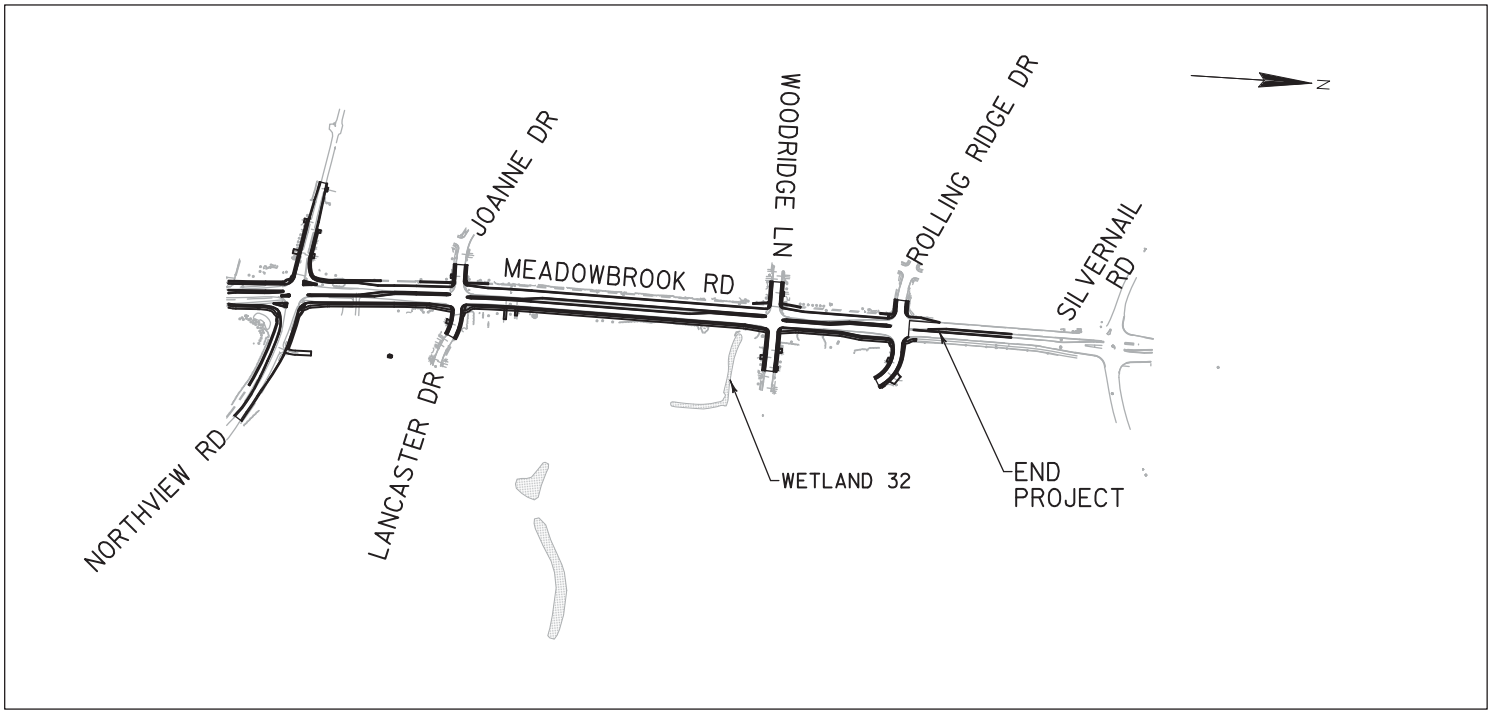
Appendix A1-1

Corridor Wide Wetland Location Overview Map
Waukesha County



Appendix A1-2

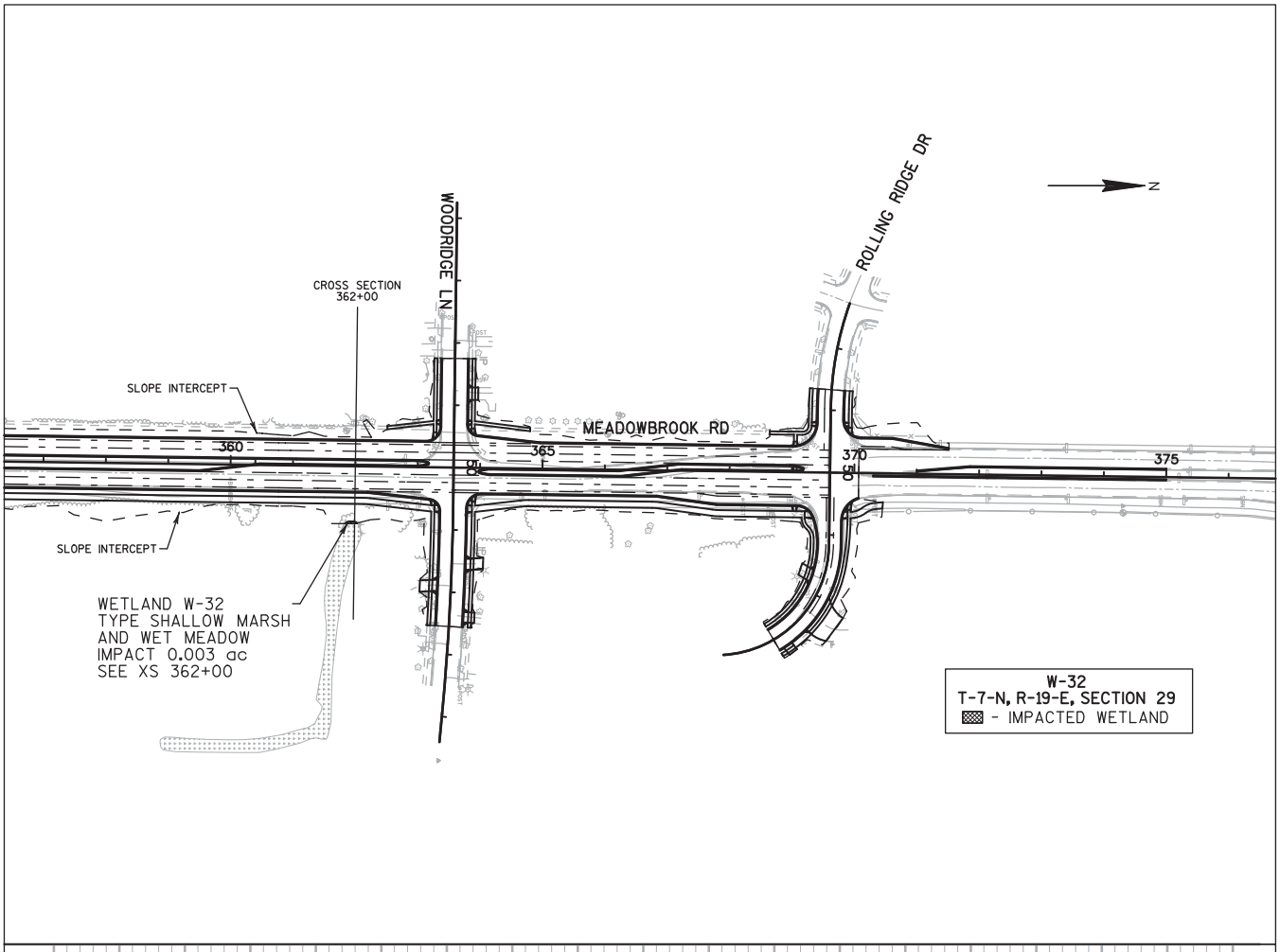
Corridor Wide Wetland Location Overview Map
Waukesha County

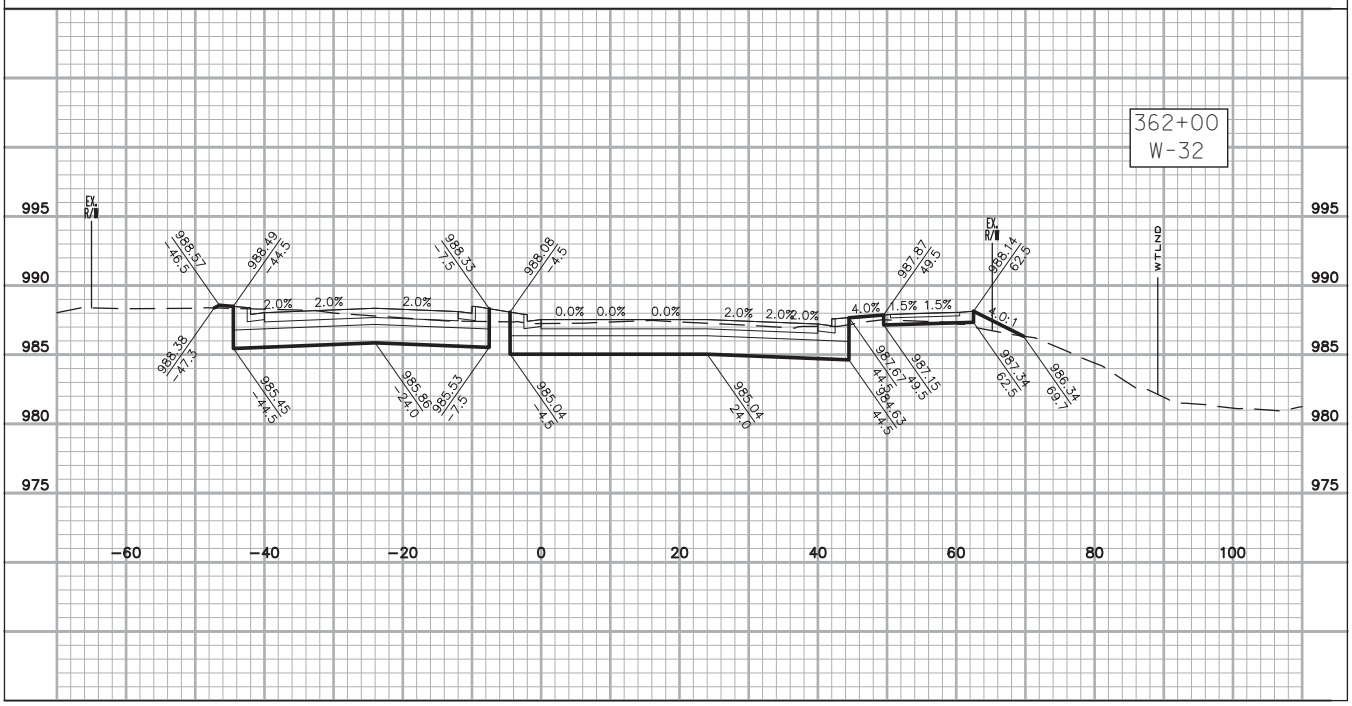


FOR INFORMATION ONLY

Appendix A2-1

City of Waukesha Segment: Rolling Ridge Drive to Northview Road
Wetland Location Overview Map

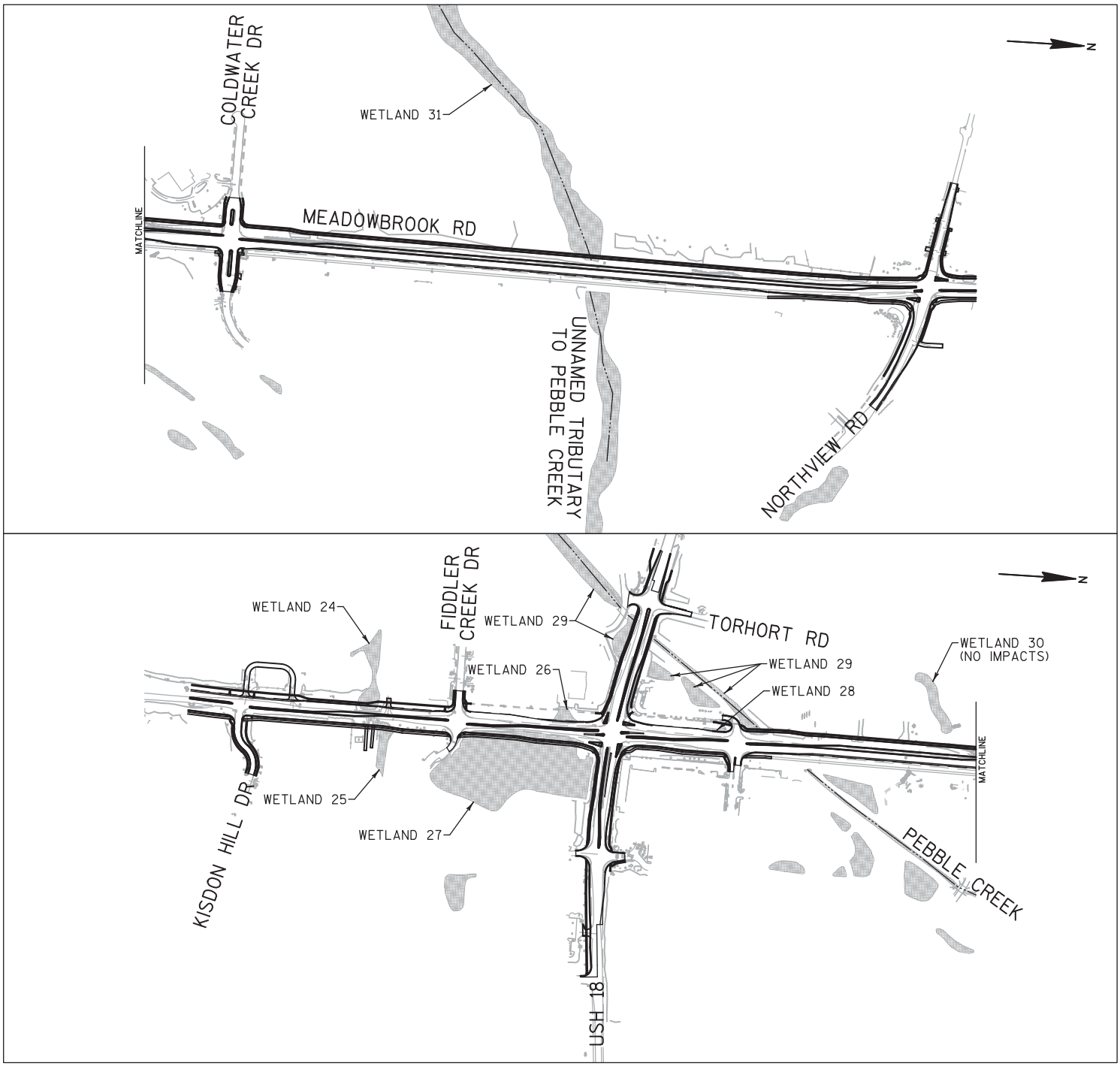




FOR INFORMATION ONLY

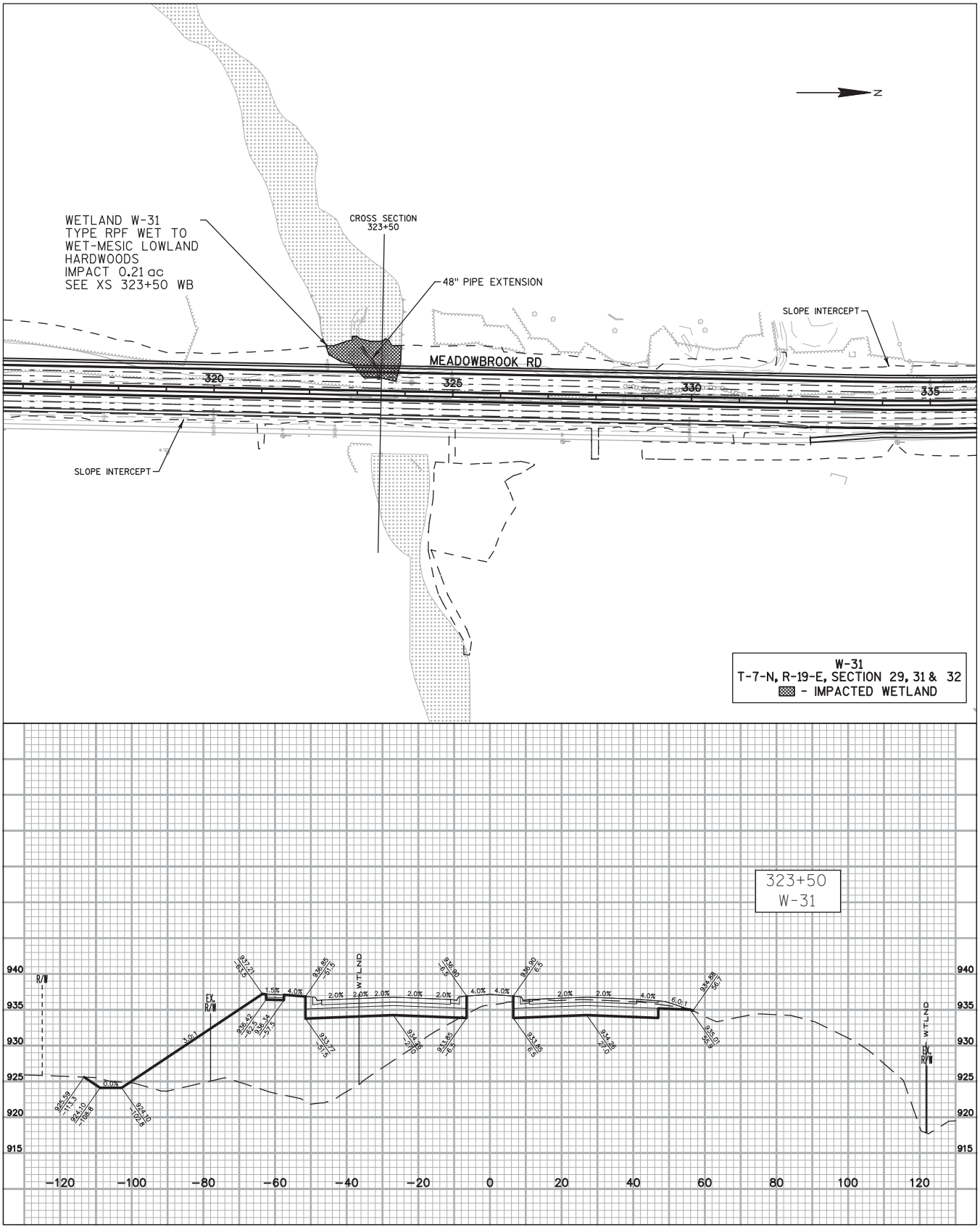
Appendix A2-2

City of Waukesha Segment: Rolling Ridge Drive to Northview Road
Project Plans/Wetland Figures



Appendix A3-1

Waukesha County Segment: Northview Road to Summit Ave
Wetland Location Overview Map
Project ID 2788-00-02 & 2788-02-00



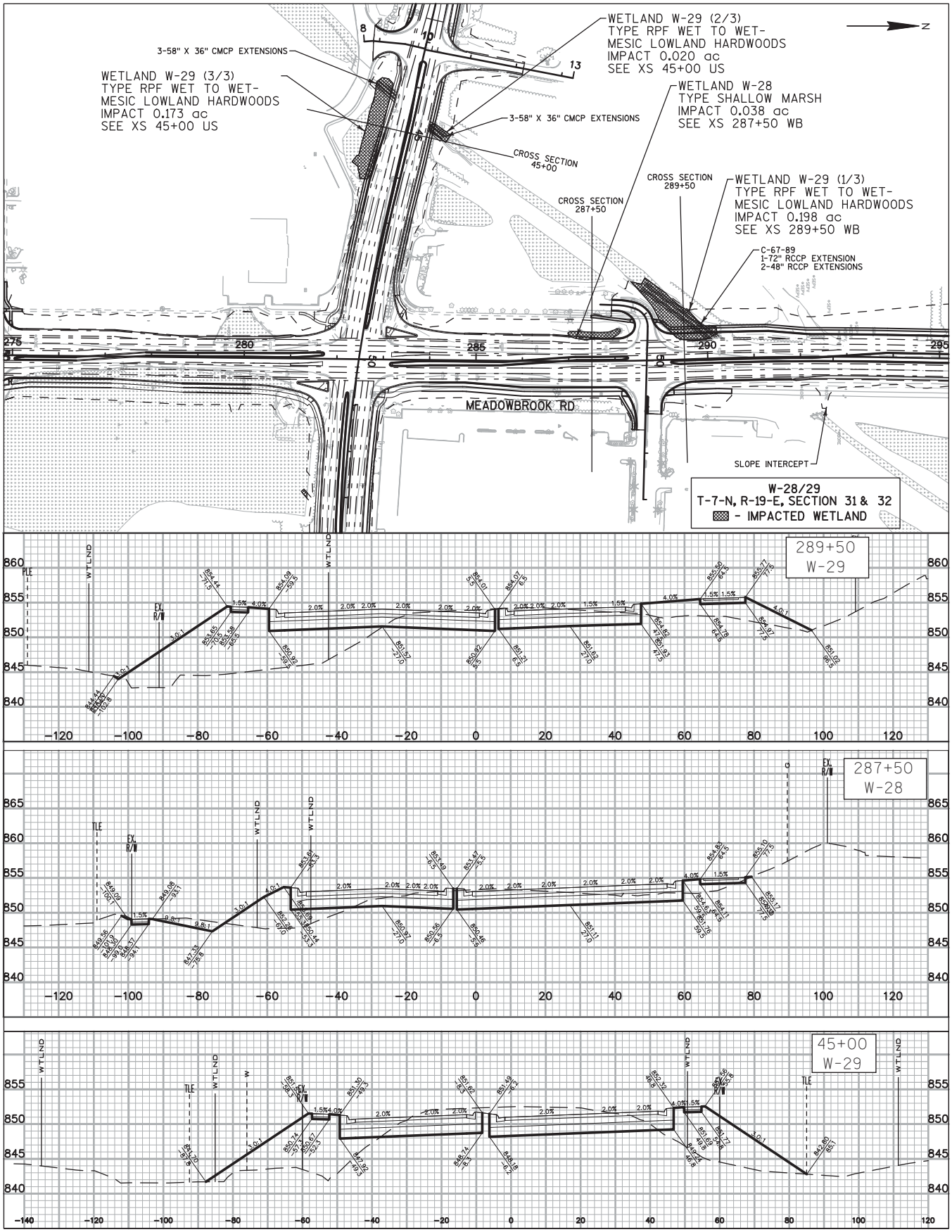
Appendix A3-2

Waukesha County Segment: Northview Road to Summit Avenue

Project Plans/Wetland Figures

Impact Figure 1

Project ID 2788-00-02 & 2788-02-00



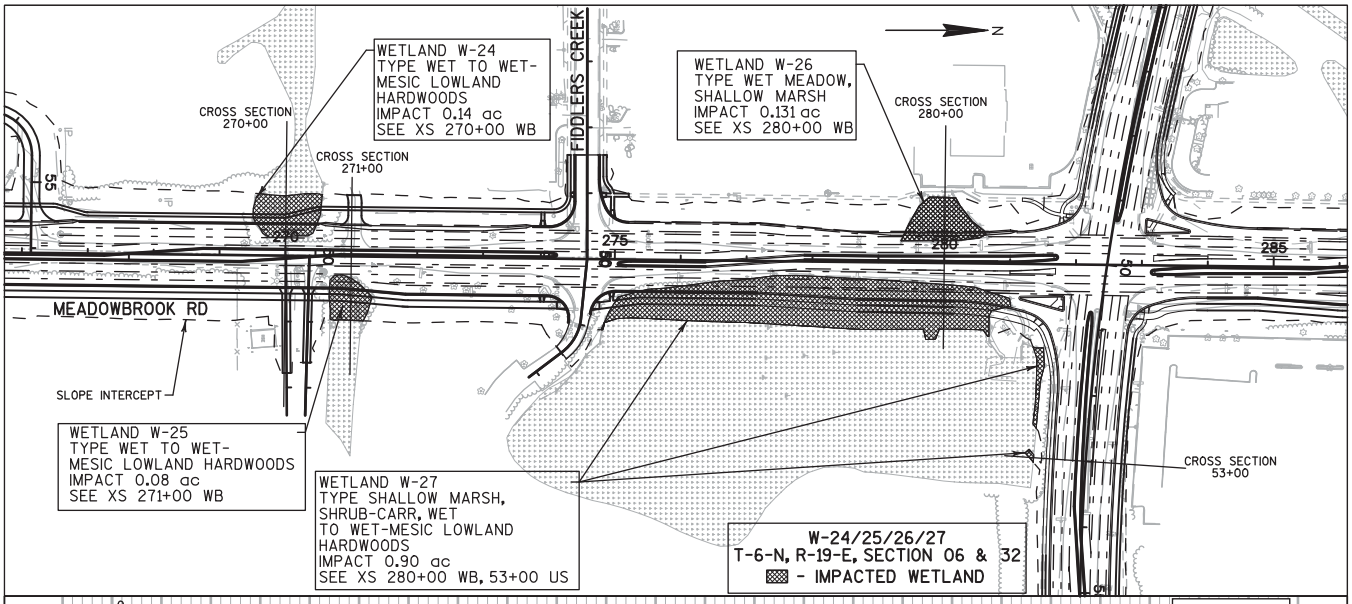
Appendix A3-2

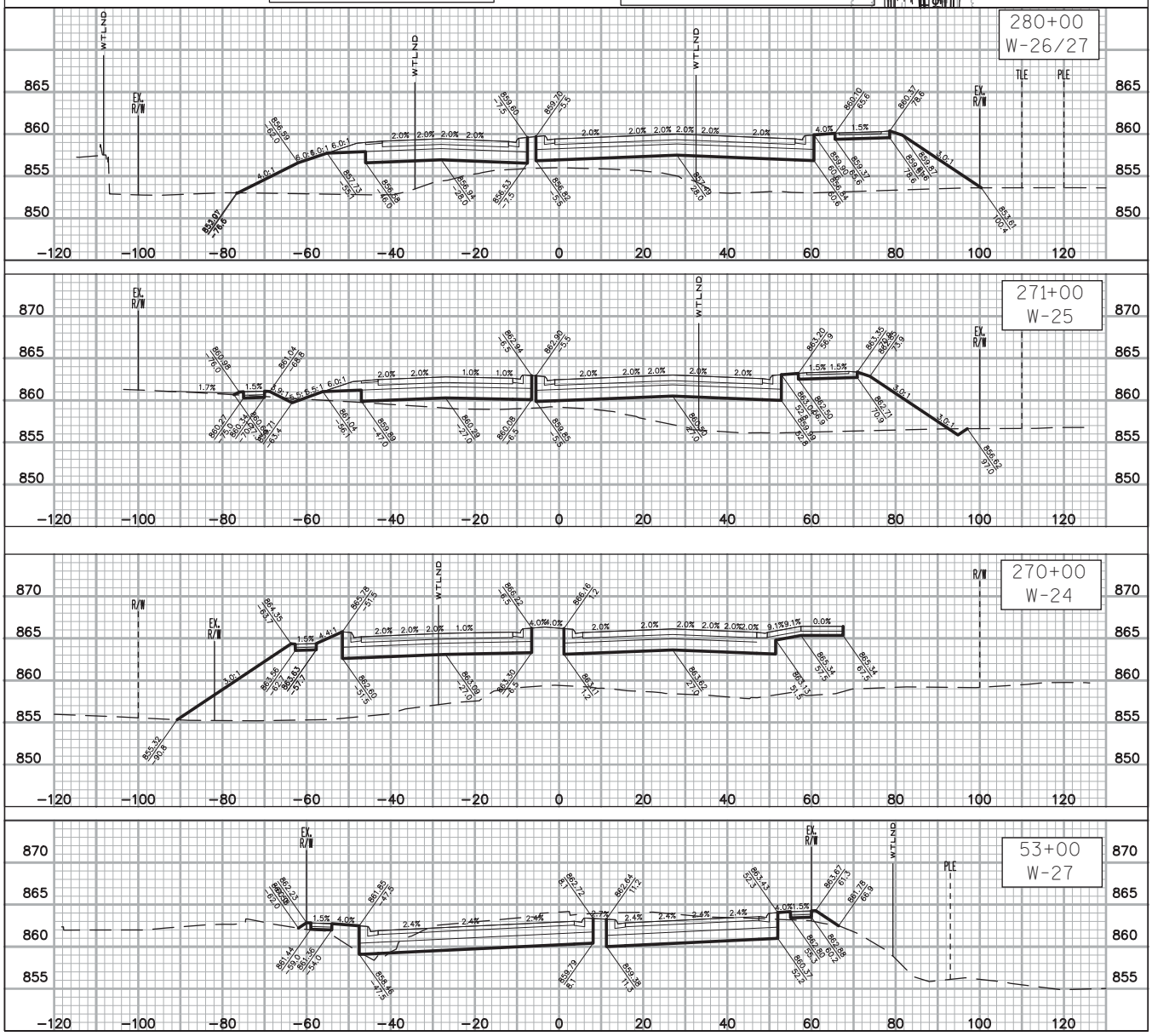
Waukesha County Segment: Northview Road to Summit Avenue

Project Plans/Wetland Figures

Impact Figure 2

Project ID 2788-00-02 & 2788-02-00





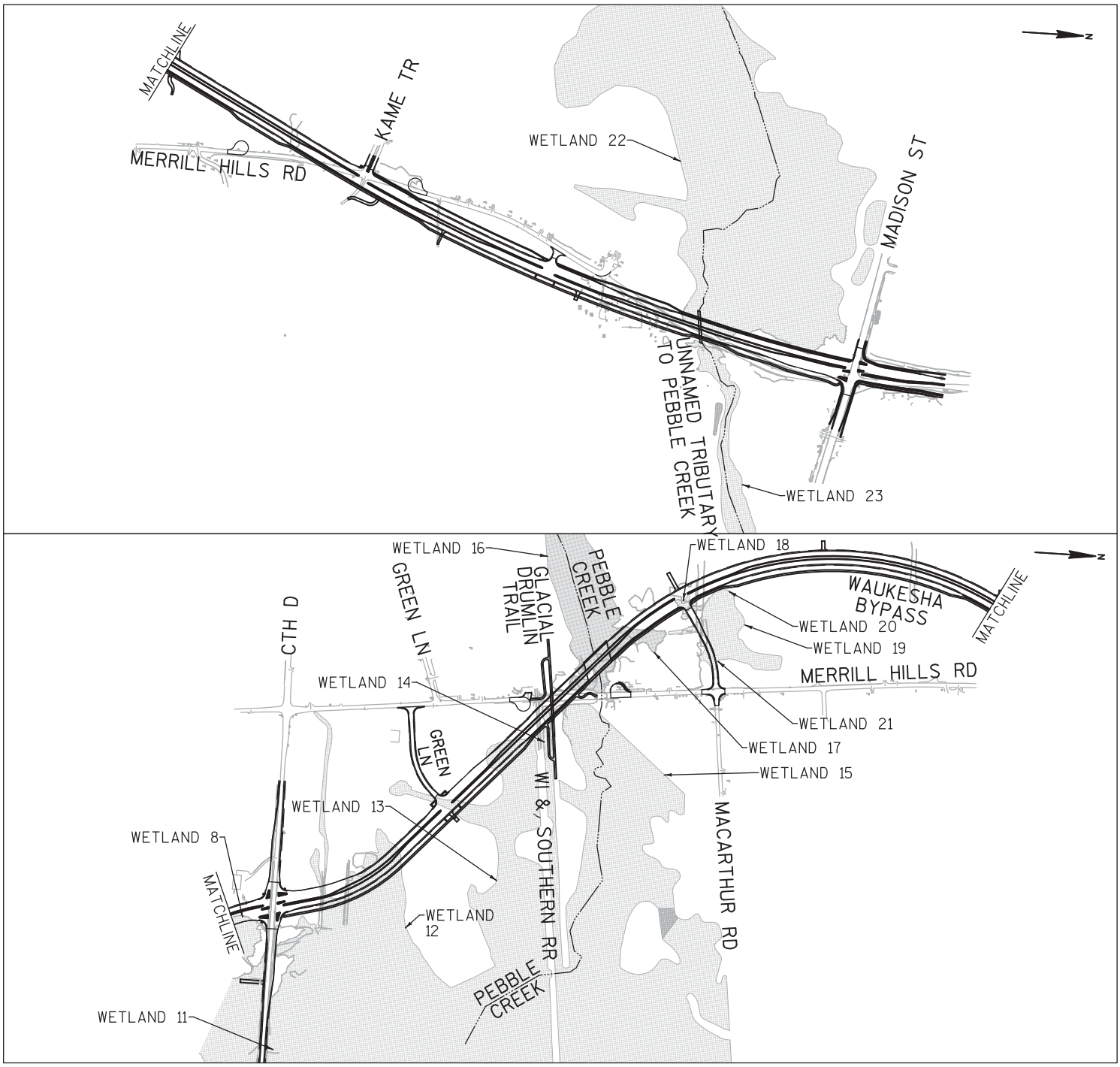
Appendix A3-2

Waukesha County Segment: Northview Road to Summit Avenue

Project Plans/Wetland Figures

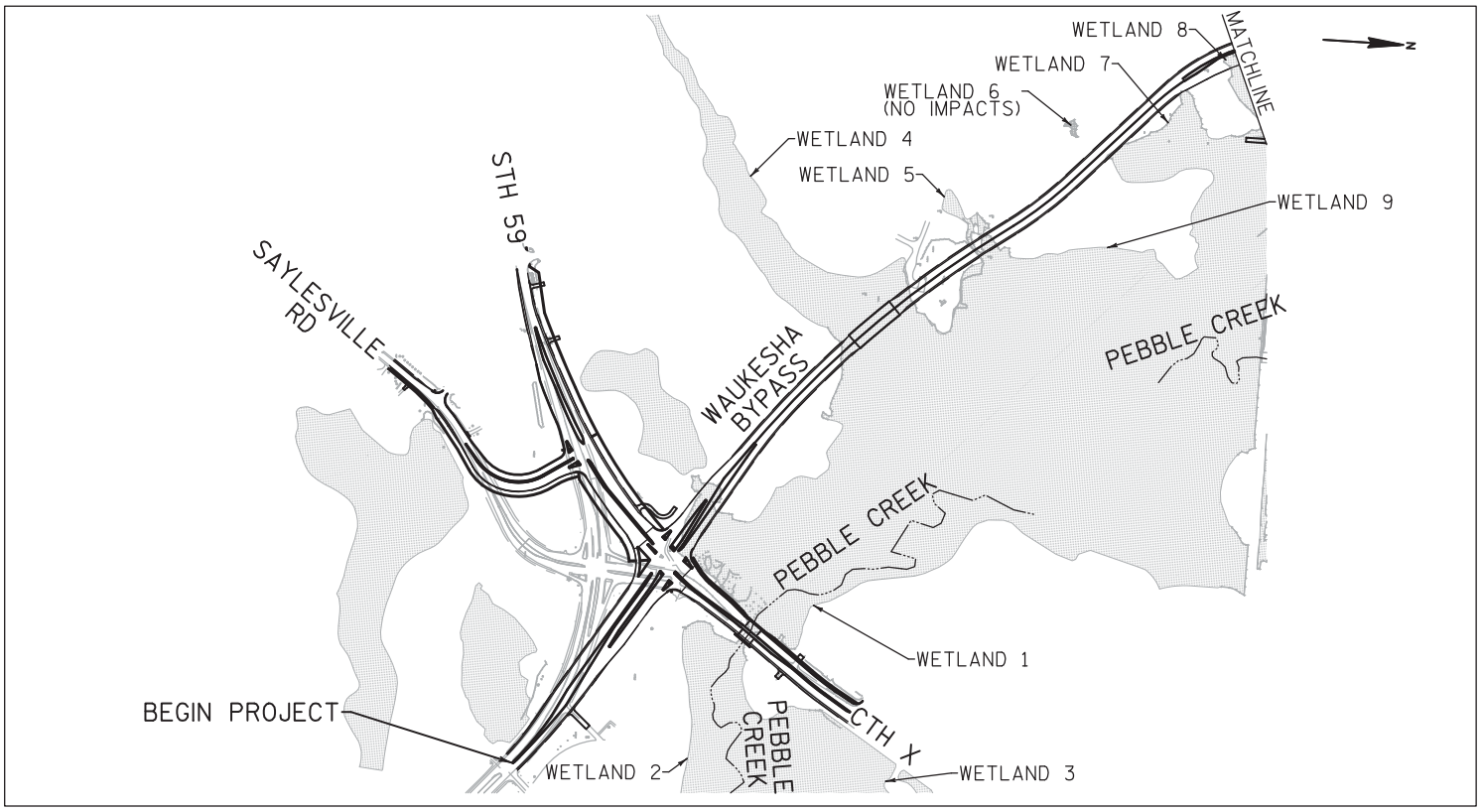
Impact Figure 3

Project ID 2788-00-02 & 2788-02-00



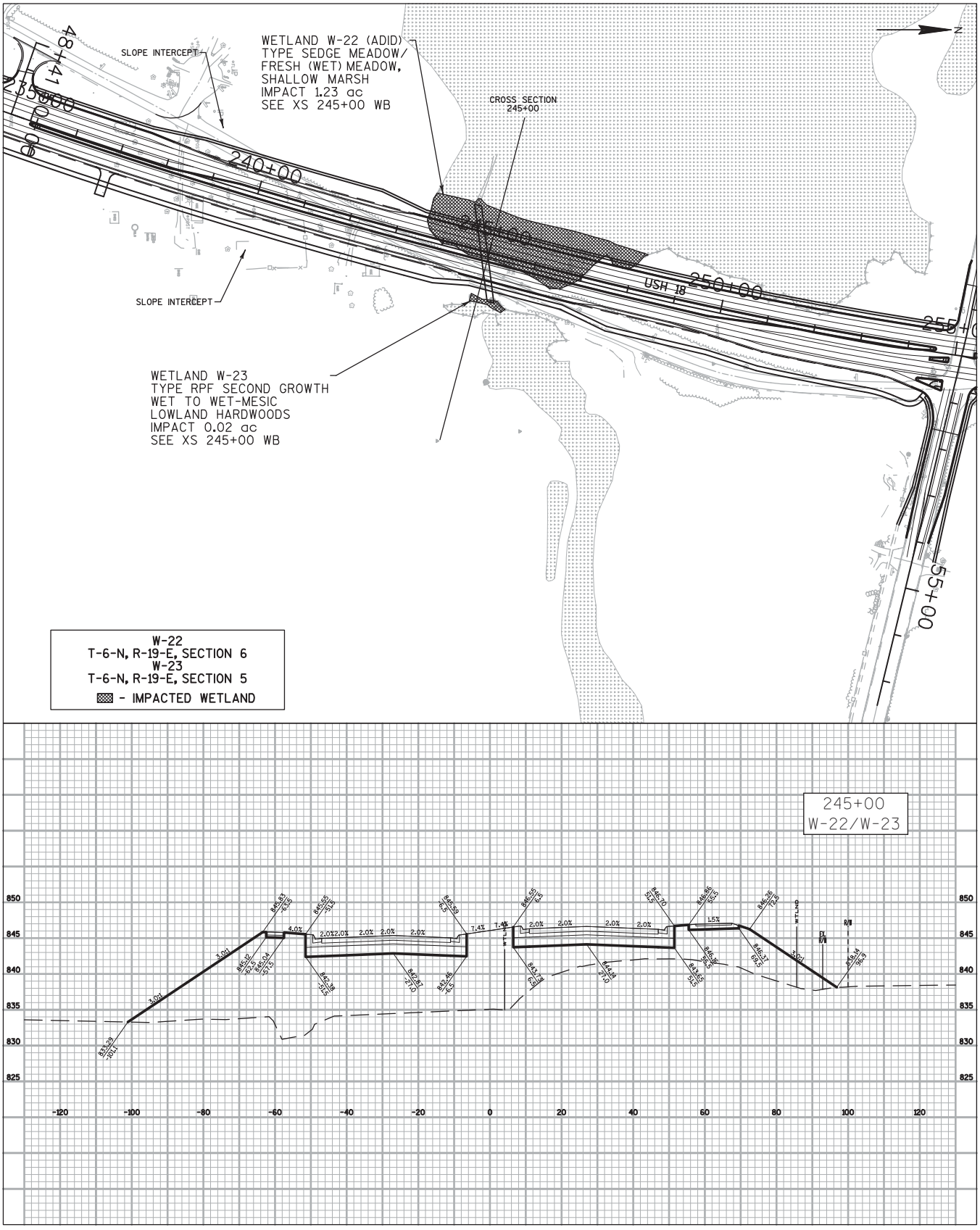
Appendix A4-1

WisDOT Segment: Summit Avenue to WIS 59/County X
Wetland Location Overview Map
Figure 1
Project ID 2788-00-01



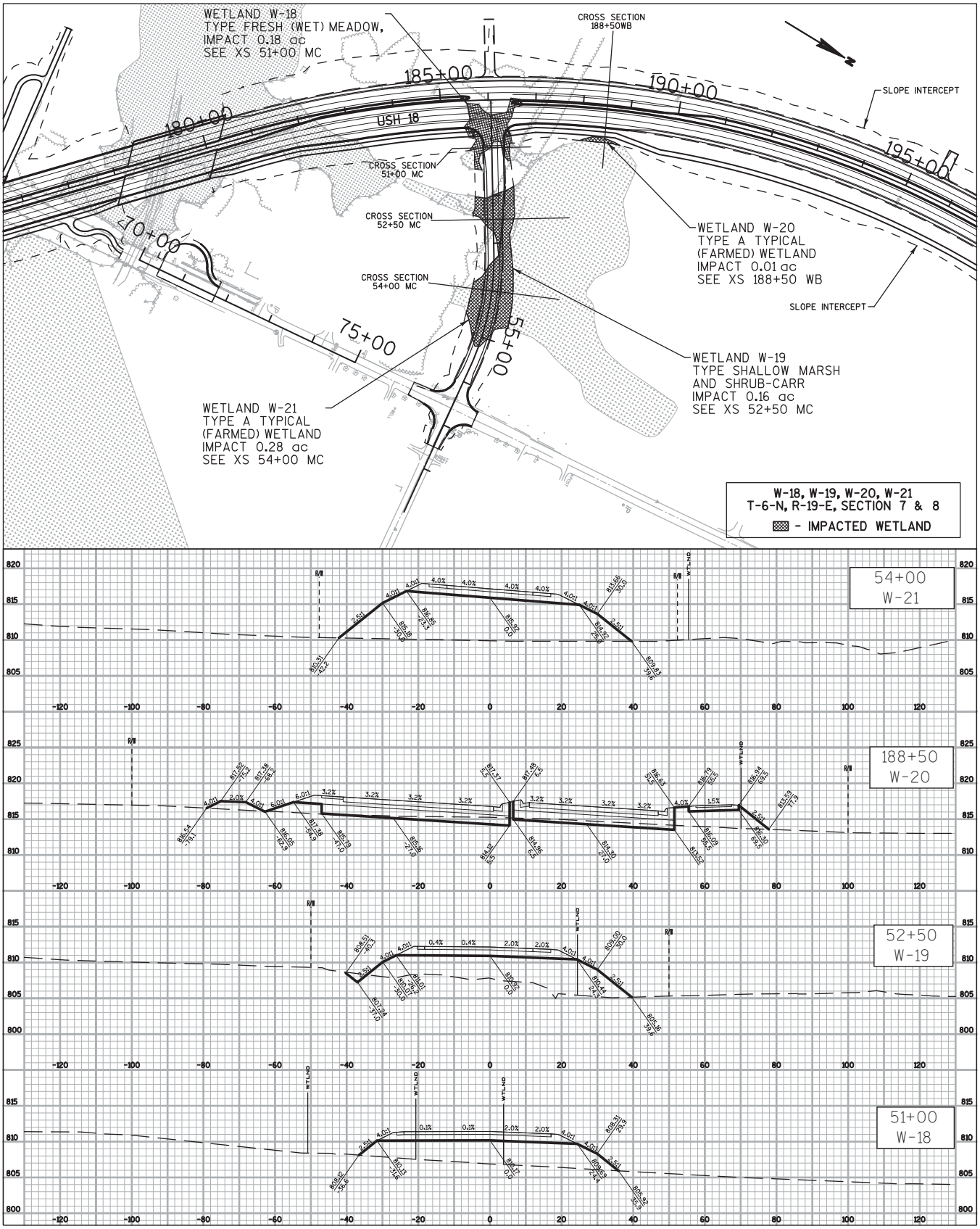
Appendix A4-1

WisDOT Segment: Summit Avenue to WIS 59/County X
Wetland Location Overview Map
Figure 2
Project ID 2788-00-01



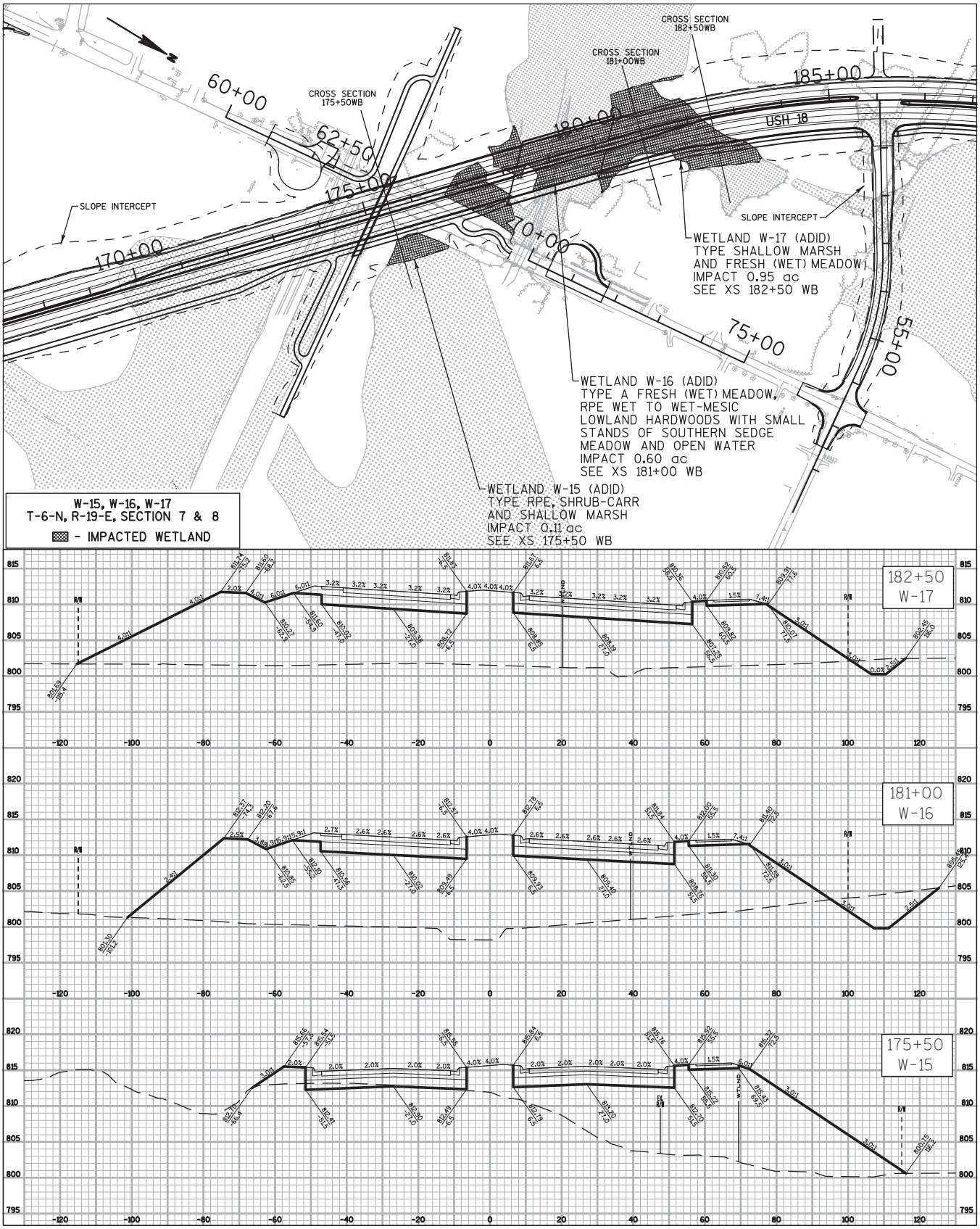
Appendix A4-2

WisDOT Segment: Summit Avenue to WIS 59/County X
Project Plans/Wetland Figures
Impact Figure 1
Project ID 2788-00-01



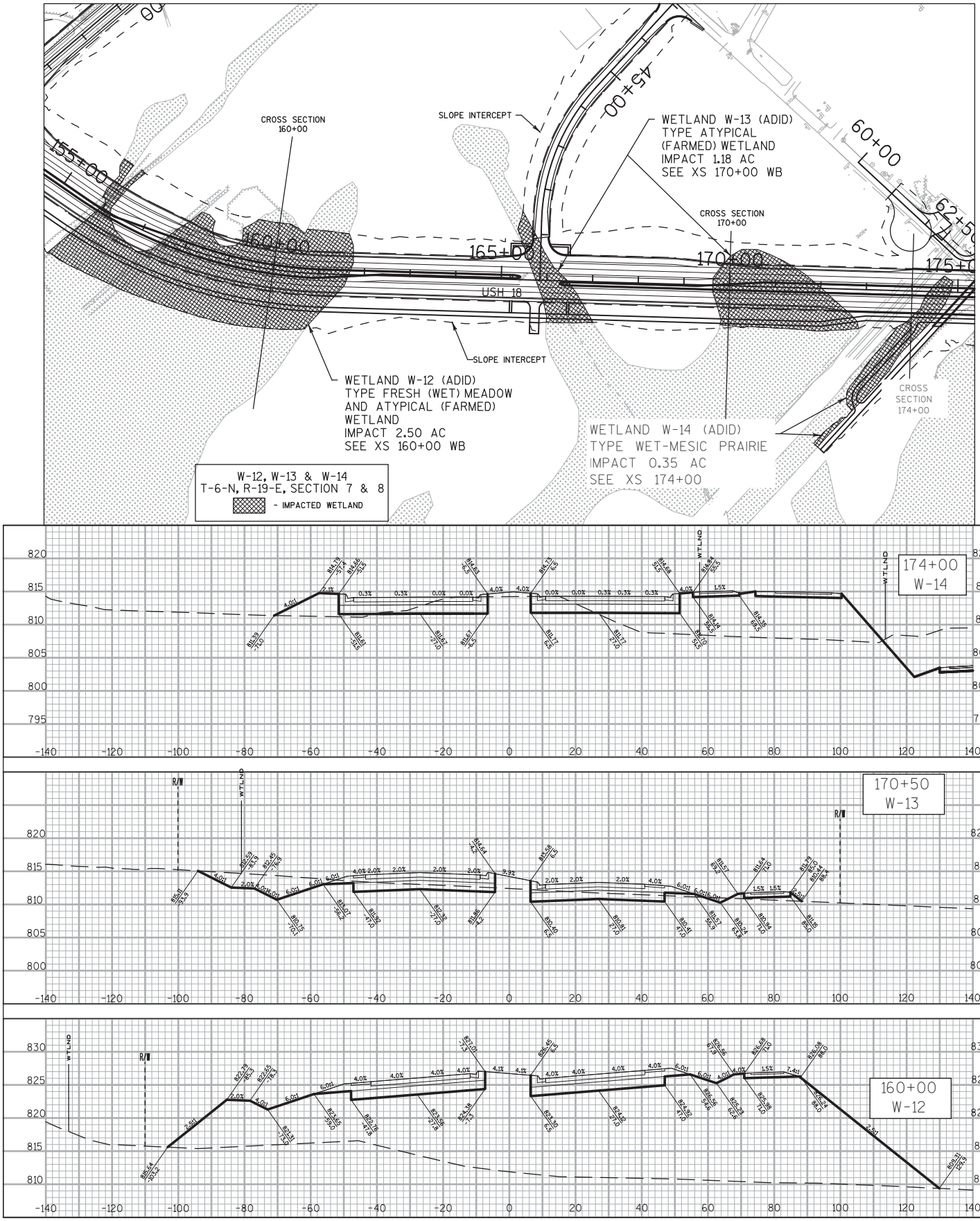
Appendix A4-2

WisDOT Segment: Summit Avenue to WIS 59/County X
Project Plans/Wetland Figures
Impact Figure 2
Project ID 2788-00-01



Appendix A4-2

WisDOT Segment: Summit Avenue to WIS 59/County X
Project Plans/Wetland Figures
Impact Figure 3
Project ID 2788-00-01



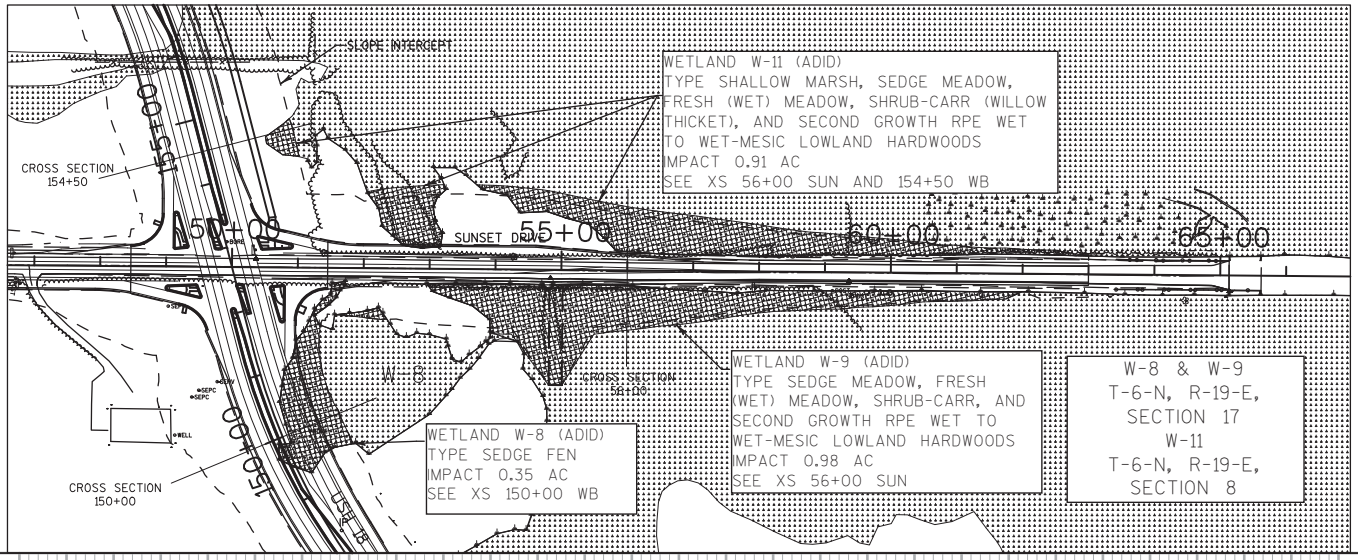
Appendix A4-2

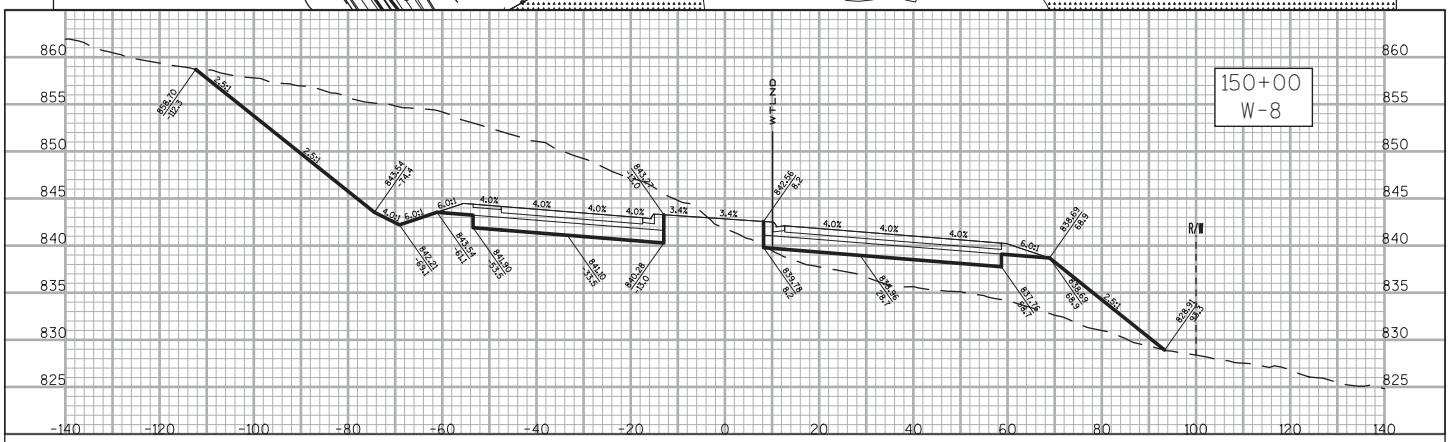
WisDOT Segment: Summit Avenue to WIS 59/County X

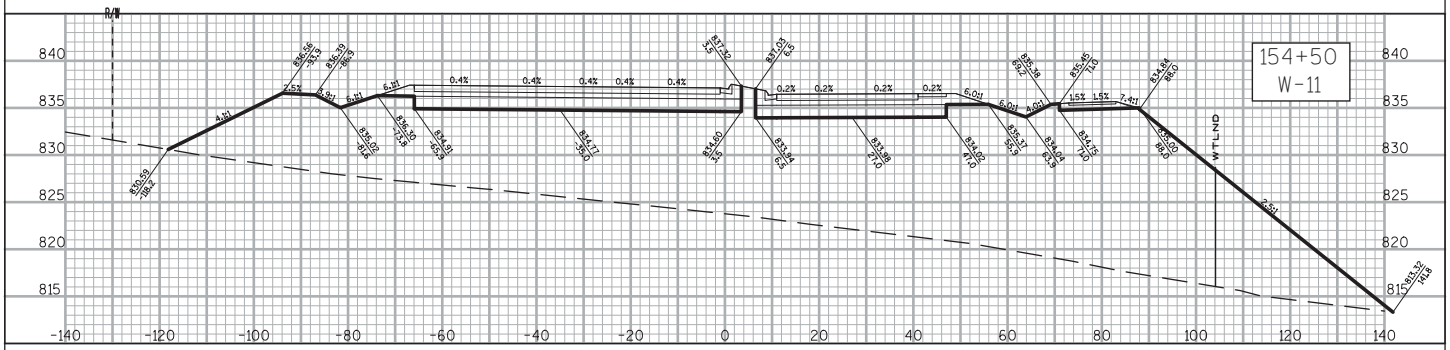
Project Plans/Wetland Figures

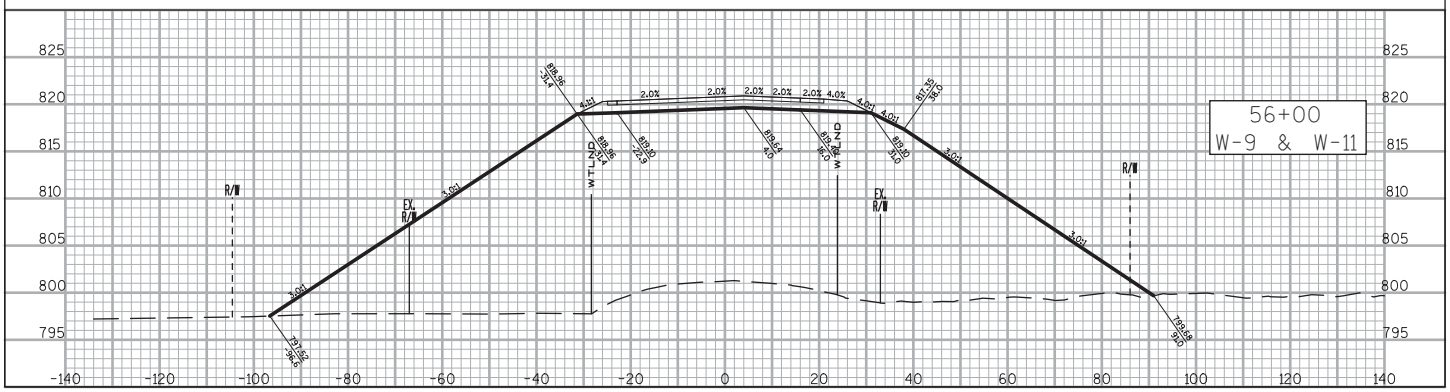
Impact Figure 4

Project ID 2788-00-01



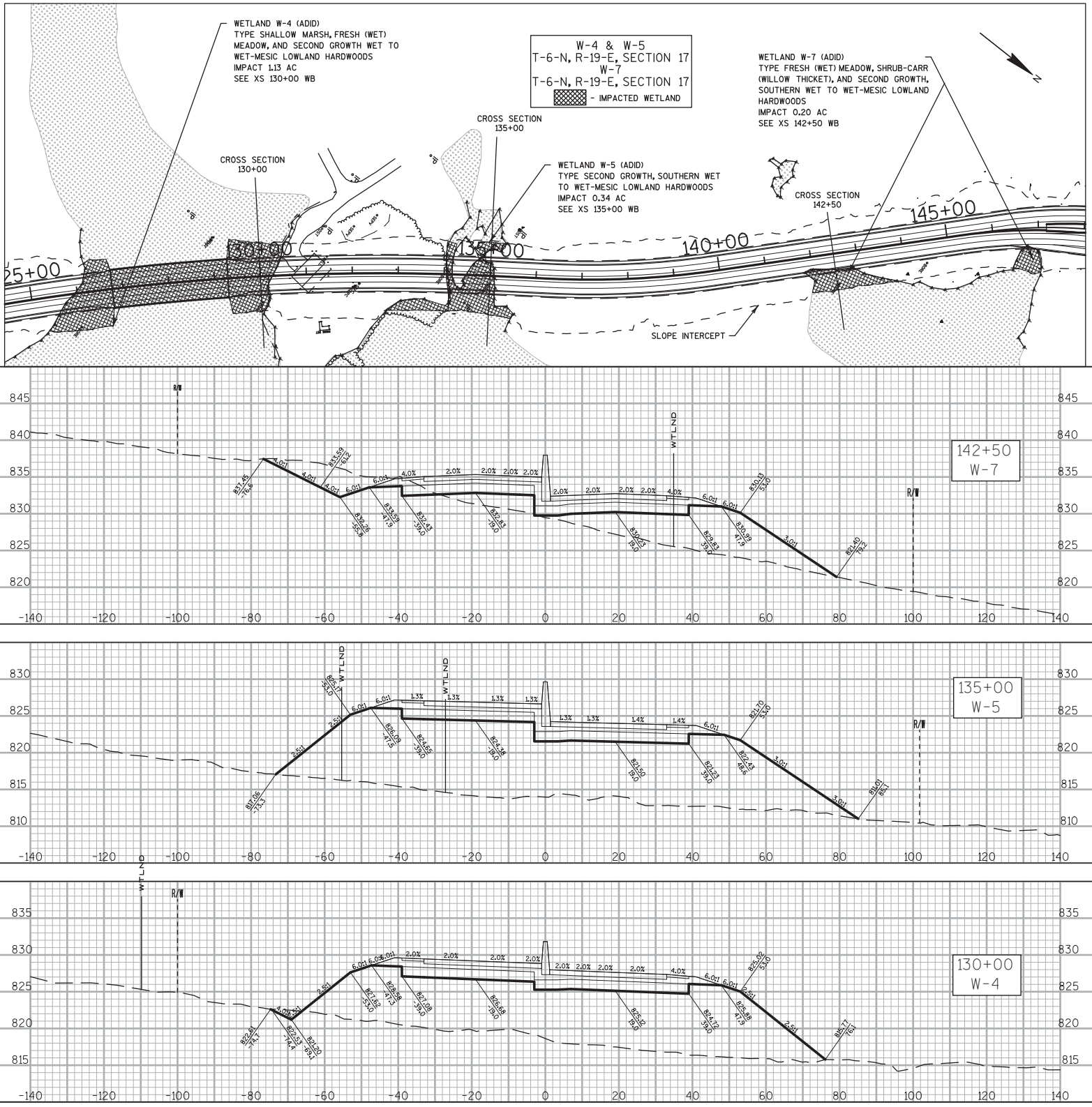






Appendix A4-2

WisDOT Segment: Summit Avenue to WIS 59/County X
Project Plans/Wetland Figures
Impact Figure 5
Project ID 2788-00-01



Appendix A4-2

WisDOT Segment: Summit Avenue to WIS 59/County X
Project Plans/Wetland Figures
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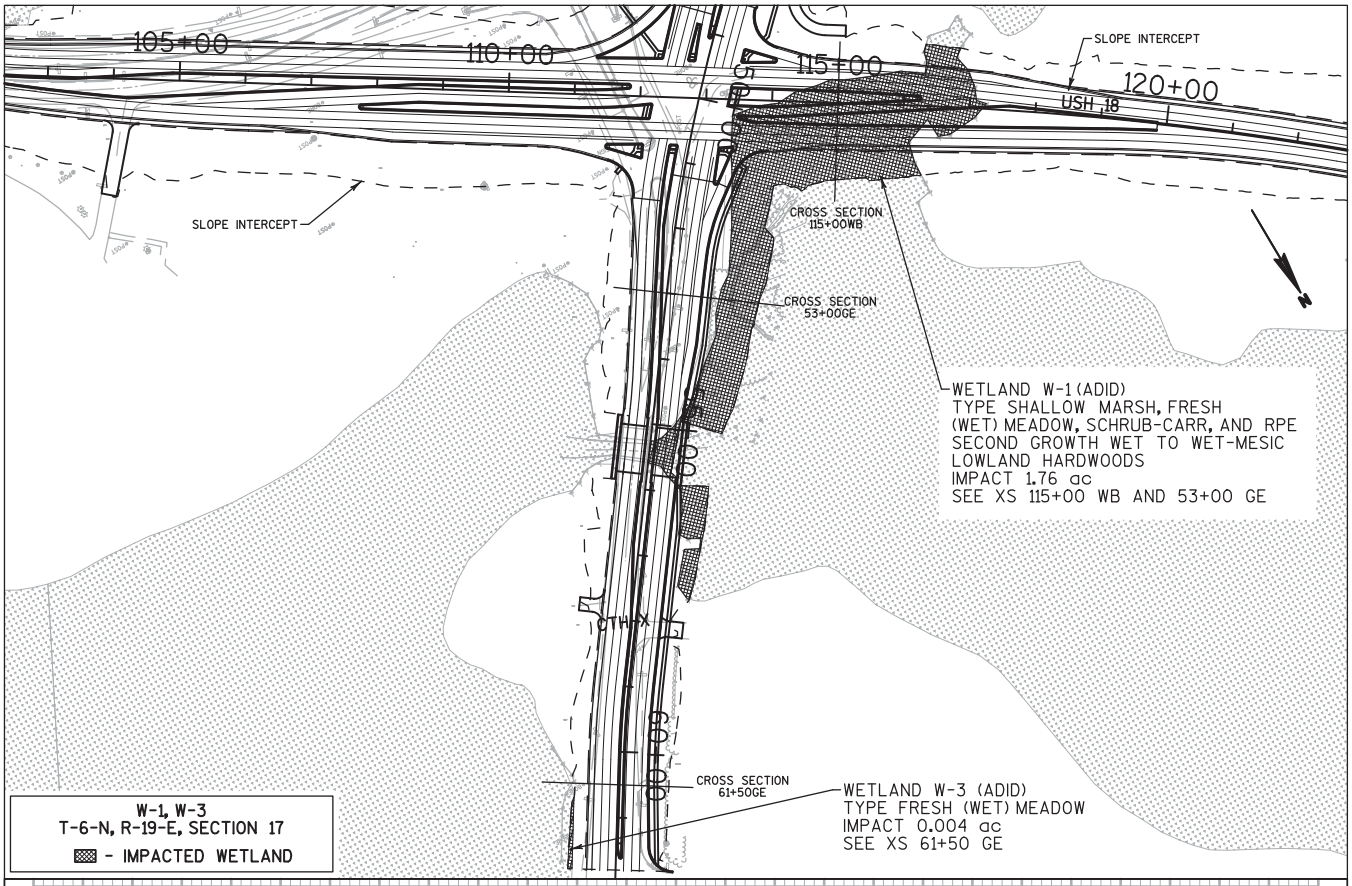
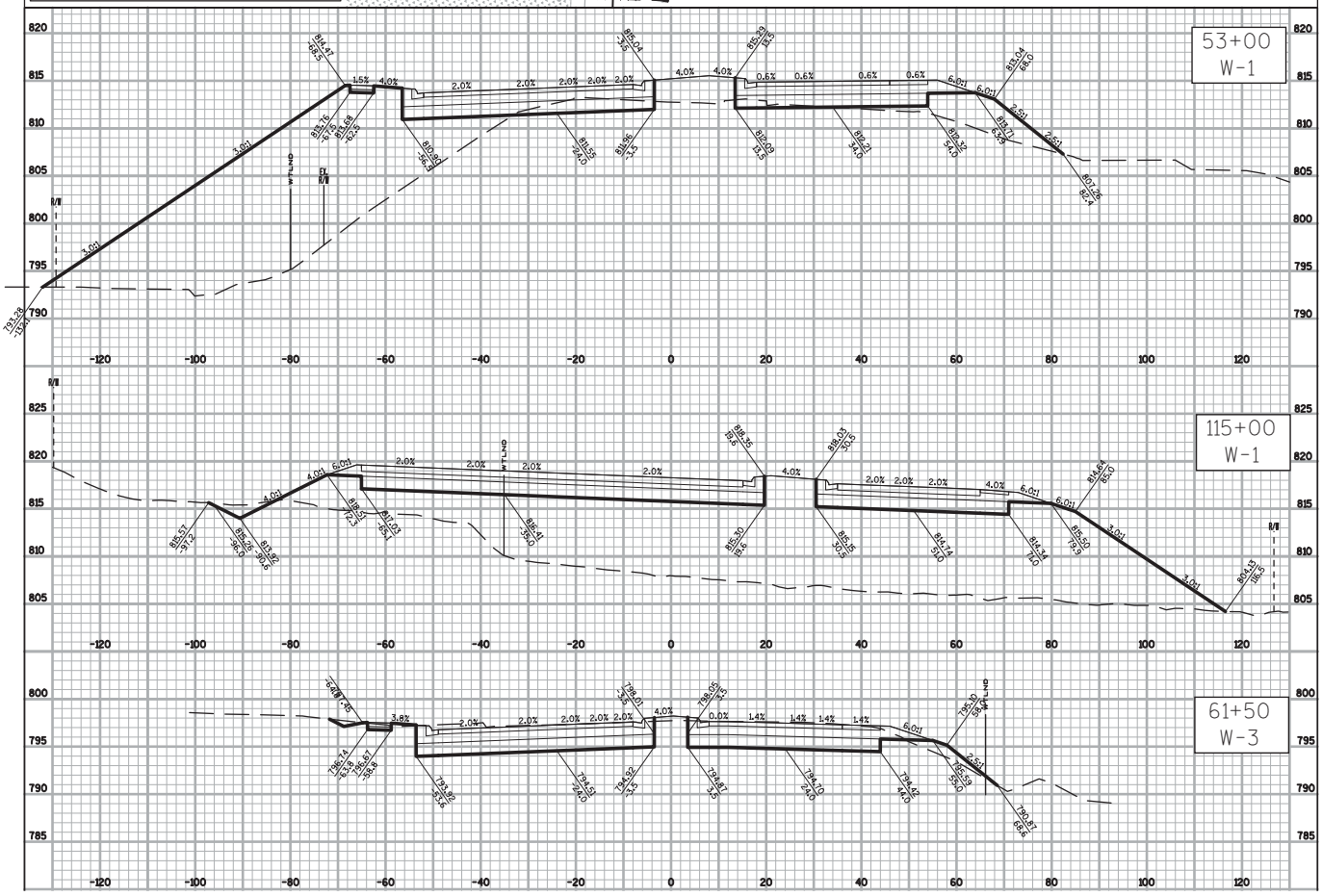
Project ID 2788-00-01





Appendix A4-2

WisDOT Segment: Summit Avenue to WIS 59/County X
Project Plans/Wetland Figures
Impact Figure 7
Project ID 2788-00-01

FHWA-WISC-EIS-12-01-D

PROJECT I.D. 2788-01-00
WEST WAUKESHA BYPASS
COUNTY TT
I-94 TO WIS 59

WAUKESHA COUNTY, WISCONSIN

DRAFT ENVIRONMENTAL IMPACT STATEMENT

and Section 4(f) and Section 6(f) Evaluation

Submitted Pursuant to 42 U.S.C. 4332(2)(c) and 49 U.S.C. 303
by the

U.S. Department of Transportation, Federal Highway Administration,
State of Wisconsin Department of Transportation,
and the Waukesha County Department of Public Works

Cooperating Agency

U.S. Army Corps of Engineers
Wisconsin Department of Natural Resources (pursuant to 23 U.S.C. 139)

APPROVALS

10/19/2012 — For Federal Highway Administration
Date

10-16-2012 — For Wisconsin Department of Transportation
Date

CONTACTS FOR ADDITIONAL INFORMATION ABOUT THIS DOCUMENT

George Poirier
Federal Highway Administration
525 Junction Road, Suite 8000
Madison, WI 53717
Phone: 608-829-7500

Rebecca Burkel
WisDOT Bureau of Technical Services
P.O. Box 7965
Madison, WI 53707-7965
Phone: 608-516-6336

ABSTRACT

The study area includes County TT from I-94 on the north to WIS 59 on the south, a distance of about 5 miles. For decades this corridor has been the planned route for the last leg of a circumferential bypass around Waukesha. This corridor has safety issues, and design deficiencies including narrow lanes, lack of shoulders, and sharp curves and steep hills. As time passes and traffic increases, safety and operations on this corridor will continue to deteriorate. Traffic volumes are forecast to increase 17 to 56 percent by 2035. The Environmental Impact Statement evaluates the social, environmental, and economic impacts of the No-Build Alternative and a range of Build Alternatives, as well as the extent to which these alternatives address the project's purpose and need.

Comments on this Draft EIS are due by December 10, 2012 or 45 days after the Notice of Availability is published in the Federal Register, whichever is later, and should be sent to:

Gary Evans
Waukesha County Dept. of Public Works
515 W. Moreland Blvd.
Waukesha, WI 53188
westbypass@waukeshacounty.gov

FHWA-WISC-EIS-12-01-F

PROJECT I.D. 2788-01-00
WEST WAUKESHA BYPASS
COUNTY TT
I-94 TO WIS 59

WAUKESHA COUNTY, WISCONSIN

FINAL ENVIRONMENTAL IMPACT STATEMENT

and Section 4(f) and Section 6(f) Evaluation

Submitted Pursuant to 42 U.S.C. 4332(2)(c) and 49 U.S.C. 303
by the

U.S. Department of Transportation, Federal Highway Administration,
State of Wisconsin Department of Transportation,
and the Waukesha County Department of Public Works

Cooperating Agency

U.S. Army Corps of Engineers
Wisconsin Department of Natural Resources (pursuant to 23 U.S.C. 139)

APPROVALS

09/11/14 _____
Date For Federal Highway Administration

09/11/14 _____
Date For Wisconsin Department of Transportation

CONTACTS FOR ADDITIONAL INFORMATION ABOUT THIS DOCUMENT

George Poirier
Federal Highway Administration
525 Junction Road, Suite 8000
Madison, WI 53717
Phone: 608-829-7500

Rebecca Burkel
WisDOT Bureau of Technical Services
P.O. Box 7965
Madison, WI 53707-7965
Phone: 608-516-6336

Gary Evans
Waukesha County Dept. of
Public Works
515 W. Moreland Blvd.
Waukesha, WI 53188

ABSTRACT

The study area includes County TT from I-94 on the north to WIS 59 on the south, a distance of about 5 miles. For decades this corridor has been the planned route for the last leg of a circumferential bypass around Waukesha. This corridor has safety issues, and design deficiencies including narrow lanes, lack of shoulders, and sharp curves and steep hills. As time passes and traffic increases, safety and operations on this corridor will continue to deteriorate. Traffic volumes are forecast to increase 17 to 56 percent by 2035. The Draft Environmental Impact Statement (EIS) was approved on October 19, 2012. The Draft EIS evaluates the social, environmental, and economic impacts of the No-Build Alternative and a range of Build Alternatives, as well as the extent to which these alternatives address the project's purpose and need. This Final EIS documents the input received on the Draft EIS and identifies the preferred alternative.

Conclusion

Based on the analysis and evaluation documented in the EIS, and after careful consideration of all social, economic, and environmental factors, including comments received on the EIS, it is FHWA's decision to adopt the Selected Alternative contained therein as the proposed action for this project.

1-20-2015

George R. Poirier, P.E.
Division Administrator
Federal Highway Administration, Wisconsin Division

Date

E-mail from USDA/NRCS indicating no further action needed for compliance with Farmland Protection Policy Act (FPPA)

From: Turk, Jesse - Stevens Point, WI [Jesse.Turk@wi.usda.gov]
Sent: Friday, May 06, 2011 8:40 AM
To: Dupies, Dan/MKE; Wacker, Carl - Madison, WI
Subject: RE:

Dan,

Thank you for allowing NRCS to review the proposed project. After a brief review, I've determined that the site would not be considered farmland, since under the definition of farmland in the FPPA, Farmland does not include land committed to urban development and land committed to urban development includes land that would receive a score of 160 or less. I briefly estimated the score of this site and determined that it would be below 160. So, no need for further compliance.

While zoning in itself is not an outright exemption to the act, Most sites that are zoned residential would receive a low site score that would therefore lead to the determination that the site is committed to urban development.

If you have any questions, please don't hesitate to contact me!

Jesse.
(715)-343-6200.

From: Dan.Dupies@ch2m.com [mailto:Dan.Dupies@ch2m.com]
Sent: Thursday, May 05, 2011 3:32 PM
To: Wacker, Carl - Madison, WI
Cc: Turk, Jesse - Stevens Point, WI
Subject:

Carl, thanks for taking the time to briefly discuss the West Waukesha Bypass with me and the need to complete the 1006 form for the project. The alternative pdf shows the current alignments under consideration. The project is located on the west side of Waukesha in a fairly suburban area. There clearly is, however; agricultural land adjacent to County TT that would be affected by the project. I have also attached the Town of Waukesha's zoning map which shows the remaining farm properties zoned R-1 residential. After reviewing this information, I am interested in your views on whether completing the 1006 form is still necessary. Thanks in advance for your assistance. Please ring me at 414-847-0206 with any questions. dd

State of Wisconsin
Governor Scott Walker

Department of Agriculture, Trade and Consumer Protection
Ben Brancel, Secretary

May 9, 2011

Mr. Ben Goldsworthy
CH2M Hill
135 South 84th Street
Suite 400
Milwaukee, WI 53214

Dear Mr. Goldsworthy:

Re: Project ID#: 2788-01-00
West Waukesha Bypass Study
Waukesha County

The Department has received the notification you submitted concerning the potential need for an agricultural impact statement (AIS) for the above project. Based upon the information received, it appears that an AIS is required for this project.

The Department is reviewing the project to determine what, if any, additional information is needed to prepare the AIS. If no additional information is necessary, you will receive written notification that the AIS is being prepared. The AIS will be completed within **60 days of the date of that notification**.

Upon completion of the AIS, the Department will charge a fee to cover preparation costs as stipulated in §32.035, *Wisconsin Statutes*. The potential condemnor may not negotiate with or make a jurisdictional offer to any landowner until 30 days after the AIS has been published. Please contact me if you have questions concerning the AIS.

Sincerely,

Peter Nauth

Peter Nauth
Agricultural Impact Program
608/224-4650

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutcheon, Regional Director

Southeast Region Headquarters
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee, Wisconsin 53212-3128
FAX 414-263-8606
Telephone 414-263-8500
TTY Access via relay - 711

May 4, 2010

Ben Goldsworthy
CH2M HILL
135 South 84th Street, Suite 325
Milwaukee, WI 53214

Subject: West Waukesha Bypass Study - State listed special concern, threatened and endangered species
WisDOT# 2788-01-00
Waukesha County

Dear Mr. Goldsworthy:

The Department of Natural Resources has done a preliminary look up of the Natural Heritage Inventory (NHI). This correspondence is only a review of state listed species and should not be considered an initial review of the project or the study area. Our review of the NHI included the following sections, per your request:

T6N, R18E, Sections [redacted]
T6N, R19E, Sections [redacted]
T7N, R18E, Sections [redacted]
T7N, R19E, Sections [redacted]

Our Natural Heritage Inventory (NHI) data files contain the following rare species occurring within or near the requested areas of study, some in multiple locations:

- *Thamnophis butleri* (Butler's Gartersnake) – Threatened snake
- *Triglochin maritima* (Common Bog Arrow) – Special concern plant
- Mesic Prairie – Natural area of special concern
- *Calylophus serrulatus* (Yellow Evening Primrose) – Special concern plant
- *Cypripedium parviflorum var. makasin* (Northern Yellow Lady's slipper) – Special concern plant
- *Emydoidea blandingii* (Blanding's Turtle) – Threatened turtle
- Southern Dry Forest – Natural Area of special concern
- *Erimyzon sucetta* (Lake Chubsucker) – Special concern fish
- *Alasmidonta marginata* (Elktoe Mussel) – Special concern mussel
- *Alasmidonta viridis* (Slippershell Mussel) – Threatened mussel
- *Aster furcatus* (Forked Aster) – Threatened plant
- *Agrimonia parviflora* (Swamp Agrimony) – Special concern plant
- *Cypripedium candidum* (Small White Lady's slipper) – Threatened plant

Special Concern (Watch) species are species about which some problem of abundance or distribution is suspected but not yet proved. The main purpose of this category is to focus attention on certain species before they become endangered or threatened. Comprehensive endangered resource surveys may not have been completed for this area. As a result, our data files may be incomplete. We will continue to work with you throughout the study to determine impacts and avoidance of sensitive species.

Sincerely,

Maureen Millmann
WDNR Environmental Coordinator

CC: Lisie Kitchel, WDNR Bureau of Endangered Resources
Karla Leithoff, WisDOT Wetland Ecologist

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Scott Walker, Governor
Cathy Stepp, Secretary

101 S. Webster St.
Box 7921
Madison, Wisconsin 53707-7921
Telephone 608-266-2621
FAX 608-267-3579
TTY 608-267-6897

May 12, 2012

Gary Evans
Waukesha County DPW
515 W. Moreland Blvd.
Waukesha, WI 53188

SUBJECT: West Waukesha Bypass Study
Revised state listed endangered species information
WisDOT # 2788-01-00, Waukesha County

Dear Mr. Evans,

The Bureau of Endangered Resources is providing the attached revised list of threatened, endangered and special concern species, as well as high quality natural communities, for the West Waukesha Bypass study area. This revised list is based on information not available in the NHI database at the time of Ms. Millmann's initial letter of 4 May 2010.

The attached information contains the name, status, and most recent observation date of the species. Species known to occur in Pebble Creek are noted. This information is generalized and can be provided in publicly disseminated documents. Specific locational information will be provided separately and should not be shared in public documents.

The occurrence of these species is subject to the presence of suitable habitat for the species within the project impact area. Please be aware that additional species may be found to occur in the project area if additional surveys are conducted.

For additional information on the rare species, high-quality natural communities, and other endangered resources listed above, please visit our species and natural communities website page; http://dnr.wi.gov/org/land/er/biodiversity.

The attached information only addresses endangered resources issues. This ER Review does not constitute DNR authorization of the proposed project and does not exempt the project from securing necessary permits and approvals from the DNR and/or other permitting authorities.

Please contact me at 608-266-5248 or via email at Lisie.Kitchel@wisconsin.gov if you have any questions about this information.

Sincerely,

Lisie Kitchel

Endangered Resources Program

cc: Maureen Millmann – WDNR/Milwaukee
Mike Thompson – WDNR/Milwaukee
Karla Leithoff – WDOT/Waukesha
Dan Dupies – CH2MHill
Charlie Webb – CH2MHill

West Waukesha Bypass Revised list.doc

Waukesha Bypass threatened, endangered and special concern species and high quality communities.

5/12/2012

Scientific Name	Common Name	Status	Last Obs	Group	Site
Birds					
Ammodramus henslowii	Henslow's sparrow	THR	2006-06-04	Bird	
Herptiles					
Thamnophis butleri	Butler's Gartersnake	THR	2010-06-10	Snake	Pebble Creek
Emydoidea blandingii	Blanding's Turtle	THR	1993-05	Turtle	Pebble Creek
Fish					
Lepomis megalotis	Longear sunfish	THR	2006-08-06	Fish	Pebble Creek
Notropis texanus	Weed Shiner	SC/N	2006-08-06	Fish	Pebble Creek
Invertebrates					
Venustachonca eliipsiformis	Ellipse	THR	2007-08-15	Mussel	Pebble Creek
Alasmidonta viridis	Slippershell	THR	2007-08-15	Mussel	Pebble Creek
Procambarus gracilis	Prairie crayfish	SC	2006-08-06	Crayfish	
Lycaena dione	Great copper	SC	2006-06-04	Invertebrate	
Aeshna clepsydra	Mottled darner	SC	2006-06-04	Invertebrate	
Plants					
Agrimonia parviflora	Swamp Agrimony	SC	1999-05-03	Plant	
Asclepias purpurascens	Purple milkweed	END	2006-06-04	Plant	
Besseya bullii	Kitten Tails	THR	1997-06-04	Plant	
Cacalia tuberosa	Prairie Indian plantain	THR	2006-06-04	Plant	
Camassia scilloides	Wild hyacinth	END	2006-06-04	Plant	
Calylophus serrulatus	Yellow Evening Primrose	SC	2002-07-26	Plant	
Carex lupuliformis	False hop sedge	END	2006-06-04	Plant	
Cypripedium candidum	Small White Lady's-slipper	THR	1994-05-20	Plant	
Eleocharis rostellata	Beaked spikerush	THR	2006-06-04	Plant	
Equisetum palustre	Marsh horsetail	SC	2006-06-04	Plant	
Gentiana alba	Yellow gentian	THR	2006-06-04	Plant	
Gymnocladus diocus	Kentucky coffee-tree	SC	2006-06-04	Plant	
Houstonia caerulea	Innocence	SC	2006-06-04	Plant	
Liatris spicata	Marsh blazing star	SC	2006-06-04	Plant	
Penstemon hirsutus	Hairy beardtongue	SC	2006-06-04	Plant	
Plantanthera hookeri	Hooker orchis	SC	2006-06-04	Plant	
Plantanthera leucophaea	Prairie White-Fringed Orchid	END	2006-06-04	Plant	
Prenanthes aspera	Rough Rattlesnake-root	END	2006-06-04	Plant	
Ptelea trifoliata	Wafer-ash	SC	2006-06-04	Plant	
Ranunculus cymbalaria	Seaside crowfoot	THR	2006-06-04	Plant	
Ruellia humilis	Hairy wild-petunia	END	2006-06-04	Plant	
Scirpus cespitosus	Tufted club-rush	THR	2006-06-04	Plant	
Scleria verticillata	Low nutruch	SC	2006-06-04	Plant	
Scutellaria ovata	Heart-leaved skullcap	SC	2006-06-04	Plant	
Thalictrum revolutum	Waxleaf meadowrue	SC	2006-06-04	Plant	
Thaspium trifoliatum var. *flavum*	Purple Meadow-parsnip	SC	1999-05-30	Plant	
Tofieldia glutinosa	Sticky false-asphodel	THR	2006-06-04	Plant	
Natural Communities					
Southern dry forest	Southern Dry Forest	NC	1992-04-30	Community	
Mesic prairie	Mesic Prairie	NC	2002-07-26	Community	Pebble Creek Railroad Prairie

Note: In a follow up e-mail (6/21/12), DNR noted that the Forked aster (Aster furcatus), a threatened plant, was inadvertently left off the above list. This species is potentially present in the West Waukesha Bypass study area and is therefore included in the EIS discussion on state-listed threatened and endangered species.

Signed Section 106 review form indicating SHPO concurrence in archaeological survey report and eligibility of Ward Farmstead to National Register of Historic Places

SECTION 106 REVIEW
ARCHAEOLOGICAL/HISTORICAL INFORMATION

SHPO

Wisconsin Department of Transportation
DT1635 11/2006

For instructions, see FDM Chapter 26

I. PROJECT INFORMATION

Project ID 2788-01-00	Highway - Street West Waukesha Bypass (CTH TT)	County Waukesha
Project Termini I94/CTH TT interchange on the north to WIS 59/CTH X intersection on the south		Region - Office SE Region (Waukesha)
Regional Project Engineer - Project Manager Doug Cain Wisconsin Department of Transportation	RECEIVED	Area Code - Telephone Number (262) 548-5603
Consultant Project Engineer - Project Manager Charlie Webb/CH2M HILL	MAY 20 2011	Area Code - Telephone Number 414-847-0248
Archaeological Consultant David Keene/Archaeoogical Research, Inc		Area Code - Telephone Number 773-975-1753
Architecture/History Consultant Brian Faltinson/Heritage Research, Ltd.	DIV HIST PRES	Area Code - Telephone Number 262-251-7792
Date of Need April 2011		SHSW # 11-0526/WK
Return a signed copy of this form to:		pg 1/3

II. PROJECT DESCRIPTION

Project Length 5.0 - 5.5 miles miles	Land to be Acquired: Fee Simple 80-90 acres	Land to be Acquired: Easement acres

Distance as measured from existing centerline	Existing	Proposed	Other Factors	Existing	Proposed
Right-of-Way Width	varies	100 ft	Terrace Width	varies	24 ft.
Shoulder	varies	10 ft	Sidewalk Width	varies	10 ft.
Slope Intercept	varies	6:1	Number of Lanes	2	4
Edge of Pavement	varies	39 - 47 ft	Grade Separated Crossing	no	potentially
Back of Curb Line		41.5 - 49.5 ft	Vision Triangle acres		
Realignment			Temporary Bypass acres	N/A	N/A
Other - List:			Stream Channel Change	☐ Yes	☒ No
Attach Map(s) that depict "maximum" impacts.	☒ Yes	☐ No	Tree topping and/or grubbing	☒ Yes	☐ No

Brief Narrative Project Description - Include all ground disturbing activities. For archaeology, include plan view map indicating the maximum area of ground disturbance and/or new right-of-way, whichever is greater. Include all temporary, limited and permanent easements.

The proposed action is to develop and evaluate a range of alternatives to complete the last segment of a long planned circumferential bypass around Waukesha. This segment of the project is located between Interstate 94 and WIS 59 on the west side of the City of Waukesha. The alternatives and associated transportation improvements are being studied to address growing local and regional traffic volumes, meet applicable roadway design standards, and enhance safety. Key improvements include a new 4-lane roadway and intersection improvements.

Ground disturbing activities will include clearing and grubbing, grading, shoulders and ditches, and excavation of soils unsuitable for roadway construction.

11-0526/WK
pg 2/3

RECEIVED

MAY 20 2011

DIV HIST PRES

☐ Add continuation sheet, if needed.

III. CONSULTATION

How has notification of the project been provided to:

☒ Property Owners
- ☒ Public Information Meeting Notice
- ☒ Letter - Required for Archaeology
- ☒ Telephone Call
- ☐ Other:

☒ Historical Societies/Organizations
- ☒ Public Information Meeting Notice
- ☒ Letter
- ☒ Telephone Call
- ☐ Other:

☒ Native American Tribes
- ☒ Public Info. Mtg. Notice
- ☒ Letter
- ☐ Telephone Call
- ☐ Other:

*Attach one copy of the base letter, list of addresses and comments received. For history include telephone memos as appropriate.

IV. AREA OF POTENTIAL EFFECTS - APE

ARCHAEOLOGY: Area of potential effect for archaeology is the existing and proposed ROW, temporary and permanent easements. Agricultural practices do not constitute a ground disturbance exemption.

HISTORY: Describe the area of potential effects for buildings/structures.

The Area of Potential Effects (APE) is all propertis adjacent to CTH TT between CTH D and I-94, as well as all properties adjacent to off current alignment portions of the proposed bypass.

V. PHASE I ARCHEOLOGICAL OR RECONNAISSANCE HISTORY SURVEY NEEDED

ARCHAEOLOGY	HISTORY
☒ Archaeological survey **is needed**	☒ Architecture/History survey **is needed**
☐ Archaeological survey **is not needed** - Provide justification ☐ Screening list (date).	☐ Architecture/History survey **is not needed** ☐ No structures or buildings of any kind within APE ☐ Screening list (date).

VI. SURVEY COMPLETED

ARCHAEOLOGY	HISTORY
☐ **NO** archaeological sites(s) identified - ASFR attached	☐ **NO** buildings/structures identified - A/HSF attached
☒ **NO** potentially eligible site(s) in project area - Phase I Report attached	☒ Potentially eligible buildings/structures identified in the APE - A/HSF attached
☐ Potentially eligible site(s) identified-Phase I Report attached ☐ Avoided through redesign ☐ Phase II conducted – go to VII (Evaluation).	☐ Potentially eligible buildings/structures avoided – documentation attached
☐ Phase I Report attached - Cemetery/cataloged burial documentation	

VII. DETERMINATION OF ELIGIBILITY (EVALUATION) COMPLETED

☒ No arch site(s) eligible for NRHP - Phase II Report attached	☐ No buildings/structure(s) eligible for NRHP - DOE attached
☐ Arch site(s) eligible for NRHP - Phase II Report attached	☒ Building/structure(s) eligible for NRHP - DOE attached
☐ Site(s) eligible for NRHP - DOE attached	

VIII. COMMITMENTS/SPECIAL PROVISIONS – must be included with special provisions language

IX. PROJECT DECISION

☐ No historic properties (historical or archaeological) in the APE.
☐ No historic properties (historical or archaeological) affected.
☒ Historic properties (historical and/or archaeological) may be affected by project;
- ☒ Go to Step 4: Assess affects and begin consultation on affects
- ☐ Documentation for Determination of No Adverse Effects is included with this form. WIDOT has concluded that this project will have No Adverse Effect on historic properties. Signature by SHPO below indicates SHPO concurrence in the DNAE and concludes the Section 106 Review process for this project.

Douglas A Cate
(Regional Project Manager)

4/26/11
(Date)

(Consultant Project Manager)

4/20/11
(Date)

(VDOT Historic Preservation Officer)

5/18/11
(Date)

(State Historic Preservation Officer)

6-8-2011
(Date)

11-0526/WK

pg 3/3

RECEIVED

MAY 20 2011

DIV HIST PRES

(DOE March 2011)

Wisconsin Historical Society
Determination of Eligibility Form

RECEIVED
MAY 20 2011
DIV HIST PRES

WisDOT Project ID #: 2788-01-00

WHS #: 11-0526/WK

Property Name(s): Ward Brown Farmstead

Address/Location: W272 S2137 County Highway TT/Merrill Hills Rd

City & County: Town of Waukesha **Zip Code:** 53188

Town: 6N **Range:** 19E **Section:** 6

Date of Construction: 1963-1964

WisDOT Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this request for Determination of Eligibility:

☒ Meets the National Register of Historic Places criteria.
☐ Does not meet the National Register of Historic Places criteria.

5/18/11

Rebecca Burkel, WisDOT Historic Preservation Officer **Date**

State Historic Preservation Office

In my opinion, the property:

X Meets the National Register of Historic Places criteria.
___ Does not meet the National Register of Historic Places criteria.

June 8, 2011

Michael E. Stevens, State Historic Preservation Officer **Date**

Comments (FOR AGENCY USE ONLY):
SHPO comment: The accompanying farm buildings define the context for which the house was built, provide setting. All associated farm buildings are contributing except garage, which is non-contributing.

Division of Historic Preservation
Wisconsin Historical Society
816 State Street
Madison, WI 53706

Signed amended Section 106 review form indicating SHPO concurrence in elibitility of Smirl and Ledward residences to National Register of Historic Places

Amended

SECTION 106 REVIEW
ARCHAEOLOGICAL/HISTORICAL INFORMATION

Wisconsin Department of Transportation
DT1635 11/2006

SHPO RECEIVED
MAY 02 2012
DIV HIST PRES

For instructions, see FDM Chapter 26

I. PROJECT INFORMATION

Project ID	Highway - Street	County
2788-01-00 4 DE THIS IS AN UPDATED SUBMITTAL WITH ~~THREE~~ NEW DOEs FOR AN ALTERNATIVE PREVIOUSLY DISMISSED FROM CONSIDERATION	West Waukesha Bypass (CTH TT)	Waukesha
Project Termini I94/CTH TT interchange on the north to WIS 59/CTH X intersection on the south		Region - Office SE Region (Waukesha)
Regional Project Engineer - Project Manager Doug Cain Wisconsin Department of Transportation		Area Code - Telephone Number (262) 548-5603
Consultant Project Engineer - Project Manager Charlie Webb/CH2M HILL		Area Code - Telephone Number 414-847-0248
Archaeological Consultant David Keene/Archaeoogical Research, Inc		Area Code - Telephone Number 773-975-1753
Architecture/History Consultant Brian Faltinson/Heritage Research, Ltd.		Area Code - Telephone Number 262-251-7792
Date of Need April 2012		SHSW # 11-0526/WK
Return a signed copy of this form to:		

II. PROJECT DESCRIPTION

Project Length	Land to be Acquired: Fee Simple	Land to be Acquired: Easement
5.0 - 5.5 miles miles	80-90 acres	acres

Distance as measured from existing centerline	Existing	Proposed	Other Factors	Existing	Proposed
Right-of-Way Width	varies	100 ft	Terrace Width	varies	24 ft.
Shoulder	varies	10 ft	Sidewalk Width	varies	10 ft.
Slope Intercept	varies	6:1	Number of Lanes	2	4
Edge of Pavement	varies	39 - 47 ft	Grade Separated Crossing	no	potentially
Back of Curb Line		41.5 - 49.5 ft	Vision Triangle acres		
Realignment			Temporary Bypass acres	N/A	N/A
Other - List:			Stream Channel Change	☐ Yes	☒ No
Attach Map(s) that depict "maximum" impacts.	☒ Yes	☐ No	Tree topping and/or grubbing	☒ Yes	☐ No

Brief Narrative Project Description - Include all ground disturbing activities. For archaeology, include plan view map indicating the maximum area of ground disturbance and/or new right-of-way, whichever is greater. Include all temporary, limited and permanent easements.

The proposed action is to develop and evaluate a range of alternatives to complete the last segment of a long planned circumferential bypass around Waukesha. This segment of the project is located between Interstate 94 and WIS 59 on the west side of the City of Waukesha. The alternatives and associated transportation improvements are being studied to address growing local and regional traffic volumes, meet applicable roadway design standards, and enhance safety. Key improvements include a new 4-lane roadway and intersection improvements.

Ground disturbing activities will include clearing and grubbing, grading, shoulders and ditches, and excavation of soils unsuitable for roadway construction.

☐ Add continuation sheet, if needed.

III. CONSULTATION

How has notification of the project been provided to:

☒ Property Owners
- ☒ Public Information Meeting Notice
- ☒ Letter - Required for Archaeology
- ☒ Telephone Call
- ☐ Other:

☒ Historical Societies/Organizations
- ☒ Public Information Meeting Notice
- ☒ Letter
- ☒ Telephone Call
- ☐ Other:

☒ Native American Tribes
- ☒ Public Info. Mtg. Notice
- ☒ Letter
- ☐ Telephone Call
- ☐ Other:

*Attach one copy of the base letter, list of addresses and comments received. For history include telephone memos as appropriate.

IV. AREA OF POTENTIAL EFFECTS - APE

ARCHAEOLOGY: Area of potential effect for archaeology is the existing and proposed ROW, temporary and permanent easements. Agricultural practices do not constitute a ground disturbance exemption.

HISTORY: Describe the area of potential effects for buildings/structures.

The Area of Potential Effects (APE) is all propertis adjacent to CTH TT between CTH D and I-94, as well as all properties adjacent to off current alignment portions of the proposed bypass.

V. PHASE I ARCHEOLOGICAL OR RECONNAISSANCE HISTORY SURVEY NEEDED

ARCHAEOLOGY	HISTORY
☐ Archaeological survey **is needed**	☒ Architecture/History survey **is needed**
☒ Archaeological survey **is not needed** - Provide justification ☐ Screening list (date). *See attached AR1 4/19/12 letter	☐ Architecture/History survey **is not needed** ☐ No structures or buildings of any kind within APE ☐ Screening list (date).

VI. SURVEY COMPLETED

ARCHAEOLOGY	HISTORY
☐ **NO** archaeological sites(s) identified - ASFR attached	☐ **NO** buildings/structures identified - A/HSF attached
☐ **NO** potentially eligible site(s) in project area - Phase I Report attached	☒ Potentially eligible buildings/structures identified in the APE - A/HSF attached
☐ Potentially eligible site(s) identified-Phase I Report attached ☐ Avoided through redesign ☐ Phase II conducted – go to VII (Evaluation).	☐ Potentially eligible buildings/structures avoided – documentation attached
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☐ Arch site(s) eligible for NRHP - Phase II Report attached	☒ Building/structure(s) eligible for NRHP - DOE attached
☐ Site(s) eligible for NRHP - DOE attached	

VIII. COMMITMENTS/SPECIAL PROVISIONS – must be included with special provisions language

IX. PROJECT DECISION

☐ No historic properties (historical or archaeological) in the APE.
☐ No historic properties (historical or archaeological) affected.
☒ Historic properties (historical and/or archaeological) may be affected by project;
- ☒ Go to Step 4: Assess affects and begin consultation on affects
- ☐ Documentation for Determination of No Adverse Effects is included with this form. WIDOT has concluded that this project will have No Adverse Effect on historic properties. Signature by SHPO below indicates SHPO concurrence in the DNAE and concludes the Section 106 Review process for this project.

(Regional Project Manager)

3-8-12
(Date)

(Consultant Project Manager)

3/8/12
(Date)

(WIDOT Historic Preservation Officer)

5/1/2012
(Date)

(State Historic Preservation Officer)

5/8/2012
(Date)

11-0526/WK

(DOE March 2011)

Wisconsin Historical Society
Determination of Eligibility Form

WisDOT Project ID #: 2788-01-00

WHS #:

Property Name(s): Dr. Warren & Jean Smirl Residence

Address/Location: S33 W26950 Hawthorne Hollow Drive

City & County: Town of Waukesha **Zip Code:** 53188

Town: 6N **Range:** 19E **Section:** 17

Date of Construction: 1956, 1965, 1973

WisDOT Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this request for Determination of Eligibility:

☒ Meets the National Register of Historic Places criteria.
☐ Does not meet the National Register of Historic Places criteria.

Rebecca Burkel 5/1/2012

Rebecca Burkel, WisDOT Historic Preservation Officer **Date**

State Historic Preservation Office

In my opinion, the property:

✓ Meets the National Register of Historic Places criteria.
___ Does not meet the National Register of Historic Places criteria.

6/12/12

Michael E. Stevens, State Historic Preservation Officer **Date**

Comments (FOR AGENCY USE ONLY):

Division of Historic Preservation
Wisconsin Historical Society
816 State Street
Madison, WI 53706

11-0526/WK

(DOE March 2011)

Wisconsin Historical Society
Determination of Eligibility Form

WisDOT Project ID #: 2788-01-00

WHS #: #11-0526

Property Name(s): Dr. Allan & Martha Ledward Residence

Address/Location: W269 S3282 Merrill Hills Road

City & County: Town of Waukesha **Zip Code:** 53188

Town: 6N **Range:** 19E **Section:** 17

Date of Construction: 1955

WisDOT Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this request for Determination of Eligibility:

☒ Meets the National Register of Historic Places criteria.
☐ Does not meet the National Register of Historic Places criteria.

for Rebecca Burkel, WisDOT Historic Preservation Officer — Date: 6/5/12

State Historic Preservation Office

In my opinion, the property:

✓ Meets the National Register of Historic Places criteria.
___ Does not meet the National Register of Historic Places criteria.

Michael E. Stevens, State Historic Preservation Officer — Date: 6/12/12

Comments (FOR AGENCY USE ONLY):

Division of Historic Preservation
Wisconsin Historical Society
816 State Street
Madison, WI 53706

11-0526/WK

(DOE March 2011)

Wisconsin Historical Society
Determination of Eligibility Form

WisDOT Project ID #: 2788-01-00

WHS #:

Property Name(s): Earle & Ethel Hardy Residence
Address/Location: W269 S3244 Merrill Hills Road
City & County: Town of Waukesha **Zip Code:** 53188
Town: 6N **Range:** 19E **Section:** 17
Date of Construction: 1952, 1989

WisDOT Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this request for Determination of Eligibility:

☐ Meets the National Register of Historic Places criteria.
☒ Does not meet the National Register of Historic Places criteria.

Rebecca Burkel 5/1/2012

Rebecca Burkel, WisDOT Historic Preservation Officer **Date**

State Historic Preservation Office

In my opinion, the property:

☐ Meets the National Register of Historic Places criteria.
☑ Does not meet the National Register of Historic Places criteria.

Michael E. Stevens 6/12/12

Michael E. Stevens, State Historic Preservation Officer **Date**

Comments (FOR AGENCY USE ONLY):

Division of Historic Preservation
Wisconsin Historical Society
816 State Street
Madison, WI 53706

11-0526/WK

(DOE March 2011)

Wisconsin Historical Society
Determination of Eligibility Form

WisDOT Project ID #: 2788-01-00

WHS #:

Property Name(s): Waukesha Country Club/Merrill Hills Country Club Golf Course
Address/Location: W270 S3425 Merrill Hills Road
City & County: Town of Waukesha **Zip Code:** 53188
Town: 6N **Range:** 19E **Section:** 18
Date of Construction: 1930

WisDOT Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this request for Determination of Eligibility:

☐ Meets the National Register of Historic Places criteria.
☒ Does not meet the National Register of Historic Places criteria.

Rebecca Burkel 5/1/2012

Rebecca Burkel, WisDOT Historic Preservation Officer **Date**

State Historic Preservation Office

In my opinion, the property:

☐ Meets the National Register of Historic Places criteria.
☑ Does not meet the National Register of Historic Places criteria.

6/12/12

Michael E. Stevens, State Historic Preservation Officer **Date**

Comments (FOR AGENCY USE ONLY):

Division of Historic Preservation
Wisconsin Historical Society
816 State Street
Madison, WI 53706

Daniel P. Vrakas
County Executive

Dale R. Shaver
Director

Waukesha COUNTY

DEPARTMENT OF
PARKS AND LAND USE

DATE: May 10, 2011

TO: Gary Evans, Engineering Services Manager
Waukesha County Department of Public Works

FROM: Dale R. Shaver
Director

SUBJECT: Waukesha West By-Pass De Minimis Impact Finding on Retzer Nature Center

This correspondence is submitted in response to your April 28, 2011 memo concerning a notice of intent to make a De Minimis Impact Finding for the West Waukesha Bypass on the Waukesha County Retzer Nature Center.

Specifically, your correspondence indicates an impact of 0.1 to 0.2 acres of property from the east end of Retzer Nature Center along Merrill Hills Road. The Waukesha County Department of Parks and Land Use is in concurrence that this potential impact will not adversely affect the activities, features and attributes of the Retzer Nature Center.

Should you have any questions, please feel free to contact me.

cc. Allison Bussler, Director of Public Works
Duane Grimm, Parks System Manager
Larry Kascht, Retzer Nature Center Supervisor

515 W. Moreland Blvd. • Room AC 260

Waukesha, Wisconsin 53188-3878
Phone: (262) 896-8300 • Fax: (262) 896-8298
www.waukeshacounty.gov/landandparks

City of Waukesha

PARKS, RECREATION & FORESTRY
1900 AVIATION DRIVE
WAUKESHA, WISCONSIN 53188-2471
TELEPHONE 262/524-3737 FAX 262/524-3713

Ron Grall, Director
rgrall@ci.waukesha.wi.us

MEMORANDUM

DATE: September 19, 2011

TO: Gary Evans, Engineering Services Manager
Waukesha County Department of Public Works

FROM: Ron Grall, Director
Parks, Recreation & Forestry

SUBJECT: Waukesha West By-Pass De Minimis Impact Finding on Kisdon Hill and Pebble Creek City of Waukesha Park lands (see attached map)

As per action taken at the September 12, 2011, City of Waukesha Parks, Recreation & Forestry Board (PRFB) meeting, please accept this correspondence to confirm that the Board is in concurrence that the presented potential impact of the West By-Pass project will not adversely affect the activities, features and attributes associated with the subject City park properties (Kisdon Hill & Pebble Creek).

If you have any questions or required further information, please feel free to contact me at (262) 524-3734 or rgrall@ci.waukesha.wi.us

cc. Mayor Scrima
Steve Crandell, Interim City Administrator
PRFB Members

E-mail from SEWRPC accepting invitation to be a Participating Agency for the West Waukesha Bypass Study

From: Hiebert, Christopher T. [mailto:CHIEBERT@SEWRPC.org]
Sent: Friday, June 25, 2010 8:30 AM
To: 'Evans, Gary'
Cc: Yunker, Kenneth R.; 'abussler@waukeshacounty.gov'; 'Carlos A. Pena (carlos.pena@dot.gov)'; 'michael.murphy@dot.wi.gov'; 'Jay.Waldschmidt@dot.wi.gov'; Webb, Charlie/ZOO
Subject: Invitation to Become a Participating Agency for West Waukesha Bypass Study

Mr. Evans:

Pursuant to Ms. Allison Bussler's letter to Mr. Kenneth R. Yunker, dated May 25, 2010, the Commission accepts the County's invitation to become a participating agency in the environmental aspects of the West Waukesha Bypass study. In addition, Commission staff has no comments related to the draft coordination plan or draft impact analysis methodology.

Sincerely,

Christopher T. Hiebert, P.E.
Chief Transportation Engineer
Southeastern Wisconsin Regional Planning Commission
W239 N1812 Rockwood Drive
PO Box 1607
Waukesha, WI 53187-1607
(262) 547-6722 Ext. 227
www.sewrpc.org

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL, MINNESOTA 55101-1678

June 28, 2010

REPLY TO
ATTENTION OF
Operations
Regulatory (2010-00746-DJP)

Ms. Tracey McKenney
U.S. Department of Transportation
Federal Highway Administration
525 Junction Road, Suite 8000
Madison, Wisconsin 53717

Dear Ms. McKenney:

This letter is in response to your June 8, 2010, request that the Corps of Engineers, St. Paul District act as a Cooperating Agency in the environmental review process for the West Waukesha Bypass corridor study (Wis DOT Project I.D. 2788-01-00) and provide comments regarding the draft Coordination Plan for Agency and Public Involvement and the draft SAFETEA-LU 6002 Impact Analysis Methodology. The project corridor is located in Waukesha County, Wisconsin.

We agree to serve as a Cooperating Agency. We look forward to our continuing participation in the development of the Environmental Impact Statement (EIS). Further, we ask that you consider the following comments on specific sections of the draft Impact Analysis Methodology.

Section 20: Construction Impact Methodology indicates that a discussion of additional construction related impacts concerning utility relocations and the possible availability of construction material sources (borrow sites) would be included in the EIS.

(1)

For utility line relocations, a reasonable estimate of the type and quantity of stream/wetland impacts (in addition to the impacts stated in the EIS for the roadway construction work) should be included in the EIS and the significance of the estimated impacts should be evaluated.

See attached comment responses

We understand that the selection of borrow sites and location of haul roads are determined by contractor(s) after contracts have been awarded. However, if off-site fill material is not obtained from a licensed commercial facility, the Corps may be required to evaluate potential impacts and incorporate additional analysis into our administrative record for this project. To alleviate the potential for future project delays, it is recommended that the EIS include an analysis of reasonably foreseeable impacts based on estimated quantities while giving consideration to environmental and human constraints within an economically feasible area. The EIS should also outline procedures that would be implemented to insure that any related impacts are evaluated and considered with respect to aquatic resources, cultural and historic properties, threatened

(2)

and endangered species, and other environmental and human factors, including but not limited to lateral drainage in bordering wetlands and the likelihood of the spread and establishment of invasive species. (2)

Section 4: Project Schedule indicates that a public hearing would be held following the release of the Draft EIS. This public hearing should follow a format that provides citizens and stakeholders with the opportunity to make their views known to the governing agencies as well as the community. The public hearing should allow members of the community attending the hearing to present their views to agency representatives in front of members of the community attending the public hearing. (3)

The Corps point of contact for this project is Dale Pfeiffle in our Waukesha office a U.S. Army Corps of Engineers, 1617 E. Racine Avenue, Room 101, Waukesha, Wisconsin 53186. If you have any questions, please call Mr. Pfeiffle at (262) 547-0868. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely,

/s/ Tamara E. Cameron
Chief, Regulatory Branch

Copy furnished:
Doug Cain - WDOT;
Kenneth Westlake – EPA;
Maureen Milmann – WDNR.

Comment Responses
Corps of Engineers Letter—6/28/10

1. See Section 3.6, Utilities. Raising the electrical transmission line between the railroad and the Glacial Drumlin State Trail may require work in the railroad prairie to swap out the existing wooden single poles for taller poles. This area is also a wetland. The transmission line on the south side of the railroad is not in a wetland. The single wooden poles occupy less space than lattice towers. The Glacial Drumlin State Trail would provide relatively good access to electrical transmission poles that would need to be replaced. As a result, no construction access road would need to be built in wetland. Based on utility coordination that has occurred to date, there is no indication any electrical transmission lines would have to move to a new corridor that would affect wetland.

2. A discussion on material source (borrow) sites is provided in Section 3.27.3.

3. The public hearing will follow the format suggested by the Corps of Engineers.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 02 2010

REPLY TO THE ATTENTION OF:

E-19J

Ms. Tracey McKenney
FHWA – Wisconsin Division
525 Junction Road, Suite 8000
Madison, Wisconsin 53717-2157

Re: Participating Agency Request Regarding West Waukesha bypass Corridor Study, Waukesha County, Wisconsin

Dear Ms. McKenney:

The U.S. Environmental Protection Agency – Region 5 (U.S. EPA) has received the June 8, 2010 letter from the Federal Highway Administration (FHWA) in which FHWA asked U.S. EPA to be a participating agency for the above-mentioned project. We understand that FHWA, in cooperation with Wisconsin Department of Transportation (WisDOT) and Waukesha County, is developing an Environmental Impact Statement (EIS) for transportation improvements in the Waukesha area.

The purpose of this letter is to formally agree to be a participating agency for this project. As a participating agency, U.S. EPA agrees to provide project-related input on our areas of expertise during the EIS development process. We agree to provide input on impact assessment methodologies; participate in coordination meetings, calls, and field visits; and provide comment on preliminary information developed for the EIS. Specifically, we look to provide information on purpose and need, alternatives considered, anticipated impacts, selected alternative, and mitigation. We will provide comments and/or concurrence on these points when requested. U.S. EPA retains its independent review and comment function under Section 309 of the Clean Air Act. During the formal EIS comment period, we will submit comments on this project, as we do for all federal EISs.

We have reviewed the Coordination and the Impact Analysis Methodology Plans both dated May 2010. We have no comments on the coordination document. However, we have a comment on the Impact Analysis Methodology Plan. We believe that additional discussions between the agencies should take place regarding borrow sites. It is important that everyone understands what the borrow needs might be for the project. Additionally, it would be helpful to know how the borrow issue will be handled conceptually in the EIS. We would welcome being part of those discussions. (1)

See attached comment response

We are committed to working together with FHWA, WisDOT, and Waukesha County on this project, and we will do this as our resources and time allow. Thank you for providing us this opportunity. If you have any questions, please call Sherry Kamke of my staff at 312-353-5794.

Sincerely,

Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement and Compliance Assurance

Comment Response
EPA Letter—7/2/10

1. A discussion on material source (borrow) sites is provided in Section 3.27.3.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutcheon, Regional Director

Southeast Region Headquarters
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee, Wisconsin 53212-3128
FAX 414-263-8606
Telephone 414-263-8500
TTY Access via relay - 711

July 21, 2010

File Ref: 1600

Doug Cain, Project Manager
Wisconsin Department of Transportation, Southeast Region
141 N.W. Barstow Street
Waukesha, WI 53187

Dear Mr. Cain:

Thank you for inviting the Department to be a cooperating agency for WisDOT Project 2788-01-00, West Waukesha Bypass Corridor Study. The Study will evaluate increasing traffic, safety, and alternatives for providing a north-south arterial highway between I-94 and WIS 59. The Department accepts your invitation to be a cooperating agency, with the following considerations:

Our role as a cooperating agency will be implemented in a manner consistent with the *November 2002, Cooperative Agreement between the Wisconsin Department of Natural Resources and Wisconsin Department of Transportation* which is a basis for collaboration between our two State agencies.

The Departments of Natural Resources and Transportation work together during transportation planning, design, and construction to develop projects that meet transportation needs, minimize adverse environmental impacts, maximize use of existing infrastructure, consider stakeholder input and public opinion, support a compact regional development pattern, and enhance community and regional character. The Department is committed to intergovernmental cooperation and planning to protect public health, safety, and the environment while conserving resources that support a sustainable, high quality of life.

The corridor study will implement a merged National Environmental Policy Act (NEPA) and Army Corps of Engineers Section 404 water quality permit process with "concurrence points" to move forward in a step-by-step manner. The Department will provide comments at the Study's purpose and need, alternatives analysis, and other concurrence points and acknowledges that once the Study proceeds past a concurrence point, that point will not be revisited unless there is new and compelling information not already considered and there is good cause for further analysis of corridor planning. Future final design projects will implement a refined concurrence process for construction approvals. Coordinating the merged federal process with our agencies' Cooperative Agreement is essential for our successful collaboration.

This clarifies my June 22, 2010 letter. I look forward to upcoming Study meetings and providing comments on the Study. Please contact me at Maureen.millmann@wisconsin.gov or (414) 263-8613, if you have any questions. I would be glad to meet or speak with you.

Sincerely,

Maureen Millmann
Environmental Analysis and Review Specialist

Cc: Mike Thompson, DNR
Jay Waldschmidt, WisDOT

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Green Bay ES Field Office
2661 Scott Tower Drive
New Franken, Wisconsin 54229-9565
Telephone 920/866-1717
FAX 920/866-1710

August 24, 2010

Ms. Tracey McKenney
FHWA-Wisconsin Division
525 Junction Road, Suite 8000
Madison, Wisconsin 53717-2157

re: Participating Agency Status
West Waukesha Bypass Corridor Study
Waukesha County, Wisconsin

Dear Ms. McKenney:

This letter is in response to your June 8, 2010, letter inviting the U.S. Fish and Wildlife Service (Service) to serve as a participating agency with the Federal Highway Administration in the development of the West Waukesha Bypass Corridor Study project in Waukesha County, Wisconsin.

We agree that the Service has jurisdiction and special expertise with respect to potential impacts to wetlands and wildlife habitat that may be affected by the project. However, due to staff time constraints, we are not currently able to become a participating agency.

We appreciate the invitation to become a participating agency on the proposed project. If you have further questions you may contact Jill Utrup at 920-866-1734.

Sincerely,

Louise Clemency

Louise Clemency
Field Supervisor

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
190 FIFTH STREET EAST, Suite 700
ST. PAUL, MN 55101-1678

NOV 0 4 2010

REPLY TO
Operations
Regulatory (2010-00746-DJP)

Mr. Charlie Webb
Consultant Project Manager
CH2M Hill
135 S. 84th Street, Suite 400
Milwaukee, Wisconsin 53214

Dear Mr. Webb:

We have completed our review of the Draft 'Purpose and Need" statement that was prepared for the West Waukesha Bypass project (WisDOT Project I.D. 2788-01-00). The project is located in Waukesha County, Wisconsin.

We have determined that the "Purpose and Need" for the project has been adequately addressed. Based upon the information you provided, we concur with the Draft "Purpose and Need" statement as presented. If substantial new information regarding "Purpose and Need" is brought forward during project development, the adequacy of the "Purpose and Need" statement may be reconsidered.

Sections 1.3.1 and 1.3.2.2 of the Draft Purpose and Need as well as scoping and advisory group meetings attended by Corps staff identified the desire to incorporate pedestrian and bicycle paths as an important element of the project. Although the construction of bicycle and pedestrian paths could be inferred as improvement to roadway deficiencies or a safety enhancement, we suggest that the purpose statement in Section 1.2 be modified to specifically identify the addition of separate bicycle and pedestrian paths. (1)

See attached comment response

The decision regarding this action is based on information found in the administrative record, which documents the District's decision-making process, the basis for the decision, and the final decision.

If you have any questions, contact Dale Pfeiffle in our Waukesha office at (262) 547-0868. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely

Todd Vega

Tamara E. Cameron
for Chief, Regulatory Branch

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

DEC 1 0 2010

REPLY TO THE ATTENTION OF: E-19J

Charlie Webb, Project Manager
CH2M HILL
135 South 84th Street, Suite 400
Milwaukee, Wisconsin 53214

Re: Draft Purpose and Need Section for West Waukesha Bypass Corridor Study (I-94 to WIS 59), Waukesha County, Wisconsin

Dear Mr. Webb:

The U.S. Environmental Protection Agency has reviewed the draft Purpose and Need section of the West Waukesha Bypass Environmental Impact Statement (EIS) for the above-mentioned project. This review was performed in accordance with our responsibilities under the National Environmental Policy Act, the Council on Environmental Quality's NEPA Implementing Regulations (49 CFR 1500-1508), and Section 309 of the Clean Air Act, as well as our role as a Cooperating Agency for this project.

The study area is located on the west side of the City of Waukesha between the project termini of I-94 on the north and the WIS 59/County X intersection on the south. The analysis focuses on county roads TT, D, and X, which lie between the project termini. The proposed project has evolved from the original bypass concept to completion of a 4-lane circumferential route around Waukesha designed to serve both local and through traffic.

Additional issues the proposed project seeks to address include the following:

- accommodate growing traffic volumes in the study corridor,
- improve level of service for the highway segments along the project corridor,
- improve roadway deficiencies- tight curves, steep vertical grades, narrow lanes, lack of shoulders, substandard stopping sight distance – by providing a roadway that meets current design standards.

We concur with the project's purpose and need as stated in the draft section based on the current level of service, roadway deficiencies, above-average crashes, and the high number of access points. We look forward to learning about access control policies considered as part of the proposed alternatives.

We have one recommendation concerning the safety discussion. We suggest this section be revised to include information concerning wildlife/vehicle collisions. Table 1-9 summarizes crash information for County TT for the 3-year period 2007 through 2009, excluding information about deer/vehicle crashes. Teasing out the wildlife collision rate from the crash numbers shown in Table 1-9 would provide the reviewer with a more complete picture of the array of problems currently found in the study area.

(1)

See attached comment response

The proposed project has the potential to result in a large number of environmental impacts, particularly with the presence of Advanced Identification Program (ADID) wetlands, which are generally unsuitable for receiving fill material, located in the study area. The presence of rare wetland types (a sedge fen supported by groundwater discharges) and state threatened or endangered species indicate the importance of the Pebble Creek wetland corridor. It will be difficult, if not impossible, to mitigate for these types of losses. This project warrants a robust examination of a variety of alternatives to minimize impacts to high-quality environmental resources. We will look to the EIS section that discloses alternatives and the criteria by which alternatives were retained or eliminated to discuss avoidance measures taken to decrease impacts to high-quality resources.

Since fens are groundwater-supplied wetlands, it is imperative that the hydrologic re-charge and discharge dynamics of any fen areas in the study area be well understood. With these types of constraints in the study area, we strongly recommend early coordination with EPA and other state and federal natural resource agencies.

EPA appreciates the opportunity to provide comments related to the project throughout the process. We look forward to participating in future discussions regarding this project. If you have any questions regarding the contents of this letter, please do not hesitate to contact me or Kathleen Kowal of my staff at (312) 353-5206 or via email at kowal.kathleen@epa.gov.

Sincerely,

Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement & Compliance Assurance

cc: Tracey McKenney, FHWA – Wisconsin Division
Douglas Cain, WisDOT

Comment Response
EPA Letter—12/10/10

1. Car-deer crashes have been removed from the crash data in Table 1-9. Section 1.3.6 now includes a statement that the project purpose and need does not include reducing wildlife collision rates because in general roadway improvements do not affect wildlife collision rates.

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Southeast Region Headquarters
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee WI 53212-3128

Scott Walker, Governor
Cathy Stepp, Secretary
John Hammen, Acting Regional Director
Telephone 414-263-8500
FAX 414-263-8606
TTY Access via relay - 711

June 23, 2011

File Ref: 1600

Charlie Webb
CH@M HILL
135 South 84th Street
Suite 325
Milwaukee WI 53214

Dear Mr. Webb:

Thank you for the opportunity to review and comment on the West Waukesha Bypass Draft Environmental Impact Statement (EIS) Section 2, Alternatives Considered. The Department has participated in many advisory group meetings and looks forward to continued coordination with the Bypass Team during further development of the EIS and selection of a Preferred Alternative.

The Department supports the decision to retain Alternative TT2 for further analysis. As discussed in previous meetings, the Department recommends Alternative TT2 include a clear span bridge over Pebble Creek and a grade separated Glacial Drumlin Trail crossing. Creating bike and pedestrian facilities on the new roadway will significantly increase the amount of usable recreational trail in the county, and provide a connection between the Glacial Drumlin Trail and multi-use path on the east side of CTH TT north of Summit, and ultimately, the Lake Country Trail.

The Department supports the decision to remove the "Pebble Creek Mapped Route" alternative from consideration. As stated in the document, this alternative is closest to Pebble Creek and would have direct adverse impacts to ADID wetlands, primary environmental corridor and floodplain, as well as significant secondary impacts to the Pebble Creek Corridor due to stormwater runoff and potential future developments.

WDNR recommends retaining the "Far West Pebble Creek" alternative for further study until field wetland delineations and rare species surveys are completed. This alternative could potentially result in less impact to the wetlands in the Pebble Creek corridor, if the Pebble Creek Far West, West or Sunset to CTH X alternatives is chosen as the preferred alternative. The wetland and rare species information will allow accurate comparisons of direct and indirect resource impacts and assist refined selection of Alternatives.

Please contact me at (414)263-8613 or Maureen.millmann@wisconsin.gov if you would like to discuss the project further. I look forward to continuing to work together throughout the planning, design and construction of the project.

Sincerely,

Maureen Millmann

Maureen Millmann
WDNR Environmental Analysis & Review Specialist

CC: Doug Cain, WisDOT Project Manager
Gary Evans, Waukesha County Dept.of Public Works
Michael Thompson, WDNR EA Supervisor
Scott Lee, WisDOT Regional Environmental Coordinator
Karla Leithoff, WisDOT Regional Wetland Ecologist

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL, MN 55101-1678

JUN 05 2012

REPLY TO
ATTENTION OF

Operations
Regulatory (2010-00746-DJP)

Mr. Charlie Webb
CH2M Hill
135 S. 84th Street, Suite 400
Milwaukee, Wisconsin 53186

Dear Mr. Webb:

We have completed our review of Section 2 of the Draft Environmental Impact Statement (DEIS) being prepared for the West Waukesha Bypass project. Section 2 of the DEIS discusses the alternatives considered and identifies the alternatives that would be dismissed from further consideration. The project is located in Waukesha County, Wisconsin.

We concur that when considering the project's previously identified "purpose and need," the project alternatives identified in Section 2 of the DEIS (i.e. County TT2 corridor and the Pebble Creek West, Pebble Creek Far West, and Sunset to County X alternatives) should be carried forward for detailed analysis. Although the remaining build alternatives discussed in Sections 2.2.1 through 2.5.3 will not be evaluated in detail in the DEIS, we suggest the summaries provided in each Section be retained and depicted in a comparative format to demonstrate why each alternative dropped from consideration does not meet the project's stated "purpose and need." (1)

In addition, Section 2.4.3 discusses the inclusion of bicycle and pedestrian accommodations to new highway construction or reconstruction projects. We suggested in our November 4, 2010 letter that the "purpose and need" statement be modified to identify the addition of bicycle and pedestrian paths. Since a modified "purpose and need" statement was not provided, we request that aquatic impacts due to bicycle and pedestrian path construction are identified and separated from roadway impacts. Also, please note that if there are substantial changes to the alternatives carried forward or there is new information on the project, we may require re-consideration of alternatives. (2)

See attached comment responses

In accordance with compensatory mitigation regulations found in 33 CFR Part 332, we urge Waukesha County to take all practicable and appropriate steps to ensure that compensatory mitigation for the project is located within the same watershed as the impacted waters of the U.S. and that it would support the sustainability or improvement of the aquatic resources within the same watershed. The DEIS should include the watershed name(s) for the locations of the proposed impacts to waters of the U.S. and of any proposed compensatory mitigation locations. (3)

We look forward to reviewing and commenting on the DEIS. If you have any questions, contact Marie Kopka in our Waukesha office at (262) 717-9539 ext. 4. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely

Tamara E. Cameron
Chief, Regulatory Branch

Electronic copy furnished:
Bethaney Bacher-Gresock, Federal Highway Administration
Kathleen Kowal, Kerryann Weaver, U.S. Environmental Protection Agency
Karla Leithoff, Wisconsin Department of Transportation
Mike Thompson, Wisconsin Department of Natural Resources
Gary Evans, Waukesha County
Don Reed, Southeastern Wisconsin Regional Planning Commission

Comment Responses
Corps of Engineers Letter—6/5/12

1. A table summarizing the impacts of those alternative dropped from consideration is provided in Section 2.

2. Section 1.2 has been revised to include a reference to Wisconsin Administrative Code Chapter TRANS 75, *Bikeways and Sidewalks in Highway Projects*.

3. Section 3.16.2 notes that the project's wetland impacts would occur in the Pebble Creek watershed and Section 3.16.3 notes that Waukesha County and WisDOT are searching for wetland mitigation sites in the Pebble Creek watershed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO IL 60604-3590

JUN 0 8 2012

E-19J

REPLY TO THE ATTENTION OF

Mark R. Chandler, Ph.D., PE, CMfgE
Federal Highway Administration, Wisconsin Division
525 Junction Road, Suite 8000
Madison, Wisconsin 53717

Douglas Cain, Project Manager
Wisconsin Department of
Transportation, SE Region
141 NW Barstow Street
Waukesha, Wisconsin 53187

Re: Draft Purpose and Need Section for West Waukesha Bypass Corridor Study (I-94 to WIS 59), Waukesha County, Wisconsin

Dear Messrs. Chandler and Cain:

The U.S. Environmental Protection Agency has reviewed the draft Section 2, Alternatives Considered for the West Waukesha Bypass Environmental Impact Statement (EIS). This review was performed in accordance with our responsibilities under the National Environmental Policy Act, the Council on Environmental Quality's NEPA Implementing Regulations (49 CFR 1500-1508), and Section 309 of the Clean Air Act, as well as our role as a Cooperating Agency for this project.

The study area is located on the west side of the City of Waukesha between the project termini of I-94 on the north and the WIS 59/County X intersection on the south. The analysis focuses on county roads TT, D, and X, which lie between the project termini. The proposed project has evolved from the original bypass concept to completion of a 4-lane circumferential route around Waukesha designed to serve both local and through traffic.

EPA has reviewed information contained in the draft "Section 2, Alternatives Considered" and additional refinements as stated in the May 9, 2012 "Draft Responses to U.S.EPA Questions E-mailed on April 26, 2012. This letter provides EPA's concurrence on the second concurrence point, "Alternatives to be Carried Forward for Detailed Study." The alternatives to be carried forward include the following three alternatives:

- Sunset-to-County X,
- Pebble Creek West, and
- Pebble Creek Far West.

We understand from conversations between the Federal Highway Administration (FHWA), the Wisconsin Department of Transportation (WisDOT), CH2M Hill, and the U.S. Army Corps of Engineers (ACE) on June 4 that a waiver from WisDOT will be sought to exclude a bicycle path south of Sunset to reduce impacts to high-quality resources. EPA's concurrence signifies that the information presented is adequate to advance to the next stage of project development. (1)

See attached comment responses

Based on the nature of high quality aquatic resources located in the project area, we strongly recommend the draft EIS address or contain the following:

- (2) How the proposed project meets the goals and objectives of the Waukesha Watershed Protection Plan;
- (3) SEWRPC's functional analysis of aquatic resources in the project area;
- (4) The proposed stormwater management plan and its anticipated effects to high quality upland and aquatic resources;
- (5) Based on the SEWRPC's functional analysis, an analysis of potential hydrologic impacts from altered hydrology and impervious surfaces posed by the project to the remaining aquatic resources on and adjacent to the site;
- (6) Exhibits that depict wetland boundaries/wetland types, stormwater basins, and the proposed roadway in one map;
- (7) Consistent descriptions of both direct and potential indirect impacts to aquatic and upland resources; a table format would provide reviewers with a concise depiction of impacts to each resource associated with each alternative;
- (8) Exhibits that depict location of state threatened and endangered plant/animals in relation to the proposed impact to suitable habitat within the boundaries of the alternatives carried forward;
- (3) SEWRPC's validation of the aquatic and upland resource analyses of the existing environment and proposed impacts;
- (3) SEWRPC's assessment of proposed mitigation options;
- (3) A summary of the SEWRPC's functional assessment in the body of the draft EIS to indicate the significance of aquatic and upland resources on site in comparison to other wetland communities within the State of Wisconsin or the region;
- (9) Discussion of potential indirect impacts to upland and aquatic resources based on current land use plans and reasonably-foreseeable development in the study area; and
- (10) Consideration of flexible mitigation options within the expansive Pebble Creek wetland/stream complex based on the high quality of resources proposed to be impacted within the study area.

We recommend the above information be included in the draft EIS to facilitate an expedited review process. As mentioned previously, we are available to review draft sections at any stage of development. If you have questions regarding any of the above items, please do not hesitate

to contact me or Kathleen Kowal of my staff at (312) 353-5206 or via email at kowal.kathleen@epa.gov. For aquatic resources questions, feel free to contact Kerryann Weaver at (312) 353-9483 or via email at weaver.kerryann@epa.gov.

Sincerely,

Kathleen Kowal

for

Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement & Compliance Assurance

cc: Charlie Webb
Dan Dupies
Gary Evans
Geoffrey Parish
Rebecca Graser
Marie Pokka
Michael Thompson
Don Reed
Scott Lee
Bethaney Bacher-Gresock
Jay Waldschmidt
Karla Leithoff

Comment Responses
EPA Letter—6/8/12

1. A waiver for no sidewalk south of Sunset Drive will be submitted to WisDOT. Off-road pedestrian accommodations are not required since on-road bicycle accommodations would be provided on the 8-foot paved shoulder.

2. The project team confirmed that this comment referred to the Pebble Creek Watershed Protection Plan. This plan is referenced in several locations in Section 3.

3. SEWRPC's functional analysis of aquatic resources is discussed in Section 3.16. SEWRPC input on potential mitigation measures will be sought after a preferred alternative is selected. SEWRPC's entire functional assessment is provided on the CD at the back of the EIS.

4. Section 3.12.3 discusses stormwater management.

5. See Section 3.12 and Section 3.16.

6. See Exhibit 3-13.

7. Direct impacts are discussed in several areas of Section 3, including Section 3.3, Indirect Effects, Section 3.12 Surface Water and Section 3.16 Wetlands. An impact summary table is provided in the EIS summary. The table provides an overview of those direct impacts that are quantifiable.

8. These exhibits will be provided directly to U.S. EPA. At DNR's request the specific location of threatened and endangered species will not be publically disseminated.

9. See Section 3.3, Indirect Effects.

10. Mitigation measures are discussed in Section 3. A more detailed discussion of potential mitigation measures will be developed after a preferred alternative is selected.

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL, MN 55101-1678

REPLY TO
ATTENTION OF
Operations
Regulatory (2010-00746-DJP)

MAY 05 2014

Mr. Gary Evans, PE
Waukesha County Department of Public Works
515 Moreland Boulevard
Waukesha, Wisconsin 54303

Dear Mr. Evans:

This is in response to your April 3, 2014 letter regarding selection of the Pebble Creek West (PCW) corridor as a preferred alternative in the Environmental Impact Statement (EIS) being prepared for the West Waukesha Bypass project.

We concur with the lead agency finding that the PCW alternative proposed for the southern segment represents the least environmentally damaging practicable alternative. The 404(b)(1) guidelines of the Clean Water Act allow our agency to consider permitting an alternative that would have a greater impact to the aquatic ecosystem when the alternative with lesser aquatic resource impact has other significantly adverse environmental consequences.

The information you provided clearly demonstrates that the Pebble Creek Far West alternative, while anticipated to result in a lesser wetland impact than PCW, would also include upland interior forest habitat loss. This loss has been adequately characterized as a significantly adverse environmental consequence. 1

We highly recommend that the additional discussion of the preferred alternative in your letter be clearly incorporated in the final EIS. We also believe that the legal protection of the remaining upland forest resources and preservation of an existing fen in the watershed are critical elements to a compensatory mitigation plan for the PCW alternative and should be included in the final document.

Thank you for your continued coordination efforts involving this project. If you have any questions, please contact Marie Kopka in our Waukesha office at (651) 290-5733. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely,

Tamara E. Cameron
Chief, Regulatory Branch

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 07 2014

REPLY TO THE ATTENTION OF:

E-19J

Ian Chidister
Federal Highway Administration - Wisconsin
535 Junction Road, Suite 8000
Madison, Wisconsin 53717

Dear Mr. Chidister:

The U.S. Environmental Protection Agency has reviewed the letter and supporting documentation dated April 3, 2014 from Gary Evans of Waukesha County regarding the selection of Pebble Creek West as the preferred alternative for part of the West Waukesha Bypass Corridor Study. The Federal Highway Administration (FHWA) and the Wisconsin Department of Transportation (WisDOT) support the selection of Pebble Creek West, and the Wisconsin Department of Natural Resources (WDNR) has provided its concurrence.

EPA appreciates the additional information provided and agrees that this information is adequate enough to make a determination on the least environmentally damaging practicable alternative (LEDPA), which is part of the Clean Water Act – Section 404 permitting process. EPA expects the information dated April 3, 2014 to be, at minimum, memorialized in the Final Environmental Impact Statement (EIS). However, in addition to several clarifications, we continue to have concerns about the identification of and commitment to mitigation measures. Therefore, we concur with Pebble Creek West as the preferred alternative for this segment, under the condition that the mitigation measures discussed below are incorporated into the project and committed to in the Record of Decision (ROD). 1

EPA recommends the following mitigation measures be incorporated into the overall mitigation package. These measures should be included in the Final EIS. Our concurrence is contingent upon the assurance that these mitigation measures will be included as a part of the project. A commitment to undertake these measures needs to be included in the ROD.

- Permanent, legal protection of the remaining wooded upland; EPA does not view property owner participation in the state forest management program as sufficient permanent, legal protection.
- Tree mitigation for any loss of trees in the upland area at a 1:1 ratio.

- Preservation of a fen, offsite but within the Upper Fox River watershed to mitigate for impacts to Wetland-8. We recommend WisDOT and FHWA mitigate for the entire acreage of the fen, regardless of actual acreage of direct impacts, to account for indirect impacts. 1

EPA also recommends the following clarifications are made to the memo in the Final EIS:

- The discussion under *Wetlands* on page 2 includes a matrix of "functions" and "significance" for Wetland-8, the sedge fen immediately south of Sunset Drive. The current discussion concludes that the fen is of overall medium/low quality. However, fens don't exhibit three of the eight functions listed, including flood/stormwater attenuation, water quality protection, and shoreline protection. Wetland-8 is rated low in two of these functions and medium in the other. EPA recommends that the discussion in the Final EIS reflect that fens do not provide these functions and the functional significance of this fen should be revised accordingly. 2
- The discussion under *Impacts* and number 5 under *Conclusion* on page 7 states that an area of 0.5 acres of interior forest habitat will continue to provide forest interior habitat. This statement should be documented. The enclosed memorandum from the Southeastern Wisconsin Regional Planning Commission (SEWRPC) cites this information as coming from personal communication with Michael Mossman (Bureau of Science Services, WDNR, November 2013). EPA recommends the Final EIS include any scientific research or literature to verify this information. Alternatively, if none exists, the Final EIS should so indicate. 3

Finally, please note that EPA retains the right to provide addition comments on design specifics during the Clean Water Act – Section 404 permitting stage.

Sincerely,

Kenneth A. Westlake
Chief, NEPA Implementation Section
Office of Enforcement and Compliance Assurance

cc: Marie Kopka, U.S. Army Corps of Engineers
Mark Chandler, Federal Highway Administration - Wisconsin
Douglas Cain, Wisconsin Department of Transportation
Michael C. Thompson, Wisconsin Department of Natural Resources
Gary Evans, Waukesha County
Charlie Webb, CH2M Hill
Don Reed, Southeastern Wisconsin Regional Planning Commission

Daniel P. Vrakas
County Executive

Allison Bussler
Director of Public Works

Waukesha COUNTY
DEPARTMENT OF PUBLIC WORKS

May 14, 2014

Ms. Tamara Cameron
Chief, Regulatory Branch
St. Paul District, Corps of Engineers
Assurance
180 Fifth Street, Suite 700
Region 5
St. Paul, MN 55101-1678

Mr. Kenneth Westlake
Chief, NEPA Implementation Section
Office of Enforcement and Compliance

U.S. Environmental Protection Agency,

77 West Jackson Boulevard
Chicago, IL 60604-3590

Subject: West Waukesha Bypass Study, Waukesha County, Wisconsin

Dear Ms. Cameron and Mr. Westlake:

Waukesha County, the Wisconsin Department of Transportation and the Federal Highway Administration received and reviewed the May 5, 2014 letter from the Corps of Engineers and the May 7, 2014 letter from the U.S. Environmental Protection Agency regarding your agencies' concurrence with the lead agencies preferred alternative for this project. Thank you for the time and effort your agencies have committed to this project and working through the concurrence on the preferred alternative.

Both of your letters recommend the following mitigation measures be included in the project:

- Permanent legal protection of the remaining upland woodland
- Preservation of an existing fen offsite but in the Upper Fox River watershed
- U.S. EPA also asked that loss of trees in the upland area be mitigated at a 1:1 ratio

Waukesha County and WisDOT are investigating all three of these mitigation recommendations.

Waukesha County has met with the owner of the upland area. His intention is to donate this land, with appropriate deed restrictions, to the Waukesha County Land Conservancy. We believe this action will satisfy the intent of the requested mitigation. Waukesha County will continue to coordinate with the land owner in an effort to provide your agencies with the appropriate documentation that this transfer will occur.

Waukesha County has begun to work with SEWRPC and the Wisconsin DNR to identify fens in the Upper Fox River watershed that currently have no legal protection. We intend to locate and protect a fen offsite to meet this mitigation requirement, as part of the compensatory wetland mitigation plan for the project.

Waukesha County and WisDOT are also investigating tree mitigation and are consulting with the Wisconsin DNR Forestry Specialists on the appropriate form of tree plantings for this mitigation. We are also assessing the location of suitable open space and the ownership of these areas that could be used for tree mitigation which provides a direct benefit to the upland interior forest habitat resource.

515 W. Moreland Blvd., Rm. 220
Waukesha, Wisconsin 53188
Phone: (262) 548-7740
Fax: (262) 896-8097
www.waukeshacounty.gov

Waukesha County, WisDOT and FHWA intend to implement the mitigation measures your agencies have requested, and are investigating ways to achieve these goals. The three agencies will use the powers available to them in the effort to implement these mitigation measures. However, we believe it is important you understand that If property owners are unwilling sellers, neither Waukesha County, WisDOT or FHWA have powers of eminent domain to acquire a parcel that will be used for mitigation.

The Final EIS and Record of Decision will document the general plan for implementing the mitigation measures.

Again, thank you for your involvement in the project.

Sincerely,

Allison Bussler

Allison Bussler
Director of Public Works

Cc: Mark Chandler, *FHWA -Madison*
Ian Chidister, *FHWA - Madison*
Dan Scudder, *WisDOT - Madison*
Jay Waldschmidt, *WisDOT - Madison*
Don Berghammer, *WisDOT, Waukesha*
Scott Lee, *WisDOT – Waukesha*
Karla Leithoff, *WisDOT - Waukesha*
Ben Eruchalu, *WisDOT – Waukesha*
Doug Cain, *WisDOT – Waukesha*
Charlie Webb, *CH2M Hill – Milwaukee*
Dan Dupies, *CH2M Hill – Milwaukee*
Gary Evans, *Waukesha County*
Karen Braun, *Waukesha County*

From: Peter Fasbender [mailto:peter_fasbender@fws.gov]
Sent: Monday, May 19, 2014 2:12 PM
To: Dupies, Dan/MKE
Subject: RE: West Waukesha Bypass maps we discussed this morning

Dan –

Based on the 6 bypass maps of the project, and the description below, the US Fish and Wildlife Service is not aware of any Poweshiek skipperling occurrences within the area. Therefore, the project as described will have no effect on that species. If the project expands or changes, you should contact us to evaluate project related impacts to listed species. Thank you -

Peter J. Fasbender
U.S. Fish and Wildlife Service
Minnesota-Wisconsin Ecological Services Field Office
2661 Scott Tower Drive
New Franken, Wisconsin 54229
920/866-1725

WISCONSIN HISTORICAL SOCIETY

March 12, 2013

Mr. Jason Kennedy
Wisconsin Department of Transportation
Environmental Services Section
4802 Sheboygan Ave., Room 451
Madison, WI 53707

RE: WisDOT ID 2788-01-00 / WHS# 11-0526 / WK
West Waukesha Bypass, Waukesha
Waukesha County

Dear Mr. Kennedy:

We have reviewed the Documentation for Determination of No Adverse Effect and have identified the potential for adverse effect. This project proposes to realign CTH X and expand it to four lanes in front of the National Register-listed **Barney House**. It will also result in closing CTH TT just beyond the driveway of the National Register-eligible **Ward Brown Farmstead**, ending it in a cul-de-sac that will cut into the historic boundary by 16 feet. This project has the potential to adversely affect both properties.

The Barney House historically was a farmhouse located along a rural two-lane road. Development and road expansions around the property have steadily chipped away at its historic setting, leaving only the listed acreage and the rural route that passes in front of it as remnants of its historic setting. Expanding CTH X to four lanes will dramatically alter what remains of the rural historic character of this property.

The road in front of the Ward Brown Farmstead will remain two lanes, but will terminate in a cul-de-sac constructed immediately south of the entrance bollards, cutting into the historic boundary by 16 feet. Are there any alternatives in the cul-de-sac location or size that might minimize its impact on the entrance to the farm?

I look forward to continuing to work with you on avoiding, minimizing, or mitigating the effects on these properties. Please contact me if you have any questions or concerns, 608-264-6493 or kimberly.cook@wisconsinhistory.org.

Thank you,

Kimberly Zunker Cook
Wisconsin Historical Society
Division of Historic Preservation – Public History

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee WI 53212-3128

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

May 24, 2013

Mr. Gary Evans
Waukesha County Department of Public Works
15 W Moreland Boulevard
Waukesha WI 53188

Dear Mr. Evans:

Thank you for the opportunity to comment on the West Waukesha Bypass Pebble Creek West preferred alternative. After considering a range of Build/No Build alternatives, Pebble Creek West, with four-lane capacity expansion, was selected as the best long term solution to provide a north-south roadway between Interstate 94 and STH 59 on the west side of the City of Waukesha. The roadway will address safety concerns, tight curves, steep hills, narrow lanes, lack of shoulders, deteriorating pavement, and future traffic demand.

The Department contributed information for the alternatives considered and the analysis to avoid and minimize adverse impacts and concurs with the Pebble Creek West preferred alternative. Design refinements will further reduce impacts, mitigate wetland loss, manage stormwater quality, temperature, and volume, and protect valuable resources in the Pebble Creek watershed.

I look forward to reviewing the Final Environmental Impact Statement and further environmental coordination.

Sincerely,

Michael C. Thompson
Environmental Analysis Team Supervisor
(414) 303-3408
MichaelC.Thompson@Wisconsin.gov

Cc: Marie Kopka, USACE
Kathleen Kowal, USEPA
Doug Cain, DOT
Ms. Lloyd Eagan, DNR
Sharon Gayan, DNR
Jim D'Antuono, DNR
Sue Beyler, DNR
Paul Sandgren, DNR
Lisie Kitchel, DNR
Tim Lizotte, DNR

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

December 3, 2013

Mr. Gary Evans
Waukesha County Department of Public Works
15 W Moreland Boulevard
Waukesha WI 53188

Dear Mr. Evans:

The Wisconsin Department of Natural Resources (Department) has reviewed and concurs with the findings of the *September 9, 2013, Interagency Memorandum, Waukesha Bypass: Upland Woods Located in the New Modified Pebble Creek West and Pebble Creek Far West Alternative Rights-of-Way,* and *November 12, 2013, Preliminary Draft - Impacts to Forest Interior Breeding Bird Habitat Documents* (attached) prepared by the Southeastern Wisconsin Regional Planning Commission (SEWRPC). The documents describe an upland woods plant community with 1.29 acres of interior nesting bird habitat - that portion of the essentially closed forest canopy 300 feet inward from the forest edge.

Forest interior habitat suitability has three components: the patch size of the forest, the percent of forest in a larger landscape, and the connectivity between patches. The 1.29-acre interior nesting bird habitat is part of a larger 42-acre upland woods and wildlife habitat area with a large number of trees that produce nuts useful for feeding wildlife located in a primary environmental corridor. The interior habitat is especially valuable because of its proximity to Pebble Creek and sustains Red-Headed Woodpecker *Melanerpes erythrocephalis*, a State of Wisconsin Special Concern species, and Pileated Woodpecker *Dryocopus pileatus*, a spring/fall migrant species within the Waukesha urbanized area. Small forest interior fragments – even as small as 0.5 acre - provide important foraging habitat and refugia for migrating forest interior birds. Such habitat fragments become particularly important in regions where interior habitat is limited.

When making a decision regarding a regulated wetland impact, the Department considers:

- All practicable measures to avoid and minimize wetland impacts.
- The direct, cumulative, and secondary impacts of the proposed project to wetland functional values.
- The impact on functional values resulting from the mitigation that is required.
- The net positive or negative environmental impact of the proposed project and that the proposed project represents the least environmentally damaging practicable alternative.
- The proposed project will not result in significant adverse impacts to water quality, or in other significant adverse environmental consequences.

The Department, after consultation with water resources, forestry, and wildlife habitat specialists, determined that the Pebble Creek West Alternative has the least adverse environmental impact because of the significant wildlife and nesting habitat of the upland woods compared to the limited functional value of the farmed wetland north of Sunset Drive (7 of 8 functional values are rated “low” or “N/A” according to SEWRPC 2012 rapid assessment methodology) and considering that wetland No. 8 (sedge fen) has low or medium functional value for 7 of the 8 functional values (only groundwater has a high functional value) (SEWRPC 2012 rapid assessment methodology) and considering that the Pebble Creek West Alternative minimizes upland habitat fragmentation and would leave approximately 0.5-acre of forest interior—the minimum amount to provide foraging habitat and refugia—whereas

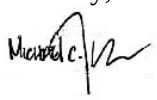
the Pebble Creek Modified West and Far West Alternatives would eliminate virtually all foraging habitat and refugia.

Alternative	Total area of wetland lost between Railroad to STH 59	Losses to the 1.1-acre Wetland No. 8 sedge fen	Class I and II Wildlife Habitat Area lost	Upland Woods area lost	Impacts to 1.29-acre Forest Interior Nesting Bird Habitat
West	9.11 acres (4 acre farmed wetland with low functional value)	0.24 acre	7.7 acres	7.3 acres	0.1 acre direct impact, about 1.2 acres remain. Of that 0.7 acre has reduced nesting value.
Modified	8.99 acres (estimate 3.5 acre farmed wetland with low functional value)	0.05 acre	estimate 8.5 acres	estimate 7.9 acres	All nesting habitat effectively eliminated
Far West	6.50 acres (estimate 1.9 acre farmed wetland with low functional value	0.02 acre	10.2 acres	9.8 acres	All nesting habitat effectively eliminated.

Thank you for the opportunity to provide information about minimizing Waukesha Bypass adverse environmental impacts. The Department encourages the Study Team to continue to look for refinements - including urban cross section design - that further reduce impacts, mitigate wetland loss, provide adequate real estate to construct stormwater management facilities to control runoff quality, temperature, and volume, provide buffers, and protect valuable habitat and resources in the Pebble Creek watershed.

The Department looks forward to reviewing the Final Environmental Impact Statement and further environmental coordination.

Sincerely,



Michael C. Thompson
Environmental Analysis Team Supervisor
(414) 303-3408
MichaelC.Thompson@Wisconsin.gov

email cc:

Marie Kopka, USACE
Kathleen Kowal, USEPA
Bethaney Bacher-Gresock, FHWA
Don Reed, SEWRPC
Doug Cain, DOT
Scott Lee, DOT
Jim D'Antuono, DNR
Sue Beyler, DNR
Paul Sandgren, DNR
Lisie Kitchel, DNR
Tim Lizotte, DNR
Mike Sieger, DNR

Attachment 1: *September 9, 2013, Interagency Memorandum, Waukesha Bypass: Upland Woods Located in the New Modified Pebble Creek West and Pebble Creek Far West Alternative Rights-of-Way*
Attachment 2: *November 12, 2013, Preliminary Draft - Impacts to Forest Interior Breeding Bird Habitat Document*
Attachment 3: Rapid Assessment for Wetland Functional Values - Plant Community Areas No. 8 and 12
Link to Wetland Delineation Report:
http://www.waukeshabypass.org/docs/SEWRPC_Rapid_Assessment_of_Wetland_Functional_Values.pdf

MEMORANDUM OF AGREEMENT

BETWEEN THE FEDERAL HIGHWAY ADMINISTRATION AND

THE WISCONSIN STATE HISTORIC PRESERVATION OFFICER

Prepared

Pursuant to 36 CFR § 800.6(c)

Regarding

WISCONSIN DOT I.D. 2788-01-00

WHS # 11-0526/WK

WAUKESHA WEST BYPASS

WAUKESHA COUNTY

WHEREAS, the Federal Highway Administration (FHWA) has been requested to participate in a project to construct the Waukesha West Bypass, in the cities of Waukesha and Pewaukee and in the Town of Waukesha; and

WHEREAS, the FHWA is the lead agency on this project with responsibility for completing the requirements of Section 106; and

WHEREAS, the FHWA has established the Waukesha West Bypass project's area of potential effects, as defined at 36 CFR § 800.16(d), to include those structures immediately adjacent to the existing and proposed project roadways; and

WHEREAS, the FHWA pursuant to 36 CFR 800.4(c) has determined that the project will have an adverse effect on the setting of the National Register-listed Sabina Barney House at W262 S3641 Saylesville Road; and

WHEREAS, the FHWA pursuant to 36 CFR 800.4(c) has determined that the project will have no adverse effect on the Ward Brown Farmstead located at W272 S2137 Merrill Hills Road; and

WHEREAS, the FHWA has consulted with the Wisconsin State Historic Preservation Officer (SHPO) in accordance with Section 106 of the National Historic Preservation Act, 15 USC § 470 (NHPA), and its implementing regulations (36 CFR Part 800) to resolve any adverse effect of the Waukesha West Bypass project on historic properties; and

WHEREAS, the FHWA intends to use the provisions of this Memorandum of Agreement (MOA) to address applicable requirements of Section 110(b) of NHPA, 16 USC 470h-2(b); and

WHEREAS, WisDOT participated in the consultation and has been invited to concur in this MOA; and

WHEREAS, this undertaking is not on federal or tribal land as defined by National Historic Preservation Act [NHPA]; therefore, all inadvertent human remain discoveries will be addressed in accordance with Wisconsin s.s. 157.70, and

WHEREAS, post-review discoveries of non-human remain cultural resources will be treated in accordance with 36 CFR 800.13(b), and

NOW, THEREFORE, the FHWA, and the Wisconsin SHPO agree that, upon acceptance of this MOA, and upon the FHWA's decision to proceed with Waukesha West Bypass Project, the FHWA shall ensure that the following stipulations are implemented in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

1. Sabina Barney House

The FHWA will ensure that the following measures are carried out:

a. Photographic Recordation

The house and its setting will be photographically recorded within 60 days of being advised by the WisDOT project manager that the MOA has been fully executed – assuming that no snow is on the ground when notification is made. Should there be snow on the ground, photographs will be taken within thirty days of its melting in Spring, but no later than 01 May 2014. Photographic recordation will be completed with digital images, the production of which will be consistent with the requirements of SHPO. Prior to the project's initiation, WisDOT or its agent will prepare and deliver to SHPO two copies of twelve to fifteen, high quality, color, digital photographs, as well as a CD with those images. A set of the images, along with a CD, will also be provided to the Waukesha County Historical Society and to Mr. Kutil, the property owner. The standards to be used for this activity are found in Appendix A.

b. Potential Plantings

Once 90% plans have been accepted and final design is started, the WisDOT project manager, or his designee, will contact Mr. Kutil within 30 days in order to discuss a landscape plan in which trees and bushes will be planted in the WisDOT-owned setback between the relocated CTH X and his property. Such plantings will further obscure Mr. Kutil's property from the roadway. Within 30 days of Mr. Kutil's acceptance of the plan, it will be submitted to SHPO for review and concurrence. SHPO will respond and concur within 30 days. If no response is received from SHPO within those 30 days, the plan will be considered accepted and implementation will be planned for the season in which the CTH X/STH 59 intersection is reconstructed. Landscaping costs will not exceed $25,000 and consist of trees and/or shrubs.

c. National Register Narratives for Properties in the Non-Incorporated Areas of Waukesha County

There are 14 non-archaeological National Register-listed properties in non-incorporated areas of Waukesha County, including the Barney House, that do not have summaries posted on the Wisconsin Historical Society website. These summaries provide awareness of the significance for listed properties and are required for every National Register nomination submitted to the Wisconsin Historical Society. Accordingly, the WisDOT project manager, or his designee, will ensure that summaries for the 14 properties are written and submitted to the WHS. The standards to be used for this activity are found in Appendix B, along with a list of the 14 properties. This component will be completed within 270 days of the signing of this MOA.

2. Dispute Resolution

Should any signatory to this MOA (including any invited signatory), per 36 CFR 800.6(c)(1) and (2), object in writing at any time prior to termination to any actions proposed or the manner in which the terms of this MOA are implemented, WisDOT and FHWA shall consult with such party to resolve the objection. The objection must specify how the actions or manner of implementation is counter to the goals, objectives or specific stipulation of this MOA. If FHWA determines that such objection cannot be resolved, FHWA will:

a. Forward all documentation relevant to the dispute, including the FHWA's proposed resolution, to the Advisory Council on Historic Preservation (ACHP). The ACHP shall provide FHWA with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FHWA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP and signatories, and provide them with a copy of this written response. FHW A will then proceed according to its final decision.

b. If the ACHP does not provide its advice regarding the dispute within the 30 day period, FHWA may make a final decision on the dispute and proceed accordingly. Prior to proceeding, FHWA shall notify the parties to this MOA of its decision regarding the dispute.

c. It is FHWA's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute.

3. Amendments

Any signatory to this agreement may propose to the agency that the agreement be amended. Whereupon the agency shall consult with the other signatory parties [including invited signatories per 36 CFR 800.6(c)(1) and (2)] to this agreement to consider such an amendment. 36 CFR 800.6(c)(1) and (7) shall govern the execution of any such amendment.

4. Professional Qualifications

WisDOT shall ensure that all historic preservation work carried out pursuant to this agreement is carried out by or under the supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Professional Qualifications Standards* in the field of architectural history, as published in 36 CFR Part 61.

5. Termination

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

6. Sunset Clause

This agreement shall be null and void if all terms are not carried out within twelve (12) years from the date of its execution, unless the signatories agree in writing to an extension for carrying out its terms.

Execution of this MOA by FHWA and the Wisconsin SHPO, and implementation of its terms, evidences that FHWA has complied with Section 106 on the Waukesha West Bypass Project and its effects on historic properties and that the FHWA have taken into account the effects of the project on historic properties.

FEDERAL HIGHWAY ADMINISTRATION

By: _____ Date: November 19, 2013

Ian Chidister, Environmental Program Manager

WISCONSIN STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: 12/13/13

James R. Draeger, State Historic Preservation Officer

INVITED SIGNATORY:

WISCONSIN DEPARTMENT OF TRANSPORTATION

By: Rebecca Burkel Date: 4/2/14

Rebecca Burkel, WisDOT Historic Preservation Officer

APPENDIX A (Photographic Standards)

Standards for Digital Photo Documentation:

- Photographic documentation will include twelve to sixteen digital images that meet SHPO and National Park Service (NPS) requirements (detailed below).
- WisDOT or its agent will submit digital images to SHPO, the Waukesha County Historical society and Mr. John Kutil, the property owner, on an archival CD, per SHPO and NPS requirements.
- WisDOT or its agent will provide two sets of commercially produced prints to SHPO, labeled per SHPO standards.
- WisDOT is aware of and will bear the cost of fulfilling this stipulation.

SHPO and NPS Requirements for Digital Photographs:

- Images will be taken with a digital SLR camera set to the highest quality.
- Each image will be at least 2,000 pixels on the longest side or at least 300 pixels per inch.
- Image file sizes will exceed 3MB (uncompressed).
- Images will be saved as uncompressed JPEGs and will not be cropped, compressed, up-sampled, or otherwise digitally altered.
- CDs should be "closed out" and readable on multiple computers.
- Photologs will be submitted that record the structure name, location, date of photograph, photographer and direction of photo.
- All color prints will be labeled on the back with date, project name, structure name, direction of the photograph, and the image file name that corresponds with the digital images and the photolog.

Appendix B (Standards for the Historic Property Summaries)

The summaries will be submitted on a disk to the Wisconsin Historical Society-Division of Historic Preservation and Public History, c/o the National Register Coordinator. Each summary will be:

- Written by a qualified National Register consultant.
- 200 to 300 words for each property. Entries for large districts, complexes or exceptionally significant properties may be longer.
- Include content that relays the history of the property, as well as discusses its physical appearance and its significance.
- Written for the general public, be engaging and fun to read, and will avoid using National Register jargon or overly academic terminology.

Include content from the National Register Nomination for each property.

The 14 properties for which summaries will be written are:

National Register #	*Listing Name*	*Address*	*County*	*Civil Town*
88000454	**Statesan Historic District**	Boys School Rd.	Waukesha	Delafield
73000097	**Turck, Christian, House**	Off WI 59 in Old World Wisconsin	Waukesha	Eagle
73000095	**Koepsel House**	Old World Wisconsin, off WI 59	Waukesha	Eagle
03000225	**Saylesville Historic District**	Saylesville Road from west bank of Genesee Creek to S52 W28731 Saylesville Road	Waukesha	Genesee
82000723	**Johnston, William, Lime Kiln**	E of Genesse Depot	Waukesha	Genesee
73000094	**Booth, J. C., House**	About 1 mi. SW of Saylesville on Saylesville Rd.	Waukesha	Genesee
81000065	**Genesee Town Hall**	Genesee St.	Waukesha	Genesee
77000058	**Beaumont Hop House**	Address Restricted	Waukesha	Merton
89002033	**Pabst, Gustave, Estate**	36100 Genesee Lake Rd.	Waukesha	Summit

72000067	**Chapel of St. Mary the Virgin**	2 mi. SW of Nashotah on Nashotah House Rd.	Waukesha	Summit
82000719	**Cobb, George N., House**	S of Oconomowoc at 1505 N. Golden Lake Rd.	Waukesha	Summit
80000204	**Haseltine Cobblestone House**	N of Big Bend on Big Bend Dr.	Waukesha	Vernon
98001595	**Reformed Presbyterian Church of Vernon**	W234 S7710 Big Bend Rd.	Waukesha	Vernon
94001250	**Barney House**	W264 S3641 Saylesville Rd.	Waukesha	Waukesha

From: Kitchel, Lisie E - DNR <Lisie.Kitchel@wisconsin.gov>
Sent: Monday, June 01, 2015 3:49 PM
To: Webster, Craig M - DNR; Cain, Douglas - DOT; Webb, Charlie/MKE; gevans@waukeshacounty.gov; Meyer, Kerry/MKE; Sonnenberg, Jennifer/MKE; nbobinski@kapur-assoc.com; Farrenkopf, Kurt A
Cc: Thompson, Michael C - DNR; Eruchalu, Benedict C - DOT; Kopka, Marie H MVP; Leithoff, Karla - DOT
Subject: RE: Northern long eared bat

That is correct – there are no known roost sites or hibernacula for the NLEB in the Waukesha Bypass project area, so there would be no concerns.
I read Charlie Webb's note from MN and sounds like they are getting different advise from FWS than we are, they have indicated no tree clear cutting from Jun1 to July 31 (during the pup season) according to the 4d rule in effect for the NLEB.
Either way it does not matter for the West Waukesha Bypass Project since there are no maternity roosts near the project area.

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Lisie Kitchel
Phone: (608) 266-5248
Cell: (608) 220-5180
Lisie.Kitchel@wi.gov

From: Webster, Craig M - DNR
Sent: Monday, June 01, 2015 2:32 PM
To: Cain, Douglas - DOT; 'Charlie.Webb@CH2M.com'; gevans@waukeshacounty.gov; Kerry.Meyer@CH2M.com; Jennifer.Sonnenberg@CH2M.com; nbobinski@kapur-assoc.com; Farrenkopf, Kurt A
Cc: Thompson, Michael C - DNR; Eruchalu, Benedict C - DOT; Kopka, Marie H MVP; Leithoff, Karla - DOT; Kitchel, Lisie E - DNR
Subject: Northern long eared bat

I have concluded that Northern long eared bats have not been reported in DNRs NHI data base in the proposed West Waukesha Bypass area. According to my project specific and expanded buffer search, northern long eared bats have NOT been reported in the proposed West Waukesha Bypass selected prefered route.

Craig Webster
Desk Phone: (262) 574-2141
Cell Phone: (414) 303-3011
Craig.Webster@Wi.Gov

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

From: Cain, Douglas - DOT
Sent: Wednesday, May 27, 2015 11:49 AM
To: 'Charlie.Webb@CH2M.com'; gevans@waukeshacounty.gov; Kerry.Meyer@CH2M.com; Jennifer.Sonnenberg@CH2M.com; nbobinski@kapur-assoc.com; Farrenkopf, Kurt A

Cc: Webster, Craig M - DNR; Cain, Douglas - DOT
Subject: RE: Northern long eared bat

I talked to Scott Lee and the current guidance is as follows:

1. Review the USFWS Section 7 website for any federally listed T&E species. http://www.fws.gov/midwest/Endangered/section7/s7process/index.html
2. Coordinate through your region WDNR liaison on any concerns with the NLEB and if there are no concerns use their email or correspondence as final documentation.

Attached is the guidance developed with WisDOT, WDNR, USFWS and FHWA.

Craig, I guess we'll be waiting to hear back from you on concerns with the NLEB in the project area.

Thanks, Doug

From: Holt, Daniel <daniel.holt@dot.gov>
Sent: Wednesday, June 03, 2015 12:45 PM
To: Metzer, Gary - DOT; Cannon, Janet - DOT
Cc: Blankenship, Tracey; Chidister, Ian
Subject: SER WIS 11, 1320-21-00, 1320-07-11 ER: NLEB issue
Attachments: NLEB Impact Eval and Consultation Process - 2015-05-04.docx

Hey Gary, Janet,

With the following notation, the issue of the NLEB for this project is resolved with no further action needed.

-Project received initial letter from DNR that noted a records search as of 6/19/13. This date is after June 1, 2011, the date in which Alyssa Barrette (WisDOT ecologist) notes the NLEB was listed on the state's endangered list.
-With initial DNR letter noting no endangered resources or suitable habitat, including no citation of the NLEB, is to be impacted provides an answer of 'no' for question #1 for the department's NLEB interim effect determination and agency consultation process (effective 5/4/15 and is attached).

I am awaiting guidance on the PM2.5 air quality issue and will provide status on that one when I receive it.

Thank you for your patience.

Regards,
Daniel

Waukesha West Bypass Project ID 2788-00-22
Woodlands Conservation and Tree Mitigation Summary
Prepared by: The Waukesha County Department of Public Works
June 29, 2015

The Pebble Creek West Alternative meets the definition of the least environmentally damaging practicable alternative; it minimizes impacts to a medium/low quality fen and retains a high quality upland interior forest bird habitat. The high-quality combined with a 50-acre upland area (a relative rarity adjacent to an urban area) compared to the medium/low quality of the 1.1-acre sedge fen makes this site a key factor for recommendation. The Pebble Creek West Alternative preserves both the forest interior bird habitat and the sedge fen. In addition, the Pebble Creek West Alternative is preferred by abutting property owners.

Waukesha County has made a concentrated effort to comply with mitigation requirements set forth in the Record of Decision as noted below:

- Permanent legal protection of the remnant wooded upland. (the EPA does not consider the property owner's enrollment in the DNR state forestry management program as a legal perpetuity conservation easement with protective covenants).

- Tree mitigation for any loss of trees in the upland areas at a 1:1 ratio

To meet these requirements, Waukesha County:

- Surveyed and platted the remnant wooded upland area

- Drafted a perpetuity conservation easement for the wooded uplands

- Appraised the value of the conservation easement

- Presented an offer to the owner (based on appraised value) to acquire a perpetuity conservation easement on the remnant wooded uplands

- Arranged multiple meetings with both the woodland owner and their representatives regarding acquisition of this easement

- Surveyed and created a log of tree removals within the wooded uplands area

- Explored potential parcels for reforestation (to include planting of trees) to mitigate for proposed tree removals; parcels included wooded uplands adjacent to/and outside of the project footprint.

The County is experiencing some challenges with the regulatory conservation requirements for the bypass, but continues to explore and is actively engaged in fulfilling this commitment.

- To acquire the woodland perpetuity conservation easement to serve as mitigation, Waukesha County is unable to condemn the property and must negotiate a purchase from the owner.

- The owner has demonstrated a willingness to communicate and the easement is still being considered, however, to date, he has not finalized his decision regarding the acquisition.

- The County is open to a reasonable counter offer and will review requirements brought forth by the owner to secure this easement.

- The County continues to be in contact with the owner and is making an effort to secure this conservation easement over the next several weeks

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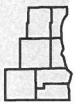

June 29, 2015

Mr. Gary Evans
Engineering Services Manager
Waukesha County Department of Public Works
515 W Moreland Blvd, Room 220
Waukesha, WI 53188

Dear Mr. Evans:

Pursuant to your request dated June 10, 2015, to provide documentation on the potential fen mitigation sites and selection criteria associated with the West Waukesha Bypass project and request dated June 16, 2015, to conduct a vegetation assessment of the Yatzeck's Fen site we are providing you a SEWRPC Staff Memorandum entitled *Evaluation of the Selection Criteria to Identify a Suitable Fen Enhancement Site to Mitigate Anticipated Wetland Impacts Associated with the West Waukesha Bypass Project (Project Id 2788-01-00)*, June 26, 2015.

Should you have any questions concerning the memorandum please contact Thomas M. Slawski of the Commission staff.

Sincerely,

Kenneth R. Yunker, PE
Executive Director

KRY/TMS/lgh
#00226819.DOC

Enclosure (#226845.pdf)

cc: Ms. Karen Braun, Senior Civil Engineer, Waukesha County Department of Public Works

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SEWRPC Staff Memorandum

EVALUATION OF THE SELECTION CRITERIA TO IDENTIFY A SUITABLE FEN ENHANCEMENT SITE TO MITIGATE ANTICIPATED WETLAND IMPACTS ASSOCIATED WITH THE WEST WAUKESHA BYPASS PROJECT (PROJECT ID 2788-01-00)

June 26, 2015

INTRODUCTION

Since 2010, the Southeastern Wisconsin Regional Planning Commission has been one of the designated participating agencies for the West Waukesha Bypass Project's environmental review team.[1] Commission staff have provided information and participated in multiple Inter-Agency meetings with the U.S. Army Corps of Engineers (ACOE), U.S. Environmental Protection Agency (EPA), Wisconsin Department of Natural Resources (WDNR), Waukesha County staff and associated consultants to assist with elements of the environmental study of this project that included: wetland delineations to quantify potential wetland impacts, rapid assessment of wetland functional values and quality impacts, analysis of alternative environmental impacts associated with the selection of the preferred alternative, and draft environmental impact statement. This information combined with numerous detailed studies was incorporated into the final Record of Decision that was approved on January 20, 2015.[2] The Record of Decision is the Federal Highway Administration's (FHWA) final approval of the project and it represents the end of the study phase of the project.

As detailed in the Record of Decision the FHWA, the ACOE and EPA concurred with Waukesha County's decision in May 2014 with one key condition concerning mitigation of the impacted 0.38 acres of the existing 1.1-

[1] *U.S. Department of Transportation Federal Highway Administration, Wisconsin Department of Transportation, Waukesha County Department of Public Works,* Coordination Plan For Agency and Public Involvement, As part of the Environmental Review Process for West Waukesha Bypass, I-94 to WIS 59 Waukesha County, WI, (WisDOT Project I.D. 2788-01-00), *May 2010, updated February 2012.*

[2] *U.S. Department of Transportation Federal Highway Administration, West Waukesha Bypass, County TT, I-94 to WIS 59, Record of Decision, Project I.D. 2788-01-00, January 2015; the document is available on the Environmental and Technical Reports page at http://waukeshabypass.org/docs/FinalEIS/12-09-14_ROD_v2_rmb.pdf.*

acre sedge fen wetland (Site No. 8 in Exhibit A) associated with the selected preferred alternative route of this roadway project, which states:

> *Preservation of a fen, offsite, but within the Upper Fox River watershed to mitigate for impacts for Wetland-8. We recommended that FHWA and WisDOT mitigate for the entire acreage of the fen, regardless of the actual acreage of the direct impacts, to account for indirect impacts.*

Therefore, the Record of Decision also included the following provision to mitigate the fen impacts as summarized below:

> *To mitigate the Pebble Creek West's impacts on Wetland 8, a fen, Waukesha County and WisDOT will preserve Brown's Fen. Brown's fen is a 20.8-acre high quality fen located on an outlot of the Kame Terrace Subdivision (located south of Madison Street and west of County TT). This outlot, which is in Retzer Nature Center, was dedicated to Waukesha County without any form of deed restriction and maintains its outlot status. According to Wisconsin Statutes S. 236.02 (7), "Outlots may be sold and/or built upon if they meet size and access requirements, and any restrictions on the outlot have been released". To formally protect Brown's Fen, Waukesha County proposes to place deed restrictions on the parcel that will permanently protect the fen and place the outlot parcel in Waukesha County's ownership in perpetuity.*

As summarized in the Record of Decision, the concept of the Brown's Fen mitigation is to incorporate this into a 15- to 20-acre mitigation site as part of the Waukesha County's Retzer Nature Center properties and management in perpetuity. The potential mitigation areas are surrounded by upland areas that would be included in the mitigation site. The upland areas would be a mix of prairie and possibly wooded areas. It was estimated that a 5-acre wetland fen mitigation site is possible at this location, though a more thorough field review of the site had not been conducted to substantiate this projection at that time, which has led to concerns by the environmental review team on the extent of the existing quality of Brown's Fen and that there are enough potential mitigation acreages.[3] This prompted a wetland delineation and *Wisconsin Rapid Assessment Methodology* (WRAM) request of the Brown's Fen by Gary Evans,[4] Waukesha County Department of Public Works, on May 22, 2015, which is currently being completed by Commission staff.

Waukesha County is now in the preliminary design phase for the entire route and construction of this project is anticipated to begin in 2016. However, before undertaking construction requiring discharge of fill material into waters of the United States, including wetlands, authorization will be obtained from the Army Corps of Engineers under Section 404 of the Clean Water Act. Such authorization is contingent on obtaining water quality certification from the DNR under Section 401 of the Clean Water Act, and Wisconsin Administrative Code Chapter NR 299.

In order to meet the requirements of the wetland mitigation permitting associated with the West Waukesha Bypass Project, the County requested that SEWRPC provide documentation on the methods and criteria used to identify the best candidate fen site for mitigation associated with this project on June 10, 2015. However, recent interest by the property owners of the Yatzeck's Fen site in entering into a permanent conservation easement prompted the Waukesha County Department of Public Works to expand their request on June 16, 2015, for the Commission to conduct a floristic quality assessment to determine the condition of plant communities within the proposed Yatzeck's Fen site and provide a summary of the findings. This site has been one of the top seven fen

[3]*Personal Communication, Gary Evans, Waukesha County Department of Public Works.*

[4]*Wisconsin Department of Natural Resources,* WDNR Wetland Rapid Assessment Methodology – User Guidance Document, *Version 2.0, March 2014.*

mitigation sites considered as part of the fen site selection process by the Environmental Review Team, but was not chosen primarily due to an unwillingness by the property owner to sell.[5] However, given this recent change in interest by the property owners, there are concerns by the Environmental Review Team on the existing quality of Yatzeck's Fen to serve as an adequate mitigation site.

Therefore, this memorandum presents the inventory findings assembled by the Commission staff and sets forth 1) the selection criteria used to identify a suitable fen restoration site to mitigate anticipated wetland impacts associated with the West Waukesha Bypass project, 2) summary of the Brown's Fen WRAM conducted on June 4, 2015, and 3) summary of the floristic quality assessment of Yatzeck's Fen conducted on June 24, 2015. This Memo is based upon available inventory data and information acquired from the WDNR, WisDOT, Waukesha County, Retzer Nature Center, and Commission records.

BACKGROUND

The selection criteria used to identify a suitable fen restoration site to mitigate anticipated wetland impacts associated with the West Waukesha Bypass project included guidance from two sources; WisDOT's Wetland Mitigation Banking Technical Guidelines (Version 2, 2002) and WDNR's Guidelines for Wetland Compensatory Mitigation in Wisconsin (Version 1, August 2013). The fundamental objective of wetland compensatory mitigation is to offset unavoidable adverse impacts to wetlands authorized by the United States Army Corps of Engineers (USACE) and/or the Wisconsin Department of Natural Resources (WDNR). The USACE and WDNR have drafted this document to update the 2002 Guidelines for Wetland Compensatory Mitigation in Wisconsin. The United States Environmental Protection Agency (USEPA) Region V and the United States Fish and Wildlife Service (USFWS) Region 3 participated in the preparation of these updated guidelines.

Hence, a watershed approach was used as a basis for selection criteria for the targeted selection of compensatory mitigation sites with the ultimate goal to maintain and improve the quality and quantity of sedge fen wetland resources within the Upper Fox River watershed. To the extent practicable, consideration of how the types and locations of compensatory mitigation projects will provide the desired sedge fen wetland resource functions and continue to function over time in a changing landscape was included. Assurances of the protection and maintenance of terrestrial resources, such as non-wetland riparian areas and uplands, when those resources contribute to or improve the overall ecological functioning of wetland resources in the watershed were also considered. Although the selection criteria for mitigation sites did not focus exclusively on specific functions (e.g. water quality or habitat for certain species), it did take into consideration, where practicable, the suite of functions typically provided by the affected sedge fen. So, sedge fen quality was an important factor in choosing mitigation sites (see **Impacted Wetland Quality** section below). In addition, since the amount of mitigation required increases the further away the mitigation site is from the impact site, from a watershed perspective, proximity to the impact site was also a major factor in selecting the wetland mitigation sites.

The compensatory mitigation project site must be ecologically suitable for providing the desired sedge fen wetland functions. In determining the ecological suitability of the compensatory mitigation project site considered the following six factors from WDNR 2013 guidelines, to the extent practicable, in choosing the best potential sedge fen mitigation site:

- Hydrological conditions, soil characteristics, and other physical and chemical characteristics;
- Watershed-scale features, such as habitat diversity, habitat connectivity, and other landscape scale functions;

[5]*Waukesha County Department of Public Works, Summary of Waukesha County Fen Research, June, 2015.*

- The size and location of the compensatory mitigation site relative to hydrologic sources (including the availability of water rights) and other ecological features;

- Compatibility with adjacent land uses and watershed management plans;

- Reasonably foreseeable effects the compensatory mitigation project will have on ecologically important aquatic or terrestrial resources, cultural sites, or habitat for threatened and endangered species; and

- Other relevant factors including, but not limited to, development trends, anticipated land use changes, habitat status and trends, the relative locations of the impact and mitigation sites in the stream network, local or regional goals for the restoration or protection of particular habitat types or functions (e.g., reestablishment of habitat corridors or habitat for species of concern), water quality goals, floodplain management goals, and the relative potential for chemical contamination of the aquatic resources.

Though not applicable to all sites, the following list of general characteristics (from the WDNR 2013 guidelines) for a viable compensation site were used to help distinguish the best sedge fen mitigation sites for this project (no order of importance is implied by the numbering):

1. The site is not too small, and fits into the ecological landscape; generally these sites are contiguous with existing wetland resources or where aquatic resources previously existed.

2. The site chosen has a good potential to maximize functional lift, or otherwise provide functional gains over existing conditions.

3. Ditches, tiles, and other features which impact hydrology that are contained within the property boundaries can be disabled or manipulated without negatively impacting neighboring properties by the bank sponsor or compensation site developer.

4. The site is not likely to receive continual inputs of undesirable vegetative species (invasive and/or non-native species).

5. Upland buffers provide adequate wetland protection from adjacent present and future land uses.

6. The work proposed will not result in an adverse impact to federal or state endangered, threatened, or special concern species.

7. The work proposed will not threaten or degrade high quality upland habitat, such as prairie remnants and oak savannas.

8. The site offers the opportunity to provide or enhance wetland functions and services as well as ecological or hydrological functions and services missing in the surrounding landscape or watershed, such as those identified in regional habitat conservation plans.

9. The site has a suitable reference wetland which can be used to assess the predicted final product of the proposed compensation site.

10. The site will not require long-term maintenance of structures to sustain targeted community types, functions and services.

Long-Term Site Protection and Management Considerations

Permitting agencies require that all compensation sites (permittee-responsible and mitigation banks) be protected with a conservation easement or comparable legal instrument in perpetuity. The site protection mechanism proposed must be approved by the permitting agencies. The legal site protection document must, to the extent appropriate and practicable, prohibit incompatible uses (e.g., clear cutting or mineral extraction) both within and adjacent to the property that might otherwise jeopardize the objectives of the compensatory mitigation project.
However, it is important to note that a property owner cannot be forced into a conservation easement, if they happen to have a potential mitigation site on their property. Hence, a mitigation site is solely dependent upon the willingness of the property owner to commit to entering into a legal agreement that would result in significant restriction of their access to and use of their property, which may also include a permanent easement to access the site through their property.

Once a mitigation site has been approved by the permitting agencies, the applicant shall prepare a Conservation Site Plan (CSP) that must also include a long-term management plan. This plan must identify the legal mechanisms and party responsible for ownership and all long-term management and protection of the mitigation project site. In addition to identifying legal mechanisms and responsible parties above, the long-term management plan should include a description of long-term management needs, the annual cost estimate for these needs, and identify the funding mechanism that will be used to meet those needs.

Both the willingness of the property owner to commit to entering into a legal agreement to protect the potential mitigation site and the potential to ensure the long-term management issues can be addressed in perpetuity, to the extent practicable, were also used to determine the best fen mitigation site.

Impacted Wetland Quality

The impacted wetland site (shown as wetland No. 8 on Exhibit A) is comprised of 1.1 acres of sedge fen, with Southern Wet to Wet Mesic Lowland Hardwoods; dominant plant species include reed canary grass, jewel weed, and green ash; located on the south side of Sunset Drive, with a very narrow connection to the adjacent wetland, disturbances include selective cutting of trees as well as siltation and sedimentation due to stormwater runoff from adjacent land.[6] However, one of the most distinctive features are active spring seeps associated with skunk cabbage along the hillside slopes of this fen.[7]

While this impacted wetland received a high rating for groundwater, it received low ratings for shoreline protection and flood/stormwater attenuation and medium ratings for floral diversity, wildlife habitat, fishery habitat, water quality protection and aesthetics based upon the rapid functional value assessment methodology by Commission staff in 2012.[8] Overall the fen was classified as medium/low quality with a mean Coefficient of Conservatism (C) of 2.2. The concept of species conservatism is the foundation of floristic quality assessment. The method assigns a Coefficient of Conservatism to each native plant species based on that species tolerance for disturbance and fidelity to a particular pre-settlement plant community type. The aggregate conservatism of all the

[6]*Waukesha County Department of Public Works, Selection of Preferred Alternative, West Waukesha Bypass Corridor Study, Waukesha County, Project ID 2788-01-00, April 3, 2014. Summary of Waukesha County Fen Research, June 2015.*

[7]*Southeastern Wisconsin Regional Planning Commission, Rapid Assessment of Wetland Functional Values for the Waukesha West Bypass Alternative Routes, August 3, 2012.*

[8]*Ibid.*

plants inhabiting a site (i.e. Mean C) determines its floristic quality.[9] C values range from 0 (lowest) to 10 (highest quality) and concerns over any particular C value are usually compensated within the floristic quality assessment method since it requires the average C value of all the individual species that occur at a site.

Therefore, it was decided by the permitting agencies that the mitigation site should be an equal or greater quality sedge fen to compensate for the direct and indirect impacts associated with the anticipated losses of the impacted sedge fen wetland and associated functional values.[10]

INVENTORY FINDINGS

There were a total of 28 potential sedge fen sites identified within the Fox River watershed, which were mapped and described in Exhibits B and C, respectively. However, two of those sites No. 27 (Dunlop Fen and Marsh) and No. 28 (Cambridge Avenue Fen) were found to be part of the natural areas sites No. 22 (Spring Lake Sedge Meadow) and No. 5 (Fruit's Pond Fen), respectively, and incorporated into those natural area site descriptions as shown in Exhibit C. Three sites did not have sufficient documentation and were not considered further in this site assessment, which included site numbers 21 (Sigurdson Fen), 24 (CTH D Wetlands), and 25 (Mueller Fen). As noted in Exhibit C, sites were required to have plant species inventories beyond a single or just a few recorded species by a qualified botanist/naturalist in order to meet the proper documentation criteria. Five additional sites were not considered to be a high enough quality to serve as good candidates for fen mitigation sites and included site numbers 12 (Genesee Creek Fen), 17 (Oak Park Drive Fen), 20 (Romanowski Fen), 23 (Barton Road Wetlands), and 26 (Quarry Fen). Site number 4 (Pebble Creek Wetlands) is the fen being impacted by the roadway project, so it cannot serve as the mitigation site. Therefore, this left a total of 17 potential fen mitigation sites.

The WDNR 2013 guidelines prefer that the mitigation site be located within a half mile of the impacted wetland site, but there were no potential fen mitigation sites this close to the project site. Therefore, the proximity boundary was expanded to five miles from the impacted wetland site, which is consistent with the WisDOT compensatory mitigation protocols.[11] Exhibit C shows how the sites were sorted by several factors that included: distance (within five miles of project impact site); location (within the Pebble Creek subwatershed), which is the same subwatershed where the project impact is taking place; high potential for enhancement; quality of site; and site documentation.

The five mile restriction potentially eliminated 12 fen mitigation sites from further consideration, which included site numbers 6 (Jericho Creek Fen), 7 (Mill Brook Fen), 9 (Vernon Fen), 10 (Vernon Prairie Fen), 11 (Yatzeck's Fen), 13 (Malek Wetland), 14 (Meyer Sedge Fen), 15 (Mukwonago Fen), 16 (Mukwonago River Esker Fen), 18 (Pewaukee Lake Access Fen), 19 (Reinke Sedge Fen), and 22 (Spring Lake Sedge Meadow). However, three of those sites (Yatzeck's Fen, Pewaukee Lake Access Fen, and Spring Lake Sedge Meadow) were thought to be of

[9]*Swink, F. and G. Wilhelm, Plants of the Chicago Region, 4th ed., Indiana Academy of Science, Indianapolis, 921 pages, 1994; Wilhelm, G. S. and L. A. Masters, Floristic Quality Assessment in the Chicago Region and Application Computer Programs, Morton Arboretum, Lisle, IL. 17 pp. + Appendices, 1995.*

[10]*U.S. Department of Transportation Federal Highway Administration, West Waukesha Bypass, County TT, I-94 to WIS 59, Record of Decision, Project I.D. 2788-01-00, January 2015.*

[11]*Wisconsin Department of Transportation,* Wetland Mitigation Banking Technical Guideline, *In cooperation with:Wisconsin Department of Natural Resources, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service, and Federal Highway Administration, July 1993, First Revision: January 1997, Second Revision: March 2002.*

high enough quality and size for continued consideration. Although these sites exceeded the five mile distance, the Pewaukee Lake Access Fen was still located within the Upper Fox River Watershed, while the Yatzeck's Fen and Spring Lake Sedge Meadow were located within the Middle Fox River Watershed as shown on Exhibit B.

There were a total of five potential sites within the five mile distance that included site numbers 1 (Brown's Fen), 2 (Dragon Fen), 3 (Falk Fen and Woods), 5 (Fruits Pond Fen), and 8 (Minooka Fen). However, the Dragon Fen site was determined to be too small to serve as an effective mitigation site for this project and removed from further consideration. Of the remaining four sites, Brown's Fen is the only site that is actually located with the Pebble Creek subwatershed. Fruits Pond Fen is located within the Upper Fox River watershed and the other two sites Falk Fen and Woods and Minooka Fen are located further downstream within the Middle Fox River watershed.

Therefore, based upon this preliminary assessment there were a total of seven sites that were recommended by the Commission for further investigation to the Waukesha County Department of Public Works that included the following list of sites:

- Pewaukee Lake Access Fen
- Minooka Fen
- Brown's Fen
- Fruits Pond Fen
- Falk Fen and Woods
- Spring Lake Sedge Meadow
- Yatzeck's Fen

The Waukesha County of Public Works conducted a thorough analysis of each of these potential mitigation sites and determined that Brown's Fen was the best and most viable compensation site for this project when compared to all the other sites in terms of its proximity to the impact site, quality, size, potential for enhancement (see **Brown's Fen Vegetation Assessment** section below), access to the site, compatibility with adjacent existing and planned land uses, deed restrictions or protective covenant issues, willingness of the landowner to establish permanent conservation easements as well as commitments and abilities to manage the site in perpetuity.[12] More specifically, Waukesha County owns the property within and adjacent to Brown's Fen and is willing to establish permanent conservation easements or deed restrictions to protect this site in perpetuity. In addition, the Retzer Nature Center has developed a management plan for this site as shown in Exhibit D and has also committed to managing this site in perpetuity, which essentially ensures that the long-term management issues associated with this site, to the extent practicable, will be met (including competent staff and resources to manage effectively). The Retzer Nature Center staff have worked on WisDOT mitigation projects in the past (i.e. Retzer staff are perpetuity stewards for the mitigation site on the Pewaukee River), they are very skilled and knowledgeable about all aspects of wetland management and enhancement techniques (see Exhibit D), and are familiar with regulatory compliance easements and issues.[13]

[12]*Waukesha County Department of Public Works,* Summary of Waukesha County Fen Research, *June, 2015.*

[13]*Personal Communication, Karla Leithoff, Wetland Scientist, WisDOT.*

Brown's Fen Vegetation Assessment

Based on results of the recent WRAM conducted on this site dated June 4, 2015, the Brown's Fen can be divided into three main areas that includes the core fen (2.1 acres), fen complex (12.03 acres), and remaining wetland areas outside of the fen complex within the project boundary (total of 16.48 acres) as shown on Exhibit E. Overall, floristic integrity is at the low end of "high". Exhibit F provides species common names, status for listed/rare species, combined canopy cover of exotic species, and plant community and disturbance descriptions for each of the three aforementioned areas individually. The core fen was the least disturbed and invaded by exotic species and is high quality with several common to abundant conservative fen species.However, most of the broader wetland area is strongly influenced by groundwater discharge, so surrounding, more disturbed areas that presently support lower quality sedge fen, fresh wet meadow, and shrub or hardwood swamps were likely predominately sedge-fen with areas prairie-fen prior to European settlement.. The most disturbed portion of the fen (now mostly a mosaic of shrub swamp and hardwood swamp) had a mean C of 2.8, the fen complex (mostly degraded sedge fen) had a mean C of 3.6, and the core fen (prairie fen and sedge fen) had a mean C of 4.6.

The condition of the central portion of the assessment area that contains the core fen is good quality. It is dominated by relatively conservative native species characteristic of fens. The surrounding areas are degraded, with fewer conservative native species and greater area dominated by exotic species or community types that are inappropriate (e.g. hardwood swamp on previously open sedge and prairie fen). By far the greatest stressor to the quality of this fen is the encroachment of both native woody vegetation and the invasion of exotic woody vegetation in much of the assessment area, which have caused the loss of conservative herbaceous prairie- and sedge-fen vegetation over large areas that now support hardwood and shrub swamp plant communities. Areas of reed canary-grass,stinging nettle, and garlic mustard have likewise displaced conservative native species in parts of the eastern and southeastern portion of the assessment area, but it is not possible to ascertain whether the displaced communities were historically sedge meadow, fen, or fresh wet meadow; these areas were likely most affected by ditching, placement of spoils, and impoundment in the past.

Potential for Fen Enhancement

The Brown's Fen site would be conducive to serving as a mitigation site by enhancing up to approximately 10.24 acres of degraded sedge fen wetland. This acreage was divided into two main targeted categories of potential management 1) 5.32 acres for exotic shrub removal and 2) 4.92 acres for reed canary grass and garlic mustard removal as shown on Exhibit E. In particular, areas with hillside groundwater seepage that were historically open, but are now dominated by shrubs and trees, could be cleared of woody vegetation, the stumps could be treated to prevent re-sprouting, and the ground could be revegetated with sedge and fen species in those areas where they have been displaced by woody vegetation. Some areas encroached upon by shrubs still support struggling sedge-fen herbaceous species underneath and others do not. Proposed management activities would unite a larger area of open wetland plant communities with several other fragments of remnant sedge fen.

Historically, this was an open wetland, likely nearly entirely composed of calcareous fen (sedge fen and prairie fen).[14] The area of potential direct impact from proposed management activities is a calcareous fen (sedge fen) dominated by tussock sedge with a few fen associated species such as prairie sedge, slender sedge, and swamp lousewort and shrub swamp dominated by glossy buckthorn, bush honeysuckle, and common buckthorn, all in an area of hillside groundwater seepage, that would be restored to sedge fen. The main secondary impact would be improved habitat continuity with other existing calcareous fen (prairie fen and sedge fen) dominated by tussock sedge and Canada blue-joint grass (with abundant shrubby cinquefoil and sterile sedge) elsewhere on the site that has been fragmented and reduced in extent by the encroachment of woody species.

[14]SEWRPC Wetland Delineation Report, Brown's Fen (Hwy 59 Waukesha West Bypass), Cover letter dated June 26, 2015.

Important Findings

- Calcareous fens are a rare plant community (S3-rare or uncommon in Wisconsin, G3-globally very restricted and vulnerable to extinction), and the area supporting an existing fen community at the site is designated as a natural area of local significance in SEWRPC planning report no. 42.

- Proposed management activities would decrease the area dominated by shrubby vegetation (mostly exotic) and increase the area dominated by fen species, which would increase the integrity of the existing fen.

- The significance of the proposed enhancement would be high and positive, because it would restore approximately 10.24 acres of fen vegetation to areas where it has been displaced by woody species (mostly exotic). In particular, it will restore hillside seeps that are being impacted or lost at the bypass impacted wetland site.

- The potential enhancement areas support a higher quality plant community (mean C 2.8) than the sedge fen site for which it is mitigating impacts (mean C 2.2).

- The project would decrease fragmentation by consolidating open wetland communities into a larger habitat block that includes a higher quality sedge-/prairie-fen (mean C 4.6).

- This proposed management would be impermanent or reversible, if the wetland site were not properly managed in the future. It is more likely that proper management will occur, because this is on the property of a nature center, some of which is already being restored and managed.

Yatzeck's Fen Vegetation Assessment

Based on results of the recent floristic quality assessment conducted on this site by Commission staff dated June 22, 2015, Yatzeck's Fen can be divided into three main areas that includes the core fen (1.82 acres), potential fen enhancement area for exotic shrub removal (10.27 acres), and potential fen enhancement area for reed canary grass removal (9.04 acres) as shown on Exhibit G. Exhibit H provides species common names, status for listed/rare species, combined canopy cover of exotic species, onsite photos, and plant community and disturbance descriptions for each of the three aforementioned areas individually.

The core fen plant community area includes native-dominated springs, seeps, and spring runs as well as areas of sedge fen and had a mean C of 5.7 (see Exhibit H). The highest quality areas are immediately surrounding springs and seeps and along the banks of the upper portions of Genesee Creek. The false asphodel and beaked spike-rush, both state threatened species, occur in a small, isolated area to the north. Valeriana uliginosa, another state threatened species, occurs in a seepage area just east of the upper reaches of Genesee Creek. Tufted hair-grass dominates portions of the fen around springs and seeps in the south. A clone of the exotic strain of giant reed and extensive stands of reed canary grass in close proximity to the springs and spring runs are concerning, and a source population of giant reed upstream to the west of the railroad right-of-way is source of propagules for further invasion. Hydrology is also impacted by the construction of two impoundments and a railroad right-of-way that passes through the wetland. The area has been impacted by beaver activity. Recently, a beaver dam backed up the upper portions of Genesee Creek. The water has largely subsided, but the newly exposed banks have not fully recovered; they are dominated by early successional native sedges and rushes (e.g. bottlebrush sedge, green bulrush, spike-rushes, and knotted rush).

The exotic shrub dominated plant community area includes shrub swamp dominated by buckthorn over generally organic soils and springs/spring runs shaded by woody vegetation. This area had amean C of 4.5 (see Exhibit H). The shrub canopy is generally dense and ground layer vegetation sparse. Where there is more light, sedges characteristic of fens and reed canary grass occur. The presence of reed canary grass would complicate restoration of this area, because it would proliferate quickly following shrub removal.

The reed canary grass dominated plant community area consists of a dense stand of reed canary grass with isolated small patches of sedges and other species characteristic of fens and had a mean C of 2.9 (see Exhibit H). The southern portion of this plant community area is subject to surface run-off from adjacent agricultural lands (rotated between row crops and hay); nitrogen and sediment inputs are likely exacerbating the reed canary grass infestation. Restoration of this area would require great effort over a long period of time (repeated herbicide treatments over years to eliminate read canary grass and revegetation with native species), and would only be worth considering if adjacent agricultural lands to the south could be taken permanently out of production. The northern portion of this plant community area is being encroached upon by glossy buckthorn, dogwood, and willows.

Important Findings

- Calcareous fens are a rare plant community (S3-rare or uncommon in Wisconsin, G3-globally very restricted and vulnerable to extinction), and the area supporting an existing fen community at the site is designated as a natural area of statewide significance in SEWRPC planning report no. 42.

- There are several small pockets of core sedge fen that contain three threatened, one special concern, and six uncommon plant species.

- There has been significant degradation to the fen, due to encroachment by buckthorn and reed canary grass infestation.

- Flooding has been reduced on this site (beaver dam has been breached or abandoned) and water levels have receded, and there is evidence of early colonization of native sedge fen species along the exposed areas.

- Adjacent land uses along the southern boundary are poorly buffered and dominated by intensive agriculture that currently discharges into the fen, which contributes to high nutrient loading conditions that support reed canary grass encroachment.

CONCLUSIONS

The recent plant community assessments for Brown's Fen and Yatzeck's Fen indicate that overall both of these sites contain a high quality core sedge fen area and contain significant potential acreages for enhancement to serve as candidate sedge fen mitigation sites. More importantly, in each case the existing quality of the core fen and enhancement areas are higher quality than the sedge fen that is being impacted by the West Waukesha Bypass project, which was a major selection criteria required by the permitting agencies (see **Impacted Wetland Quality** section above). Based upon these size and quality characteristics either of these sites could potentially serve as good fen mitigation sites.

However, despite the similarities above, these two sites have significant differences concerning their ability to serve as a viable sedge fen mitigation sites when compared against each other in terms of location (watershed based approach), functional value, adjacent land uses, site access, property owner commitments, and long-term management issues as described below.

Location

Yatzeck's Fen is not located within the Upper Fox River watershed, which was a major selection criteria required by the permitting agencies for this project. Rather, it is located in the Middle Fox River, which is well downstream of the project impact site.

In contrast, Brown's Fen is located within the Pebble Creek subwatershed, which is the same area as the project impact site and part of the Upper Fox River watershed. More importantly, it is literally upstream of the project

impact site, so it has both geomorphic position and a nexus of connection to the areas being impacted by the roadway project.

Functional Value
The most distinctive features of the impacted sedge fen wetland site are observed active spring seeps associated with skunk cabbage along the hillside slopes of this fen. The Brown's Fen mitigation would result in the enhancement and protection of the same type of unique hillside seeps that are being impacted or lost at the bypass impacted wetland site. Although Yatzeck's Fen was observed to contain numerous springs, seeps, and spring runs, it did not contain the unique hillside seep habitats. Between the two sites, the Brown's Fen would more closely provide the suite of functions typically provided by the affected sedge fen.

Adjacent Land Uses
The adjacent land uses along the southern boundary of the Yatzeck's Fen site are poorly buffered and dominated by intensive agriculture that currently discharges into the fen, which contributes to high nutrient loading conditions that support reed canary grass encroachment. It is likely that this site will need to be protected with a 100 foot buffer, but this would impact the existing recreational areas currently used by the property owners. Such an easement to protect the mitigation site may limit or restrict the rights to recreate in these areas, so this may affect the willingness of the owners of the Yatzeck's Fen site to enter into a permanent conservation easement agreement for this site (see Exhibit I).

In contrast, the existing adjacent land uses adjacent to the Brown's Fen site are largely buffered and planned to continue to remain that way, ensuring the protection of this site over the long-term.

Invasive Species Issues
Both sites support invasive species capable of reducing native biodiversity and wetland functional values. However, the invasive species issues at Yatzeck's Fen are more profound; the upper portions Yatzeck's are dominated by a large area of read canary grass. Further, the underlying problem of eutrophication of the upper reaches of Yatzeck's fen from surrounding intensive agricultural land use would need to be addressed in order to adequately address its reed canary grass infestation. Areas of reed canary grass invasion at Brown's fen are relatively small, and most of the wetland is well buffered against surface runoff from agricultural and residential areas, so attempts to eliminate reed canary grass at Brown's Fen are more likely to be successful. The clone of giant reed located in the core area of Yatzeck's fen has not yet caused significant ecological harm to the fen and could be successfully removed, but the upstream propagule source on a neighboring property would need to be addressed as well.

Site Access & Long-Term Management
There is limited access to the Yatzeck's Fen site, which is a real cause for concern in terms of the ability to manage this site. Even though this site is adjacent to a state natural area, there is no access to this site through state land from the north or east and the railroad limits access from the west (see Exhibit G). The only viable access to this site would be from the south through Yatzeck's property, so an access easement would be necessary to ensure the ability to access this site in perpetuity. Such an easement may limit or restrict the rights to develop the remainder of Yatzeck's property, so this may affect the ability to obtain the necessary permanent conservation easement agreements for this site (see Exhibit I). In addition, the remoteness and limited access of this site would potentially make it difficult to mobilize the appropriate equipment and staff necessary to manage this site effectively. In addition, Waukesha County has established that is does not have the resources or abilities to manage such a remote site from their existing facilities, so there is no commitment on who would manage the site over the long-term.[15] Hence, these are important issues that would need to be addressed to ensure the permitting agencies that the long-term management issues can be addressed in perpetuity, to the extent practicable.

[15]*Personal Communication, Karen Braun, Waukesha County*

In contrast, Brown's Fen site and the lands adjacent to the site are owned by Waukesha County. These lands are part of the Retzer Nature Center, which is owned and operated by Waukesha County. Thus, this site has good access for equipment and staff, strong willingness of the property owner (Waukesha County) to commit to entering into a legal agreement to protect the potential mitigation site, and commitment by qualified Retzer Nature Center staff to manage the site in perpetuity. Hence, this site meets all the requirements to ensure the permitting agencies that the long-term management issues are addressed in perpetuity, to the extent practicable.

In summary, based upon the data, correspondence, and information set forth in this memorandum, the Yatzeck's Fen site simply does not meet the minimum criteria established by the permitting agencies and Environmental Review Team associated with the West Waukesha Bypass project to be a viable fen mitigation site. In contrast, the Brown's Fen meets and exceeds all of the criteria that make this the best and most viable sedge fen mitigation site to offset the anticipated fen wetland impacts associated with this project. Therefore, we recommend that the Brown's Fen site be chosen as the fen mitigation site for the West Waukesha Bypass project.

* * *

00226818.DOC
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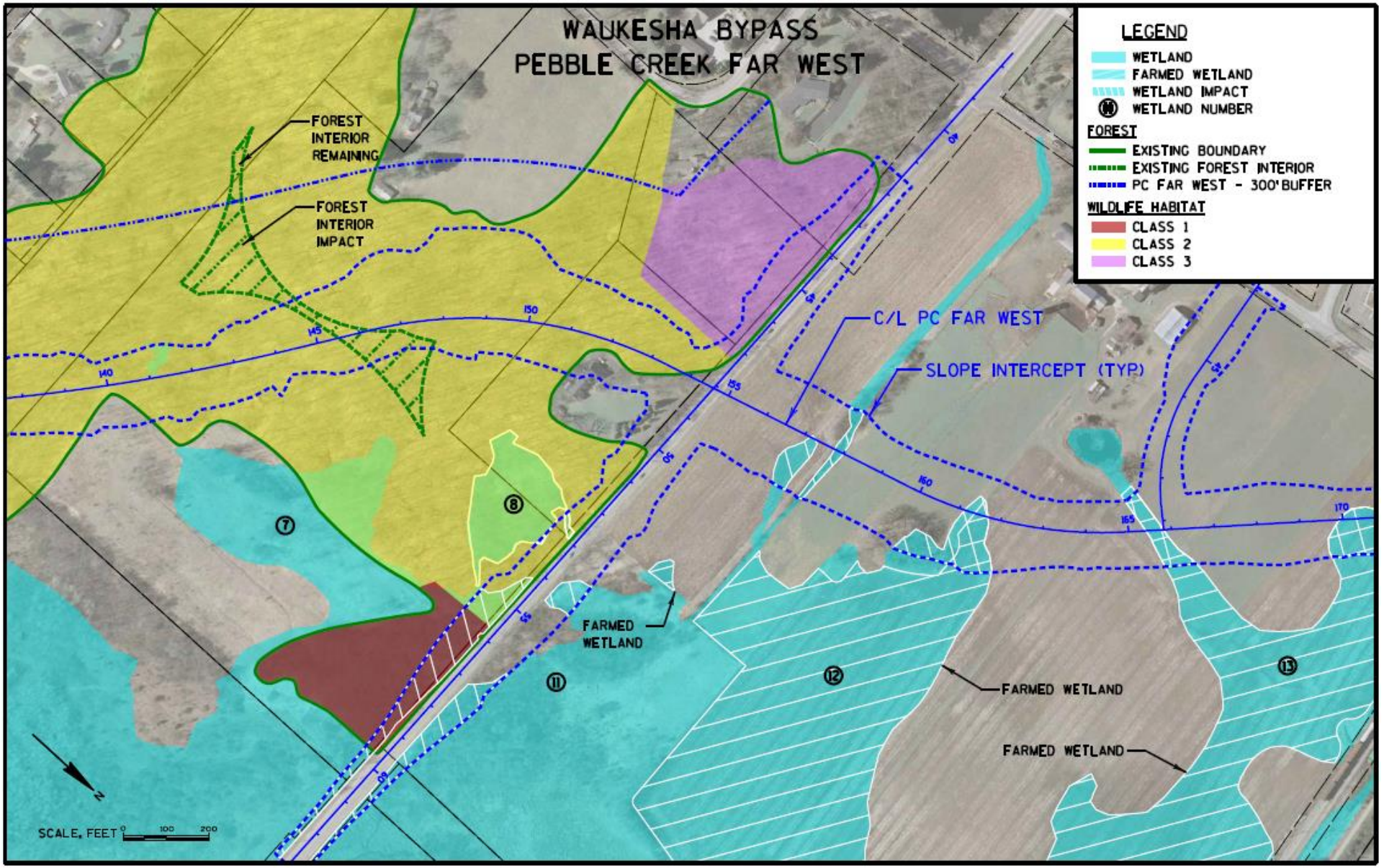
Exhibit A

WETLAND IMPACTS ASSOCIATED WITH THE PREFERRED PEBBLE CREEK FAR WEST ALTERNATIVE ALIGNMENT FOR THE WEST WAUKESHA BYPASS PROJECT



Source: Waukesha County Department of Public Works

Exhibit B

POTENTIAL SEDGE FEN MITIGATION SITES FOR THE WEST WAUKESHA BYPASS PROJECT WITHIN THE FOX RIVER WATERSHED

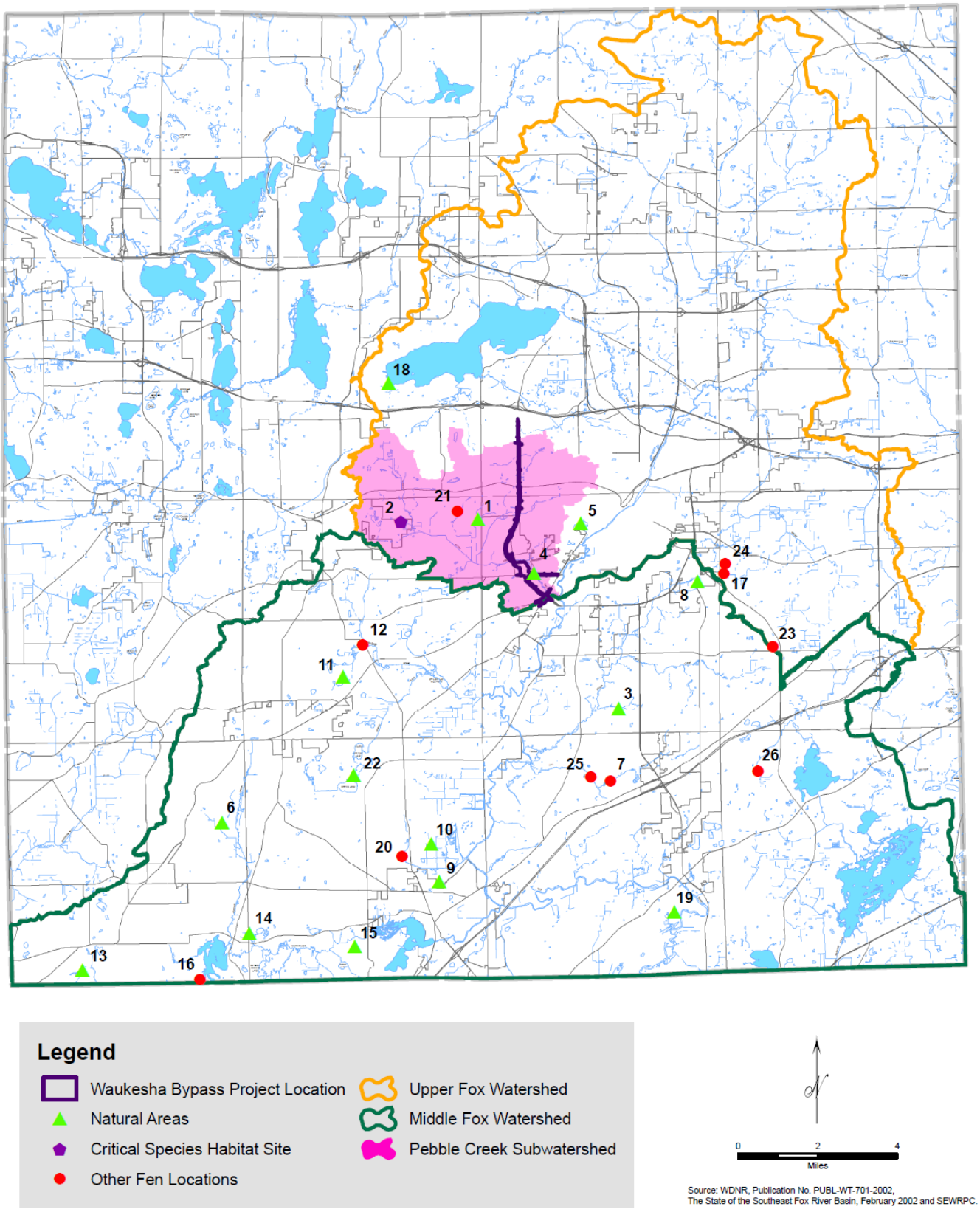


Exhibit C

POTENTIAL SEDGE FEN MITIGATION SITES FOR THE WEST WAUKESHA BYPASS PROJECT WITHIN THE FOX RIVER WATERSHED

Site No. (see Exhibit B)	Calcareous Fen Name and Location	Located Within Five Miles of Project	Located within the Pebble Creek Subwatershed	High Potential for Enhancement[1]	Known High Quality Site[2]	Documentation[3]
1	Brown's Fen, T6N R18E Section 1	Yes	Yes	Yes (much woody encroachment in known fen area)	Yes (NA-3)	Yes (inventory)
2	Dragon Fen, T6N R18E Section 3	Yes	Yes	No (small size)	Yes (Critical Species Habitat)	Yes (inventory)
3	Falk Fen and Woods, T6n R19E Section 34	Yes	No	Yes (much woody encroachment in known fen area)	Yes (NA-2)	Yes (inventory)
4	Pebble Creek Wetlands, T6N R19E Sections 8 &17	Yes	Yes	No (impacted fen due to proposed bypass project)	Yes (NA-3)	Yes (inventory)
5	Fruits Pond Fen, T6N R19E Section 4	Yes	No	No (surrounding development)	Yes (NA-3)	Yes (inventory)
6	Jericho Creek Fen, T5N R17E Sections 12 & 13	No	No	Yes (much woody encroachment in known fen area)	Yes (NA-3)	Yes (inventory)
7	Mill Brook Fen, T5N R19E Section 10	No	No	Yes (much woody encroachment in known fen area)	Yes (Critical Species Habitat)	Yes (inventory)
8	Minooka Fen, T6N R19E Section 13	Yes	No	No (in heavily developed area)	Yes (NA-3, within Minooka Park Woods)	Yes (inventory)
9	Vernon Fen, T5N R18E Section 23	No	No	Yes (much woody encroachment in known fen area)	Yes (NA-2)	Yes (inventory)
10	Vernon Prairie Fen, T5N Range18E Section 14	No	No	Yes (much woody encroachment in known fen area)	Yes (NA-2)	Yes (inventory)
11	Yatzeck's Fen, T6N R18E Section 28	No	No	Yes (beaver dam needs removal)	Yes (NA-1)	Yes (inventory)
12	Genesee Creek Fen, T6N R18E Section 22	Yes	No	No (known fen habitat is intact)	No	Yes (inventory)
13	Malek Wetland, T5N R17E Sections 32 & 33	No	No	No (known fen habitat is intact)	Yes (NA-3)	Yes (inventory)
14	Meyer Sedge Fen, T5N R17E Section 25	No	No	Unknown	Yes (NA-3, within Brown Lake Wetlands, Woods, and Dry Prairies)	Yes (inventory)
15	Mukwonago Fen, T5N R18E Section 28	No	No	No (known fen habitat is intact)	Yes (NA-1)	Yes (inventory)
16	Mukwonago River Esker Fen, T5N R17E Section 35	No	No	No (known fen habitat is intact)	Yes (NA-1, within Lulu and Eagle Spring Lake Wetland Complex and Adjacent Uplands)	Yes (inventory)

Site No. (see Exhibit B)	Calcareous Fen Name and Location	Located Within Five Miles of Project	Located within the Pebble Creek Subwatershed	High Potential for Enhancement[1]	Known High Quality Site[2]	Documentation[3]
17	Oak Park (Drive) Fen, T6N R20E Section 18	Yes	No	No (unconfirmed report that site was destroyed)	No	Yes (inventory)
18	Pewaukee Lake Access Fen, T7N R18E Section 22	No	No	No (most of known fen habitat is intact)	Yes (NA-2)	Yes (inventory)
19	Reinke Sedge Fen, T5N R19E Section 26	No	No	No (known fen habitat is intact)	Yes (NA-3)	Yes (inventory)
20	Romanowski Fen, T5N R18E Section 15	No	No	Yes (much woody encroachment in known fen area)	No (Designated critical species habitat, but no longer supports critical species)	Yes (inventory)
21	Sigurdson Fen, T6N R18E Section 1	Yes	Yes	No (potential fen area appears intact in aerial photography)	No	None
22	Spring Lake Sedge Meadow, T5N R18E Sections 3,4 & 9,	No	No	No (known fen habitat is intact)	Yes (NA-2)	Yes (inventory)
23	Barton Road Wetlands, T6N R18E Section 30	No	No	Location and extent of fen communities in large are unknown	No	Yes (inventory)
24	CTH D Wetlands, T6N R20E Section 7	Yes	No	Unknown	Unknown	None
25	Mueller Fen, T5N R19E Section 9	No	No	Yes (much woody encroachment in known fen area)	No	None
26	Quarry Fen, T5N R20E Section 7	No	No	No (not a natural fen, area with fen-like community intact in aerial photography)	No	Yes (inventory)
27 (mapped as 22)	Dunlop Fen and Marsh, T5N R18E Section 3 (N/A-Part of Spring Lake Sedge meadow)	- -	- -	- -	- -	- -
28 (mapped as 5)	Cambridge Avenue Fen, T6N R19E Section 4 (N/A-Part of Fruit's Pond Fen)	- -	- -	- -	- -	- -

[1]Potential to enhance fen: Sites are indicated that are known to have problems that, if rectified, would enhance or restore fen habitat.

[2]High Quality Sites: Sites identified in SEWRPC Planning Report No. 42, A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, September 1997, updated December 2010, as fens are considered to be high quality. NA-3 sites are of local significance. NA-2 sites are of countywide or regional significance. NA-1 sites are statewide or greater significance. Critical species habitats support one or more Wisconsin listed or special concern species.

[3]Documentation: Sites with plant species inventories (beyond reports of single or a few species) were considered to have documentation. All observations were conducted by qualified botanists/naturalists from SEWRPC staff, WDNR staff, and Waukesha County staff records dating from the 1970s to present.

Source: Natural Resources Natural Heritage Inventory and SEWRPC.

Exhibit D

RETZER NATURE CENTER MANAGEMENT GOALS AND OBJECTIVES FOR BROWN'S FEN AND STAFF MANAGEMENT QUALIFICATIONS

Brown's Fen Mitigation - Protection/Preservation Goals

Description of Fen

Brown's Fen – Prairie Fen – T6, R18E, Section 1, Town of Genesee, Waukesha County, Retzer Nature Center.

The Brown's Fen is a remnant of a globally rare type of wetland dominated by sedges and grasses. This Fen has two Fen types, a Sedge Fen and a Prairie Fen. It is the only known Prairie Fen in Waukesha County. This Fen Complex provides a unique diversity of plants, including prairie, sedge and wetland plants.

Ownership

The original Retzer property was donated by John and Florence Retzer for the purpose of establishing a Nature Center.

- The NE 2-acre portion of the Fen Complex was added in 2001 when the County purchased the Owen Williams Farm. Waukesha County received State of Wisconsin Department of Natural Resources stewardship funds for this parcel; thus it has restrictive covenants (document #2998041) protecting this property.

- The majority (11.6 acres) of the Browns Fen Complex came through the Kames Terrace addition Subdivision out lot land dedication (document #1425970); there are no restrictive covenants on this property.

Existing Conditions

A small portion of the Browns Fen is under protective covenants; however, there remains a large portion (11.6 acres) that is not under any restrictive covenants.

Retzer Nature Center staff currently maintains 3.5 acres of this high quality Fen Complex; however, to preserve this Fen Complex, work needs to encompass the entire 13.6 acre complex.

Inclusion of a 300 foot buffer ring around the complex would not only enhance habitat protection but also maintains essential hydrological conditions. A map of the Brown's Fen watershed shows location of both surface water and groundwater. Protective buffers in these areas are critical for maintaining and improving water quality at the Fen.

Proposed Mitigation Plans

Conservation Perpetuity Covenants – Waukesha County proposes to the regulatory agencies that protective covenants be placed on the Brown's Fen Complex to mitigate for impacts to an existing fen for the proposed Waukesha Bypass. Portions of the Brown's Fen complex and protective buffers, currently lacking protective/restrictive covenants would be deed restricted in perpetuity.

There may be additional opportunities to expand buffer enhancement to the west and northeast of the complex; Waukesha County plans to secure these properties when they become available. To the northeast there is approximately 4 acres of potential buffer owned by Howell Oaks Development, LLC. To the west there is approximately five acres of potential buffer owned by Ronald J. Williams.

Management Plan - Management goals for the Brown's Fen Complex include the protection and preservation of the 3.5 acre high quality Fen, the improvement and enhancement of an existing 10.1 acre wetland complex and 55.85 acres of potential protective buffers. The management plan includes the existing 11.9 acres of restricted covenant protected area.

A 10.1 acre wetland complex encompasses the outer perimeter of the high quality Fen; however it is dominated by invasive shrubs and reed canary grass. In addition to invasive species, the area contains small pockets of high quality Fen vegetation and also a Southern Sedge Meadow.

The management goal is to work outward, far reaching into each buffer level to enhance and preserve vegetative integrity of the Fen Complex. This methodology will reconnect isolated pockets of native vegetation to serve as a protective buffer.

Management objectives/activities - The targeting and removal of invasive species; It is the intent of this management plan to restore and maintain the ecological integrity of each of these pockets by actively controlling invasive species within the Fen Complex. A critical activity provided by Retzer staff would be fire management, an important tool in re-establishing the Fen Complex. Prescribed burns offer native plants an opportunity to thrive by keeping invasive species in check.

Vegetative Enhancement will improve surrounding upland habitats for avian species, Lepidoptera species (butterflies and moths), herptiles and mammals.

Additional Benefits: Ecological, Educational, Dedicated Expertise of Retzer Staff

Ecological Benefits - Additional Buffer areas

Outside the Fen Complex include an Oak Savanna (Oak Opening), Old-Field, Thicket and Dry-Mesic Forest. The ***Oak Opening,*** an essential complement to the Fen Complex**,** provides adjacent upland habitat while filtering surface water that drains towards the Fen. ***Old-Field,*** exhibits a tendency to develop into a wet meadow; containing a variety of native forbs and graminoids. The ***Thicket*** , with potential for a good ground layer offers the benefit of wildlife protection. ***Dry-Mesic forest*** has many quality maturing trees. The diversity and association of these adjacent habitats surrounding the Brown's Fen, when restored, will provide critical habitat for wildlife protection.

Additional Threats – Groundwater, Ecosystem and Plant Diversity

Agricultural land-use to the NW provides groundwater flow to, and through, the Fen. Fen plant communities are groundwater-dependent and rely on constant and uncontaminated water flow from percolation. Unfortunately, agricultural fertilizers alter the chemistry of runoff and groundwater**,** which is oftentimes beneficial to non-native plants who capitalize on disturbance. Removing the source of excess nutrients will increase the vigor of native plants, and inhibit the opportunistic invasive weeds.

The Retzer staff, as part of their Management goals would develop a plan to address this issue by encouraging abutting landowners to utilize permanent cover. This will prove beneficial to the Fen by reducing runoff and increasing rainwater infiltration. Plugging a drainage ditch immediately to the south of the wetland; would also restore historical hydrology while reducing groundwater drawdown in mid-summer.

In an urban area, plant diversity in a healthy wetland ecosystem provides an excellent community benefit of carbon sequestration. The ecological benefit of long term storage of carbon dioxide is slowing atmospheric accumulation of greenhouse gases.

Retzer staff expertise and dedication

The location of the Brown's Fen in close proximity to the Retzer Nature Center and surrounding acquisitions provides the expertise and protection of the Brown's Fen. The Nature Center staff is both dedicated and has expertise to continue management, set goals, and insure perpetuity protection of the Fen. If not actively managed, the Brown's Fen would likely be jeopardized by invasive species and run off from abutting properties.

Mitigation commitments insure continued enhancement of this high quality Prairie Fen; extended buffers allow the Fen to increase in acreage and vegetation indicative of a high quality fen. .

Prairie Fens are rare, both locally and globally; this one is extremely important to the landscape-scale diversity at the Nature Center. We view this as increased incentive and opportunity to enhance the ecology of the entire area. As part of the Nature Center**,** this provides the ability to educate the public on such a rare ecological feature that is preserved and protected for future generations.

Source: Retzer Nature Center

The Waukesha County Parks Ecology Team is a collaborative group of professionals that researches, plans, and executes natural land management in the Waukesha County parklands. The team includes the County Parks Conservation Biologist, the Retzer Nature Center Park Foreman and Land Manager, the Retzer Nature Center Supervisor, the 2 Parks Field Supervisors, and other professional staff members giving input to specific projects. Critical qualifications and expertise for the accomplishment of natural land management are provided by the following Ecology Team members.

Mike Bourquin, Conservation Biologist

2007-present **Waukesha County Department of Parks and Land Use**
Conservation Biologist. Designed and created management plans for county open-space lands. Inspected properties for potential purchase. Conducted vegetative inventories of new properties. Conducted property evaluations for private landowners and provided management direction. Managed natural plant communities including invasive species control. Acting burn boss and line boss for prescribed fires. Represented county interests with private agencies. Directed county ecological personnel, volunteers, and activities. Led workshops and tours for employees and nature center visitors. Direct duties include 100-200 hours per year of hands-on ecological management of 10 acres of plantings, demonstrations, and remnants; management practices include foliar spray applications, cut/dab, hand-pulling, controlled fire. As a key member of the County Parks Ecology Team—suggests ecological management methods/solutions, evaluates/researches management problems, visits parkland and consults with field staff, provides field staff direction, solicits group review of management plans, keeps up on current ecological management research.

2000-2006 **Waukesha County Department of Parks and Land Use**
Park Naturalist. Designed and managed native plant nurseries, seed inventory, annual plant sales and restoration plantings. Managed native plant and seed catalog sales. Developed and mixed seed recipes for sale. Directed land management practices including prescribed burning and exotic species removal. Assisted with ecological inventory and site evaluations. Led workshops for county employees and nature center users. Guided interpretive tours. Supervised one employee and one volunteer group.

1993-2006 **Wisconsin Department of Natural Resources**
Endangered Resources Technician. Assisted in State Natural Area site inspections, baseline data collection, invertebrate surveys, Breeding Bird Atlas, invasive species control, public field trips, the native plant seed farm and prescribed burning. Experienced with herbicides, backpack sprayers, brush cutters, chain saws, drip torches, back cans, and All Season Vehicle (ASV) operation. Supervised Wisconsin Conservation Corps crew members. Drafted grant proposals and management plan revisions for designated areas. Attended Endangered Resources State Fair booth.

1995 **Madison Audubon Society**

Intern. Assisted with prairie restoration plantings including seed collection, moist stratification and hand broadcasting. Removed invasive species using chain saws, brush cutters, shovels and hand pulling. Helped conduct sedge wren, black tern, and general bird surveys.

1992 **University of Wisconsin-Stevens Point**
Ornithology Survey Assistant. Conducted bird surveys in Navarino Wildlife Area under the direction of a graduate student. This included duck nest searches, breeding bird surveys, aquatic insect collection, plant collection and identification. Assisted Department of Natural Resources with bear survey and prescribed burning.

George Ehrhardt, Retzer Nature Center Park Foreman and Land Manager

1995-present **Waukesha County Park System**
Park Foreman, Land Manager. Design and implementation of natural/ecological land management plans, methods, strategies, practices, and procedures. Application of a variety of land equipment and technology to the crafting and execution of solutions to ecological landscape objectives, including: control of invasive non-native plant and brush species by controlled fire; timed cutting using land equipment such as Woods brush mower, skidsteer-mounted/all season vehicle-mounted Fecon brush cutter, walk-behind rotary cutter, brush saw, customized hand cutting and removal; selective herbicide application; establishment of biodiverse native plant communities from seed by hand, use of no-till Truax seed drill; establishment of plant communities by transplant; teaching and mentoring of Parks field staff in controlled burn methodology, natural management methods and practices to meet ecological objectives contained in natural management plans, plant identification.

1978-1995 **Lied's Nursery**
Landscape Foreman. Landscaping, equipment operation, nursery operations, building and grounds, pruning, landscape maintenance, planting, transplanting, rough and finish grading, seeding/sodding, drain tile installation, construction of timber/stone retaining walls, patio and walk construction, pruning, fertilizing, irrigation installation and repair, plant pest/disease identification and control, rough and finish carpentry, block and brick masonry, concrete masonry, exterior and interior painting, drywall installation, electrical wiring, plumbing installation and repair, weatherization and insulation, roof repair, mechanical repairs to trucks and small engines; winter season includes snow-plowing and ice control; supervision of crews of 2-6 workers, training of new personnel; use of boom truck, skidsteer, tractors, backhoe, forklift, snowplow, mowers, chipper, chainsaws, bucket truck, gas and arc welders, cutting torches, miscellaneous tools.

Source: Retzer Nature Center

Exhibit E

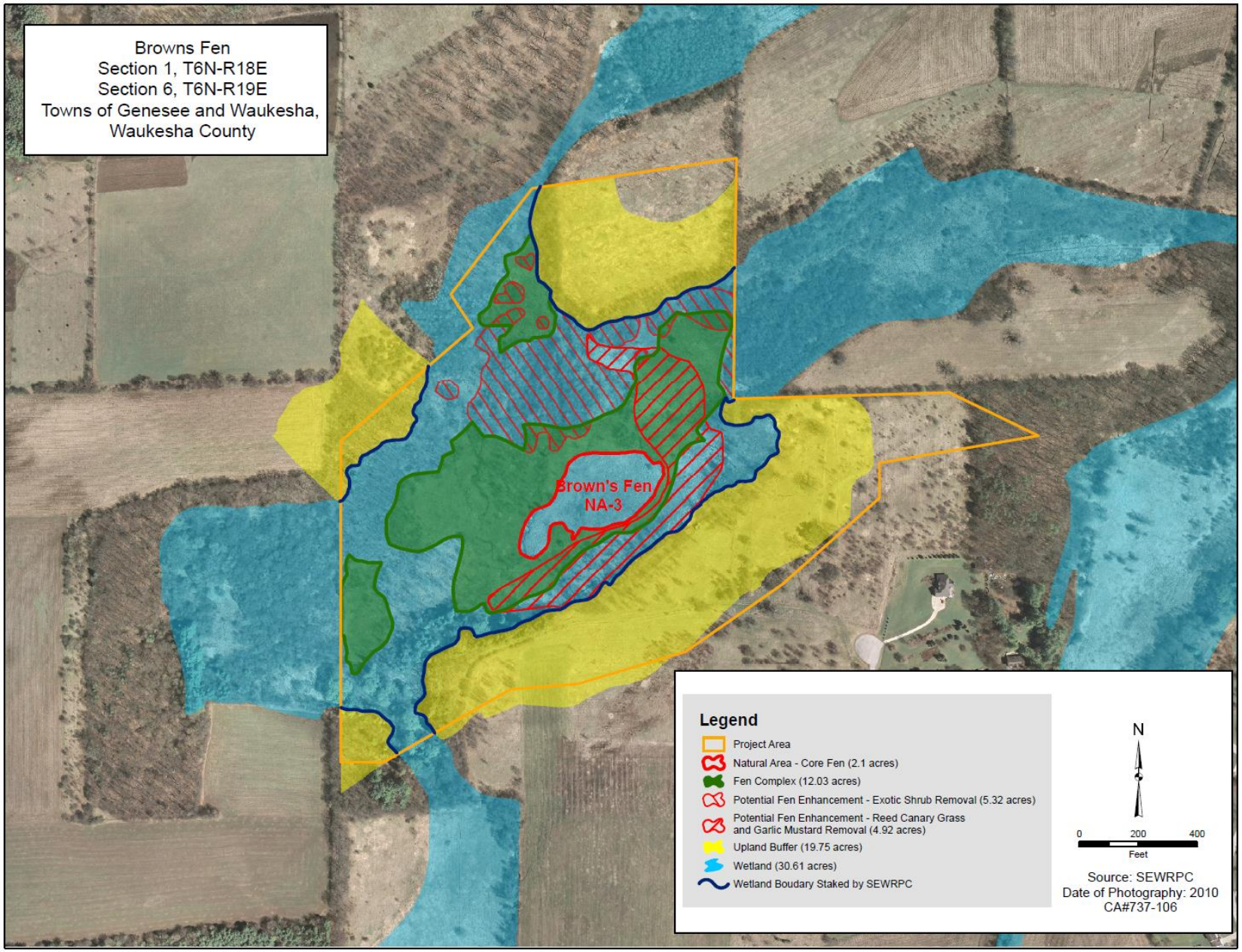

Browns Fen
Section 1, T6N-R18E
Section 6, T6N-R19E
Towns of Genesee and Waukesha,
Waukesha County
Brown's Fen
NA-3
Legend
Project Area
Natural Area - Core Fen (2.1 acres)
Fen Complex (12.03 acres)
Potential Fen Enhancement - Exotic Shrub Removal (5.32 acres)
Potential Fen Enhancement - Reed Canary Grass and Garlic Mustard Removal (4.92 acres)
Upland Buffer (19.75 acres)
Wetland (30.61 acres)
Wetland Boudary Staked by SEWRPC
N
0
200
400
Feet
Source: SEWRPC
Date of Photography: 2010
CA#737-106

Exhibit F
PRELIMINARY VEGETATION SURVEY
BROWNS FEN
(PROPOSED MITIGATION SITE)

SVY4197
CA700-82

Date: June 4, 2015

Observers: Daniel L. Carter, Ph.D., Senior Biologist
Christopher J. Jors, Biologist
Jennifer Dietl, Biologist
Zofia Noe, Biologist
Southeastern Wisconsin Regional Planning Commission

Location: Town of Genesee in parts of U.S. Public Land Survey Section 1, Township 6 North, Range 18 East; and Town of Waukesha in parts of U.S. Public Land Survey Section 6, Township 6 North, Range 19 East, Waukesha County, Wisconsin.

Species List: Plant Community Area No. 1 – Native Plant Species

Co-Dominant Plant Species

Andropogon gerardii--Big bluestem
Angelica atropurpurea--Angelica
***Calamagrostis canadensis*--Canada bluejoint**
Caltha palustris--Marsh marigold
Calystegia sepium--Hedge bindweed
***Carex pellita*--Woolly sedge**
Carex sartwellii--Running marsh sedge
Carex sterilis--Sterile sedge
***Carex stricta*--Tussock sedge**
Carex tetanica--Rigid sedge
Cornus alba--Red-osier dogwood
Cornus racemosa--Grey dogwood
Dasiphora fruticosa--Shrubby cinquefoil
Dodecatheon meadia--Shooting star
Erigeron philadelphicus--Marsh fleabane
Eriophorum angustifolium--Narrow-leaved cotton-grass
Eupatorium perfoliatum--Boneset
Eutrochium maculatum--Joe-Pye weed
Fraxinus pennsylvanica--Green ash
Galium boreale--Northern bedstraw
Hypoxis hirsuta--Yellow star-grass
Impatiens capensis--Jewelweed
Lactuca biennis--Tall blue lettuce
Lycopus americanus--Cutleaf bugleweed
Mentha arvensis--Wild mint
Monarda fistulosa--Wild bergamot
Muhlenbergia mexicana--Leafy satin grass
Packera paupercula--Balsam ragwort
Pedicularis lanceolata--Swamp lousewort
Poa palustris--Marsh bluegrass
Pycnanthemum virginianum--Mountainmint
Salix bebbiana--Beaked willow
Schizachyrium scoparium--Little bluestem
Schoenoplectus acutus--Hard-stemmed bulrush
Scirpus atrovirens--Green bulrush

PCA No. 1 – Native Plant Species cont.

Solidago altissima--Tall goldenrod
Solidago gigantea--Giant goldenrod
Solidago riddellii--Riddell's goldenrod
Symphyotrichum lanceolatum--Marsh aster
Symphyotrichum novae-angliae--New England aster
***Symphyotrichum puniceum*--Red-stemmed aster**
Symplocarpus foetidus--Skunk cabbage
Thalictrum dasycarpum--Tall meadow rue
Thelypteris palustris--Marsh fern
Typha latifolia--Broad-leaved cat-tail
Ulmus americana--American elm
Verbena hastata--Blue vervain
Viola renifolia--Kidney-leaved violet
Vitis riparia--Riverbank grape

NON-Native Plant Species

Alliaria petiolata--Garlic-mustard
Barbarea vulgaris--Yellow rocket
Frangula alnus--Glossy buckthorn
Rhamnus cathartica--Common buckthorn

Total number of plant species: 53
Number of alien, or non-native, plant species: 4 (8 percent)
Alien, or non-native, percent canopy cover: <5 percent

This approximately 2.10-acre plant community area is part of a larger wetland complex and consists of prairie fen and sedge fen. Disturbances to the plant community area include past grazing, boardwalk construction, and clearing of vegetation for exotic shrub control. While no Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection, this plant community area is identified as Brown's Fen, a Natural Area of local significance (NA-3), in the Commissions Amendment to the *Natural Areas and Critical Species Habitat Protection and Management Plan for the Southeastern Wisconsin Region*, dated December 2010.

Plant Community Area No. 2 – Native Plant Species

Acer negundo--Boxelder
Achillea millefolium--Yarrow
Ambrosia trifida--Giant ragweed
Angelica atropurpurea--Angelica
Asclepias syriaca--Common milkweed
Bidens sp.—Beggar's-ticks
Caltha palustris--Marsh marigold
Cardamine bulbosa--Spring cress
Carex granularis--Pale sedge
Carex hystericina--Bottlebrush sedge
Carex lacustris--Lake sedge
Carex leptalea--Bristly-stalked sedge
***Carex pellita*--Woolly sedge**
Carex prairea--Fen panicled sedge
Carex sterilis--Sterile sedge
Carex stipata--Common fox sedge
***Carex stricta*--Tussock sedge**
Carex tetanica--Rigid sedge
Circaea lutetiana--Enchanter's nightshade
Cirsium muticum--Swamp thistle
Cornus alba--Red-osier dogwood
Cornus racemosa--Grey dogwood
Dodecatheon meadia--Shooting star
Eleocharis erythropoda--Red-root spike-rush
Epilobium coloratum--Willow-herb
Equisetum arvense--Common horsetail
Erigeron philadelphicus--Marsh fleabane
Eupatorium perfoliatum--Boneset
***Euthamia graminifolia*--Grass-leaved goldenrod**
Eutrochium maculatum--Joe-Pye weed
Fraxinus pennsylvanica--Green ash
Galium boreale--Northern bedstraw
Hypoxis hirsuta--Yellow star-grass
Impatiens capensis--Jewelweed
Juglans cinerea—Butternut (A State-designated Special Concern Species)
Juglans nigra--Black walnut
Juncus dudleyi--Dudley's rush
Juniperus virginiana--Red-cedar
Lycopus americanus--Cutleaf bugleweed
Lycopus uniflorus--Northern bugleweed
Mentha arvensis--Wild mint
Micranthes pensylvanica--Swamp saxifrage
Monarda fistulosa--Wild bergamot
Onoclea sensibilis--Sensitive fern
Packera aurea--Golden ragwort
Parthenocissus inserta--Virginia creeper
Physocarpus opulifolius--Ninebark
Plantago rugelii--Red-stalked plantain
Poa palustris--Marsh bluegrass
Populus tremuloides--Quaking aspen
Prunus virginiana--Chokecherry
Pycnanthemum virginianum--Mountainmint
Ribes americanum--Wild black currant
Rosa blanda--Wild rose
Rubus idaeus--Red raspberry

PCA No. 2 – Native Plant Species cont.

Rubus occidentalis--Black raspberry
Rudbeckia hirta--Black-eyed Susan
Rumex britannica--Great water dock
Salix amygdaloides--Peach-leaved willow
Salix bebbiana--Beaked willow
Salix discolor--Pussy willow
Salix nigra--Black willow
Salix petiolaris--Meadow willow
Sambucus nigra--Elderberry
Scirpus atrovirens--Green bulrush
***Solidago altissima*--Tall goldenrod**
***Solidago gigantea*--Giant goldenrod**
Solidago riddellii--Riddell's goldenrod
Spartina pectinata--Prairie cordgrass
Stachys pilosa var. *arencola*--Hedge-nettle
Stellaria longifolia--Stitchwort
Symphyotrichum lanceolatum--Marsh aster
Symphyotrichum puniceum--Red-stemmed aster
Symplocarpus foetidus--Skunk cabbage
Thalictrum dasycarpum--Tall meadow rue
Thelypteris palustris--Marsh fern
Toxicodendron rydbergii--Western poison ivy
Toxicodendron vernix--Poison sumac
Urtica dioica--Stinging nettle
Viburnum lentago--Nannyberry
Viola renifolia--Kidney-leaved violet

NON-Native Plant Species

Alliaria petiolata--Garlic-mustard
Barbarea vulgaris--Yellow rocket
Cirsium arvense--Canada thistle
Dactylis glomerata--Orchard grass
***Frangula alnus*--Glossy buckthorn**
Hesperis matronalis--Dames rocket
Lonicera X bella--Hybrid honeysuckle
Phalaris arundinacea--Reed canary grass
Poa pratensis--Kentucky bluegrass
Rhamnus cathartica--Common buckthorn
Rosa multiflora--Multiflora rose
Solanum dulcamara--Deadly nightshade
Viburnum opulus--European highbush-cranberry

Total number of plant species: 94
Number of alien, or non-native, plant species: 13 (14 percent)
Alien, or non-native, canopy cover: Over 36 percent

This approximately 12.03-acre plant community area is part of a larger wetland complex and consists of sedge fen, Southern sedge meadow, fresh (wet) meadow, and shrub-carr. Disturbances to the plant community area include past grazing, boardwalk construction, clearing of woody vegetation for restoration purposes, and water level changes due to past ditching. Butternut (*Juglans cinerea*), and American woodcock (*Scolopax minor*), both State-designated Special Concern species were observed during the field inspection.

Plant Community Area No. 3 – Native Plant Species

Acer negundo--Boxelder
Allium canadense--Wild garlic
Angelica atropurpurea--Angelica
Asclepias syriaca--Common milkweed
Bidens sp.—Beggar's-ticks
Calamagrostis canadensis--Canada bluejoint
Carex granularis--Pale sedge
Carex grisea--Wood gray sedge
Carex hystericina--Bottlebrush sedge
Carex lacustris--Lake sedge
Carex pellita--Woolly sedge
Carex stipata--Common fox sedge
Carex stricta--Tussock sedge
Carya ovata--Shagbark hickory
Celtis occidentalis--Hackberry
Circaea lutetiana--Enchanter's nightshade
***Cornus alba*--Red-osier dogwood**
Cornus racemosa--Grey dogwood
Echinocystis lobata--Wild cucumber
Epilobium coloratum--Willow-herb
Erigeron philadelphicus--Marsh fleabane
Euthamia graminifolia--Grass-leaved goldenrod
***Fraxinus pennsylvanica*--Green ash**
Galium aparine--Annual bedstraw
Geum aleppicum--Yellow avens
Geum canadense--White avens
***Impatiens capensis*--Jewelweed**
Juglans cinerea—Butternut (A State-designated Special Concern Species)
Juglans nigra--Black walnut
Juncus tenuis--Path rush
Monarda fistulosa--Wild bergamot
Osmorhiza claytonii--Sweet cicely
***Parthenocissus inserta*--Virginia creeper**
Plantago rugelii--Red-stalked plantain
Populus deltoides--Cottonwood
Prunus serotina--Black cherry
Prunus virginiana--Chokecherry
Pycnanthemum virginianum--Mountainmint
Quercus bicolor--Swamp white oak
Ribes americanum--Wild black currant
Ribes cynosbati--Pasture gooseberry
Salix nigra--Black willow
Scirpus atrovirens--Green bulrush
Solidago altissima--Tall goldenrod
Solidago gigantea--Giant goldenrod
Symphyotrichum lanceolatum--Marsh aster
Symplocarpus foetidus--Skunk cabbage
Thuja occidentalis--White cedar (planted)
Typha latifolia--Broad-leaved cat-tail
Ulmus americana--American elm
Urtica dioica--Stinging nettle
Verbena urticifolia--White vervain
Viburnum lentago--Nannyberry
Viola sororia--Woolly blue violet
Vitis riparia--Riverbank grape

PCA No. 3 - NON-Native Plant Species

Alliaria petiolata--Garlic-mustard
Arctium minus--Common burdock
Barbarea vulgaris--Yellow rocket
Bromus inermis--Smooth brome grass
Frangula alnus--Glossy buckthorn
Glechoma hederacea--Creeping Charlie
Hesperis matronalis--Dames rocket
Lonicera maackii--Amur honeysuckle
Lonicera X bella--Hybrid honeysuckle
Phalaris arundinacea--Reed canary grass
Picea sp.--Spruce (planted)
Ranunculus acris--Tall buttercup
***Rhamnus cathartica*--Common buckthorn**
Rosa multiflora--Multiflora rose
Salix alba--White willow
Solanum dulcamara--Deadly nightshade
Taraxacum officinale--Common dandelion
Viburnum opulus--European highbush-cranberry

Total number of plant species: 74
Number of alien, or non-native, plant species: 18 (24 percent)
Alien, or non-native, canopy cover: 48 percent

This approximately 16.48-acre plant community area is part of a larger wetland complex and consists of Skunk cabbage seeps, shrub-carr, Southern wet-mesic lowland hardwoods, and small stands of shallow marsh, Southern sedge meadow, and fresh (wet) meadow. Disturbances to the plant community area include past grazing; boardwalk construction and trail maintenance; clearing of woody vegetation for restoration purposes; and water level changes due to ditching, creek impoundment, and recent failure of impoundment structure. Butternut (*Juglans cinerea*), a State-designated Special Concern species was observed during the field inspection.

Exhibit G

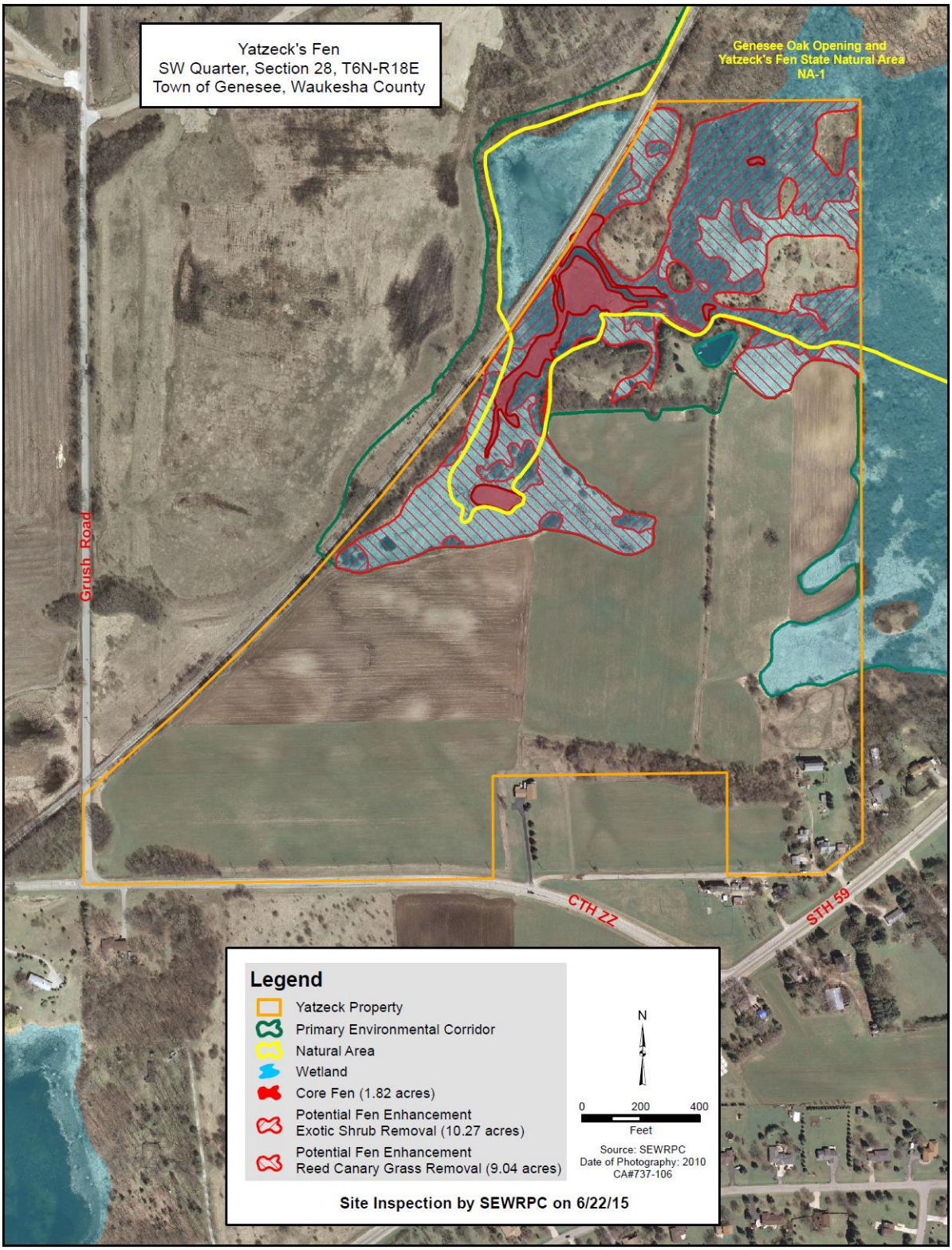

Yatzeck's Fen
SW Quarter, Section 28, T6N-R18E
Town of Genesee, Waukesha County
Genesee Oak Opening and
Yatzeck's Fen State Natural Area
NA-1
Grush Road
CTH ZZ
STH 59
Legend
Yatzeck Property
Primary Environmental Corridor
Natural Area
Wetland
Core Fen (1.82 acres)
Potential Fen Enhancement
Exotic Shrub Removal (10.27 acres)
Potential Fen Enhancement
Reed Canary Grass Removal (9.04 acres)
N
0
200
400
Feet
Source: SEWRPC
Date of Photography: 2010
CA#737-106
Site Inspection by SEWRPC on 6/22/15

Exhibit H

YATZECK'S FEN VEGETATION SURVEY

Date: 6/22/15

Observers: Daniel Carter, PhD and Chris Jors of the Southeastern Wisconsin Regional Planning Commission

Location: Waukesha County; T6N R18E NW SW 28

Ecoregion: (222KF) Geneva—Darien Moraine and Till Plains

Plant Community Area 1: Core Fen Plant Community Area – Calcareous Fen

Species List (**dominant species**; *alien species*):

Angelica atropurpurea - Angelica
Asclepias incarnata – Marsh milkweed
Berula erecta (U) – Small water-parsnip
Betula pumila – Bog birch
Bidens frondosa – Common beggar's ticks
Bromus ciliatus – Ciliated brome
Caltha palustris – Marsh marigold
Carex aquatilis – Aquatic sedge
Carex bebbii – Bebb's sedge
Carex conoidea – Field sedge
Carex diandra – Lesser panicled sedge
Carex granularis – Limestone meadow sedge
Carex hystericina – Bottlebrush sedge
Carex lasiocarpa – Wiregrass sedge
Carex leptalea – Bristly-stalked sedge
Carex sterilis – Sterile sedge
Carex stricta – Tussock sedge
Carex tetanica – Rigid sedge
Carex viridula (U) – Little green sedge
Cirsium muticum – Marsh thistle
Dasiphora fruticosa – Shrubby cinquefoil
Deschampsia caespitosa (SC) – Tufted hair-grass
Eleocharis acicularis – Needle spike-rush
Eleocharis erythropoda – Red-root spike-rush
Eleocharis rostellata (T) – Beaked spike-rush
Equisetum arvense – Common horsetail
Equisetum hyemale – Scouring rush
Eriophorum angustifolium – Common cotton-sedge
Eupatorium perfoliatum – Boneset
Eutrochium maculatum – Spotted Joe-Pye weed
Frangula alnus – Glossy buckthorn
Galium boreale – Northern bedstraw
Glyceria striata – Fowl manna grass
Impatiens capensis – Jewelweed
Juncus dudleyi – Dudley's rush
Juncus nodosus – Knotted rush

Lathyrus palustris – Marsh vetchling
Lycopus americanus – Cutleaf water-horehound
Lycopus uniflorus – Northern bugleweed
Lysimachia quadriflora – Prairie loosestrife
Mentha arvensis – Wild mint
Muhlenbergia mexicana – Marsh muhly
Nasturtium officinale - Watercress
Parnassia glauca – Grass-of-Parnassus
Pedicularis lanceolata – Marsh betony
Phalaris arundinacea – Reed canary grass
Phragmites australis subsp. australis – Giant reed
Potamogeton illinoense – Illinois pondweed
Pycnanthemum virginianum – Mountain mint
Ranunculus sceleratus – Cursed crowfoot
Salix bebbiana – Bebb's willow
Salix eriocephala – Missouri river willow
Schoenoplectus tabernaemontani – Softstem bulrush
Scirpus atrovirens – Green bulrush
Solidago altissima – Tall goldenrod
Solidago gigantea – Giant goldenrod
Solidago ohioensis (U) – Ohio goldenrod
Solidago riddellii – Riddell's goldenrod
Sphenopholis intermedia – Wedge grass
Symphyotrichum puniceum – Shining aster
Symplocarpus foetidus – Skunk cabbage
Thalictrum dasycarpum – Meadow rue
Thelypteris palustris – Marsh fern
Triantha glutinosa (T) – False asphodel
Triglochin maritima (U) – Bog arrow grass
Typha angustifolia – Narrow-leaf cattail
Utricularia intermedia – Intermediate bladderwort
Valeriana uliginosa (T) – Mountain valerian
Viburnum lentago – Nannyberry
Zizia aurea – Golden Alexanders

Summary:

Total number of plant species: 71
Number of alien plant species: 5 (Cover of alien species 8 %)
Number of Endangered (E) plant species: 0
Number of Threatened (T) plant species: 3
Number of Special Concern (SC) plant species: 1
Number of Uncommon (U) plant species: 6
Mean Coefficient of conservatism = 5.7

This plant community area includes native-dominated springs, seeps, and spring runs as well as areas of sedge fen. The highest quality areas are immediately surrounding springs and seeps and along the banks of the upper portions of Genesee Creek. The false asphodel and beaked spike-rush, both state threatened species, occur in a small, isolated area to the north. Mountain valerian, another state threatened species, occurs in a seepage area just east of the upper reaches of Genesee Creek. Tufted hair-grass dominates portions of the fen around springs and seeps in the south. A clone of the exotic strain of giant reed and extensive stands of reed canary grass in close proximity to the springs and spring runs are concerning, and a source population of giant reed upstream to the west of the railroad right-of-way is source of propagules for further invasion. Hydrology is also impacted by the construction of two impoundments and a railroad right-of-way that passes through the wetland. The area has been impacted by beaver activity. Recently, a beaver dam backed up the upper portions of Genesee Creek. The water has largely subsided, but the newly exposed banks have not fully recovered; they are dominated by early successional native sedges and rushes (e.g. bottlebrush sedge, green bulrush, spike-rushes, and knotted rush).

Area of high quality fen high on the bank and adjacent area that was inundated behind the beaver dam.

A healthy population of *Valeriana uliginosa* (white flowers), a state threatened species, in an area of high quality fen between upper Genesee Creek and a buckthorn thicket.

Main spring with high quality fen vegetation (*Deschampsia cespitosa* dominant) surrounded by a wall of reed canary grass.

This area of sedge fen near the south end is surrounded by reed canary grass.

A tiny area with high quality fen at the north end. Two state threatened species, beaked spike-rush (dominant in the middle of the photo) and false asphodel (white flower) are visible.

Plant Community Area 2: Brushy areas dominated by buckthorn in areas with fen hydrology – Shrub Swamp with inclusions of Hardwood Swamp

Species List (**dominant species**; *alien species*):

Acer negundo – Boxelder
Angelica atropurpurea – Angelica
Arisaema triphyllum – Jack-in-the-pulpit
Berula erecta (U) – Small water-parsnip
Bromus ciliatus – Ciliated brome
Carex granularis – Limestone meadow sedge
Carex hystericina – Bottlebrush sedge
Carex lasiocarpa – Wiregrass sedge
Carex leptalea – Bristly-stalked sedge
Carex sterilis – Sterile sedge
Carex stricta – Tussock sedge
Circaea lutetiana – Enchanter's nightshade
Cirsium muticum – Marsh thistle
Cornus alba – Red-osier dogwood
Cornus racemosa – Gray dogwood
Dasiphora fruticosa – Shrubby cinquefoil
Dryopteris cristata – Crested wood fern
Erigeron annuus – Annual fleabane
Eupatorium perfoliatum – Boneset
Eutrochium maculatum – Spotted Joe-Pye weed
Frangula alnus – Glossy buckthorn
Geum aleppicum – Yellow avens
Glyceria striata – Fowl manna grass
Impatiens capensis - Jewelweed
Lycopus uniflorus – Northern bugleweed
Lysimachia qualdriflora – Prairie loosestrife
Onoclea sensibilis – Sensitive fern
Oxypolis rigidior – Stiff cowbane
Parthenocissus inserta – Virginia creeper
Phalaris arundinacea – Reed canary grass
Populus tremuloides – Quaking aspen
Rhamnus cathartica – Common buckthorn
Ribes americanum – Currant
Rosa multiflora – Multiflora rose
Salix bebbiana – Bebb's willow
Salix discolor – Pussy willow
Salix eriocephala – Missouri River willow
Salix interior – Sandbar willow
Symplocarpus foetidus – Skunk cabbage
Thalictrum dasycarpum – Meadow rue
Thelypteris palustris – Marsh fern
Ulmus americana – American elm
Vitis riparia – Riverbank grape

Summary:

Total number of plant species: 43
Number of alien plant species: 4 (Cover of alien species 60 %)
Number of Endangered (E) plant species: 0
Number of Threatened (T) plant species: 0
Number of Special Concern (R) plant species: 0
Number of Uncommon (U) plant species: 1
Mean Coefficient of conservatism = 4.5

This plant community area includes shrub swamp dominated by common and glossy buckthorn over generally organic soils and springs/spring runs shaded by woody vegetation. The shrub canopy is generally dense and ground layer vegetation sparse. Where there is more light, sedges characteristic of fens and reed canary grass occur. The presence of reed canary grass (visible in the bottom middle of the photo) in scattered areas throughout this plant community areawould complicate restoration of this area, because it would proliferate quickly following shrub removal.

Typical shrub swamp in area that was likely formerly dominated by native fen species. Note the reed canary grass in the foreground.

Plant Community Area 3: Fresh wet meadow dominated by reed canary grass in areas with fen hydrology
Angelica atropurpurea – Angelica
Carex granularis – Limestone meadow sedge
Carex hystericina – Bottlebrush sedge
Carex stricta – Tussock sedge
Carex vulpinoidea – Fox sedge
Cirsium arvense – Canadian thistle
Cornus racemosa – Gray dogwood
Dasiphora fruticosa – Shrubby cinquefoil
Equisetum arvense – Common horsetail
Equisetum hyemale – Scouring rush

Erigeron annuus – Annual fleabane
Eupatorium perfoliatum – Boneset
Eutrochium maculatum – Spotted Joe-Pye weed
Frangula alnus – Glossy buckthorn
Geum aleppicum – Yellow avens
Juncus dudleyi – Dudley's rush
Poa pratensis – Kentucky bluegrass
Phalaris arundinacea – Reed canary grass
Pycnathemum virginianum – Mountain mint
Salix interior – Sandbar willow
Scirpus atrovirens – Green bulrush
Scirpus pendulus – Pendulous rush
Solanum dulcamara – Deadly nightshade
Solidago altissima – Tall goldenrod
Solidago gigantea – Giant goldenrod
Sonchus arvensis – Sow thistle
Sympholcarpus foetidus – Skunk cabbage
Symphyotrichum lanceolatum – Panicled aster
Vebena hastata – Blue vervain
Urtica dioica – Stinging nettle
Ulmus americana – American elm

Summary:

Total number of plant species: 31
Number of alien plant species: 6 (Cover of alien species 95 %)
Number of Endangered (E) planr species: 0
Number of Threatened (T) plant species: 0
Number of Special Concern (R) plant species: 0
Number of Uncommon (U) plant species: 0
Mean Coefficient of conservatism = 2.9

This plant community area consists of a dense stand of reed canary grass with isolated small patches of sedges and other species characteristic of fens. The southern portion of this plant community area is subject to surface run-off from adjacent agricultural lands (row-crop-hay rotation); nitrogen and sediment inputs are likely exacerbating the reed canary grass infestation. Restoration of this area would require great effort over a long period of time (repeated herbicide treatments over years and revegetation with native species), and would only be worth considering if adjacent agricultural lands to the south could be taken permanently out of production. The northern portion of this plant community area is being encroached upon by glossy buckthorn, dogwood, and willows.

Exhibit I

CORRESPONDENCE SUMMARY NOTES BETWEEN THE OWNERS OF YATZECK'S FEN AND WAUKESHA COUNTY STAFF

On June 15, 2015 Waukesha County staff (Allison Bussler, Director and Karen Braun, Senior Civil Engineer) met with John and Jim Yatzeck. They are the owners of lands in the Town of Genesee containing their family farm, recreational areas and the fen known as Yatzeck's fen. The purpose of the meeting was to discuss the bypass project and the mitigation needs for the fen.

Jim and John explained that this farm has been in their family for many years, and was originally purchased and run by their aunt. They live in the area and still enjoy the farm property; however, they have been considering what to do with it in the future as they get older. Years ago, developers had made offers to develop the property as a subdivision, but they were not ready to sell and now regret it since land values have fallen. They also said that the Land Conservancy had approached them many years ago for conservation but they were not willing to donate the land to them at no cost. At this time, they feel the best use for the property will be a subdivision.

The Yatzeck's were aware of the fen at the property, but have not been in that area or seen it for many years. The fen is located at the back of the property and is not easily accessible. Buckthorn and brush make access difficult. They have a farm lane that runs from STH 59, behind the home and barn, then across a farm field to the area. The access end about 500 feet from the fen area. The area tends to be wet, floods and has an issue with beavers creating dams throughout the wetland area. They have not managed the beavers, and are aware of at least 2 significant dams in the area.

The owners do use the majority of the farm for agricultural use. The northerly 1/3 of the property features woods, wetlands, the fen area, a pond and a stream. This area is not farmed, however, the owners use the more accessible portions of it for recreation including a mowed grassy area, swimming pond with dock, and hunting lands. They did indicate that they would like to continue this use. It was noted that these recreational areas may be affected by the necessary buffers to the fen and this may be an issue for the owners.

We discussed the possibility of a conservation easement and the county's interest in their fen. They were not completely opposed to an easement, but they did want to make sure that they were fairly paid for it, had continued access and use of the recreational areas they now enjoy and that this easement did not affect the future use or development of the property. They also had issues in the past with groups wanting conservation rights, but not wanting to fairly compensate them. They agreed to allow biologists access to the area to determine condition and feasibility for mitigation.

Source: Karen Braun, Waukesha County, provided on June 25, 2015.

Waukesha Bypass – Summary of Wetlands

Wetland 1- Extension Pebble Creek riparian corridor wetland north of STH 59 and west of CTH X **(ADID)**. Plant communities: Fresh (wet) Meadow, Shallow Marsh, Shrub-Carr and Southern Wet to Wet-Mesic Lowland Hardwoods. Dominant species (observed during 2011 fieldwork): reed canary grass, broad-leaved cattail and black willow). It is categorized as an Advanced Identification wetland (ADID). Functional values: range from medium to high (four medium values and four high values).

Wetland 2 – Extension Pebble Creek riparian corridor wetlands east of CTH X (ADID). Plant communities: Fresh (wet) Meadow and Shrub-Carr. Dominant plants (observed in 2011): reed canary grass, sandbar willow. Functional value:range from low to high (one low, three medium, four high).

Wetland 3 - Extension Pebble Creek riparian corridor wetlands to north of W-2 (ADID). Plant communities: Fresh (wet) Meadow, Shallow Marsh. Dominant plants (observe 2011): Reed canary grass, broad-leaved cattail. Functional value: ranged from low to high (one low, three medium, four high).

Wetland 4 - Broad low area extending west that directs surface runoff into the Pebble Creek riparian corridor wetlands north of STH 59 (ADID). Shallow groundwater and groundwater seepage areas supply water to Pebble Creek base flow. Plant communities: Atypical Wetland (mowed), Fresh (wet) Meadow, Southern Sedge Meadow, Shallow Marsh, Southern Wet to Wet-Mesic Lowland Hardwood. Dominant plants (observed in 2011): Reed canary grass, tussock sedge, jewelweed, quaking aspen, box elder. Functional values: ranged from medium to high (three medium; five high values).

Wetland 5 - Upslope extension of the Pebble Creek corridor wetlands south of Sunset Drive (ADID). Plant communities: Southern Wet to Wet-Mesic Lowland Hardwood. Dominant plants: Reed canary grass, common buckthorn, quaking aspen. Functional values: ranged from low to medium (five low, three medium values.

Wetland 6 - Small wooded wetland not directly connected to the Pebble Creek wetlands. Plant communities: Hardwood Swamp. Dominate species (observed 2011): green ash and clearweed. Functional values: ranged from low to medium (four low values; two medium values - two not applicable).

Wetland 7 - 0.8 acres part of the Pebble Creek corridor wetlands south of Sunset Drive (ADID). Plant communities: Fresh (wet) Meadow, Shrub-Carr, Southern Wet to Wet-Mesic Lowland Hardwoods. Dominant plants: Reed canary grass, jewelweed and sandbar willow. Functional values: ranged from low to high (three low, four medium, one high value).

Wetland 8 - 1.1 acres upslope of W-9 (ADID). Wetland has a Sedge Fen plant community. Plant communities/dominant plants: Reed canary grass and jewelweed - and a Wet to Wet-Mesic Lowland Hardwood plant community dominated by green ash. Functional values: ranged from low to high, (two low, five medium; one high value).

Wetland 9 - A large wetland part of the Pebble Creek wetlands north of STH 59 and south of Sunset Drive (ADID). Plant communities: Fresh (wet) Meadow, Southern Sedge Meadow, Shrub-Carr, and Wet to Wet-Mesic Lowland Hardwood. Dominant plants: Reed canary grass, tussock sedge, beaked willow. Functional values: ranged from medium to high (three medium values, five high).

Wetland 10 - Part of the Pebble Creek riparian corridor located immediately south of Sunset Drive on the east side of Pebble Creek (ADID). Plant communities: Atypical (mowed), Fresh (wet) Meadow, Shallow Marsh. Dominant plants: (2011 fieldwork) - sawtooth sunflower, Canada goldenrod, broad-leaved cattail. Functional values: ranged from medium to high (seven medium values, one high).

Wetland 11- 8.9 acre wetland located north of Sunset Drive (ADID); part of Pebble Creek riparian/ floodplain wetlands; extending from Sunset Drive on the south to the Wis. Southern RR to the north. Plant communities: Fresh (wet) Meadow, Wet Mesic Prairie, Southern Sedge Meadow, Shallow Marsh, Shrub-Carr, Wet to Wet-Mesic Lowland Hardwood. Dominant plants: Reed canary grass, tall goldenrod, broad-leaved cattail, common buckthorn, sandbar willow. Functional values: ranged from medium to high (one medium, seven high values).

Wetland 12 - 11 acre farmed wetland, upslope of, and part of a larger riparian wetland along Pebble Creek (ADID) . Plant communities: Fresh (wet) Meadow. Dominant plant: Reed canary grass. Functional values: ranged from low to medium (five low values, one medium, two not applicable).

Wetland 13 - 10.6 acre ***farmed wetland*** extends into Pebble Creek floodplain (ADID). Dominant plant: knee grass. Functional values: range from low to medium (five low, one medium value, two not applicable).

Wetland 14: Part of Pebble Creel Prairie located between the Wis. Southern RR and Glacier Drumlin Trail. Plant communities/Dominate species: Wet Mesic Prairie - big blue stem and cut-leaved teasel. Functional values: ranged from low to high (three low, three medium, and two high).

Wetland 15 - Part of a large riparian wetland along Pebble Creek east of CTH TT. Plant communities /Dominant plants: Fresh (wet) Meadow - Reed canary grass; Shallow Marsh - narrow-leaf cattail; Shrub-Carr/Southern Wet to Wet-Mesic Lowland Hardwoods dominated by box elder. Functional values: ranged from medium to high (three medium, five high).

Wetland 16 - Part of large riparian wetland along Pebble Creek west of CTH TT. Plant communities/ Dominant plants: Fresh (wet) Meadow - reed canary grass, Southern Wet to Wet-Mesic Lowland Hardwood - quaking aspen/box elder; small areas of Southern Sedge Meadow. Functional values: ranged from medium to high (two medium, six high).

Wetland 17 - 0.7 acres; in topographically low area that drains wetlands 19, 20, 21 toward W-16 (ADID). Plant communities: Open water, Shallow Marsh, Fresh (wet) Meadow plant. Dominate plants: Reed canary grass. Functional values: ranged from low to high (one low, six medium and one high value).

Wetland 18 - 0.3 acres, located immediately SW of W-19. Plant communities/Dominate species: Fresh (wet) Meadow - reed canary grass. Functional values: ranged from low to medium (five low, one medium, two not applicable).

Wetland 19 - approximate 1.3 acres, located between W-20 and W-21. Plant communities/Dominate species: Shallow Marsh - broad-leaved cattail, Fresh (wet) Meadow - reed canary grass, Shrub-Carr - sandbar willow. Functional value: ranged from low to medium (two low, four medium, two not applicable).

Wetland 20 – Approximate 1- acre farmed wetland about 450' W of Intersection (MacArthur Road and CTH TT). Due to agricultural use, wetland lacked dominant hydrophytic plant community at time of investigation. Functional value: ranged from low to medium (five low, one medium, two not applicable).

Wetland 21- Approximate 1-acre farmed wetland west of Intersection (MacArthur Road/CTH TT). Due to agricultural usage, it lacked dominant hydrophytic plant community at time of investigation. Functional values: ranged from low to medium and had five low values and one medium value (two not applicable).

Wetland 22 - part of large wetland complex in Retzner Nature Center. Plant communities: Southern Sedge Meadow, Fresh (wet) Meadow, Shallow Marsh. Dominant plants: quack grass, reed canary grass, water cress, common and glossy buckthorn, Queen Anne's lace, deadly nightshade, European highbush cranberry and bull thistle. Functional values: ranged from medium to high (five medium, three high).

Wetland 23 - Narrow riparian corridor along unnamed tributary to Pebble Creek which drains through large wetlands to west of CTH TT in Retzer Nature Center. Plant communities/dominant species: Fresh (wet) Meadow - Reed canary grass; Southern Wet to Wet-Mesic Lowland Hardwood - box elder and green ash. Functional values: ranged from low to medium (one low, seven medium).

Wetland 24 - Approximate half acre in size; located between CTH TT and residential backyards. Plant communities: Southern Wet to Wet-Mesic Lowland Hardwood. Dominate species: American elm, eastern cottonwood and box elder. Functional values: all low, two not applicable.

Wetland 25 – Approximate 1 acre wetland located immediately south of Good Times Day Camp fields. Plant communities: Fresh (wet) Meadow. Dominant plants: Reed canary grass; Southern Wet /Wet-Mesic Lowland hardwood dominate by eastern cottonwood. Functional value: all low, two not applicable.

Wetland 26 - (0.2 acre) located between CTH TT and parking lot to west. Plant communities: Shallow marsh, Wet Meadow. Dominant species: SM - broad-leaved cattail, WM - reed canary grass. Functional values: were all low with two not applicable.

Wetland 27 - Approximate 5- acre wetland immediately east/south of Intersection USH 18 and CTH TT. Plant communities: Shallow Marsh, Shrub-Carr, Southern Wet to Wet-Mesic Lowland Hardwood. Dominant species: SM - broad-leaved cattail; SS - sandbar willow; woodland - eastern cottonwood. Functional values: ranged from low to medium (one low value, five medium values, two not applicable).

Wetland 28 - 0.1 acre wetland located between existing CTH TT and private access road (aligned parallel to highway). Plant communities: Shallow Marsh. Dominant species: narrow leaved cattail. Functional values: all low; two not applicable.

Wetland 29 - Narrow riparian corridor adjacent to Pebble Creek (Secondary Environmental Corridor (SEC). Plant communities: Southern Wet to Wet-Mesic Lowland Hardwood. Dominant species: box elders. Functional values: ranged from low to medium (five low values, three medium).

Wetland 31- Riparian corridor adjacent to unnamed tributary to Pebble Creek (SEC). Plant communities: Southern Wet to Wet-Mesic Lowland Hardwood. Dominate species; box elders. Functional values: ranged from low to medium (five low values, three medium).

Wetland 32 - Small wetland swale aligned perpendicular to alignment approximately 130' south of Woodridge Lane. Plant communities: shallow marsh dominated and fresh wet meadow. Dominant plants: broad leaved cattail in SM, Reed canary grass in the M. Functional values: low.

Wetland Function

Wetland Summary: Type, Dominant Vegetation, Function and Values

Wetland	PLSS Location	Wisconsin Wetland Inventory Classification	Wetland Type[1]	Dominant Vegetation[1]	Functional Value Significance Summary[2]								Impact Area (Acres)
					Floral Diversity	Wildlife Habitat	Fishery Habitat	Flood/ Stormwater Attenuation	Water Quality Protection	Shoreline Protection	Groundwater	Aesthetics/ Recreation/ Education	
1 (ADID Wetland)	NE ¼ & SE ¼, Sec 17, T6N, R19E	S3/E2K	Shallow Marsh, Wet Meadow, Shrub-Carr, Hardwood Swamp	Typha angustifolia, Phalaris arundinacea, Salix sp., Cornus sp., & Salix nigra	Medium	High	High	Medium	High	Medium	High	Medium	1.76
2 (ADID Wetland)	NE ¼ , Sec 17, T6N, R19E	E2K	Wet Meadow, Shrub-Carr	Phalaris arundinacea & Salix interior	Low	High	High	Medium	High	Medium	High	Medium	0
3 (ADID Wetland)	NE ¼ , Sec 17, T6N, R19E	E2K	Shallow Marsh, Wet Meadow	Phalaris arundinacea & Typha latifolia	Low	High	High	Medium	High	Medium	Medium	Medium	0.004
4 (ADID Wetland)	NW ¼, Sec 17, T6N, R19E	S3/E2K & T3/S3K	Shallow Marsh, Sedge Meadow, Wet Meadow, Hardwood Swamp	Phalaris arundinacea, Typha latifolia, Carex stricta, Populus tremuloides, Acer negundo & Impatiens capensis	High	High	High	Medium	High	Medium	High	Medium	1.13
5 (ADID Wetland)	NW ¼, Sec 17, T6N, R19E	Not Mapped	Hardwood Swamp	Populus tremuloides, Rhamnus cathartica, & Phalaris arundinacea	Low	Medium	Medium	Low	Low	Low	Medium	Low	0.34
6	NW ¼, Sec 17, T6N, R19E	Not Mapped	Hardwood Swamp	Fraxinus pennsylvanica & Pilea pumila	Low	Medium	N/A	Low	Low	N/A	Medium	Low	0
7 (ADID Wetland)	NW ¼, Sec 17, T6N, R19E	Not Mapped	Wet Meadow, Shrub-Carr, Hardwood Swamp	Phalaris arundinacea, Salix interior, Impatiens capensis	Medium	Medium	Medium	Low	Medium	Low	High	Low	0.20
8 (ADID Wetland)	NW ¼, Sec 17, T6N, R19E	S3/E2K	Fen, Hardwood Swamp	Symplocarpus foetidus, Fraxinus pennsylvanica, Impatiens capensis, and Phalaris arundinacea	Medium	Medium	Medium	Low	Medium	Low	High	Medium	0.35
9 (ADID Wetland)	NW ¼, Sec 17, T6N, R19E	S3/E2K	Sedge Meadow, Wet Meadow, Scrub-Carr, Hardwood Swamp	Carex stricta, Phalaris arundinacea, Salix bebbiana, Fraxinus pennsylvanica, Ulmus Americana, & Acer negundo	High	High	High	Medium	High	Medium	High	Medium	0.98
10 (ADID Wetland)	NE ¼ , Sec 17, T6N, R19E	S3/E2K & T3K	Atypical (mowed) Wetland, Wet Meadow & Shallow Marsh	Typha latifolia, Helianthus grosseserratus & Solidago canadensis	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	0
11 (ADID Wetland)	SW ¼, Sec 8, T6N, R19E	S3/E1K	Shallow Marsh, Sedge Meadow, Wet Meadow, Shrub-Carr, Low Prairie, Hardwood Swamp	Phalaris arundinacea, Carex stricta, Salix bebbiana, Fraxinus pennsylvanica, Ulmus Americana, & Acer negundo	High	High	High	High	High	Medium	High	High	0.91
12 (ADID Wetland)	SW ¼, Sec 8, T6N, R19E	F0Kf	Wet Meadow, Atypical (farmed) Wetland	Phalaris arundinacea	Low	Low	N/A	Low	Low	N/A	Medium	Low	2.50
13 (ADID Wetland)	SW ¼ Sec 8 & SE ¼, Sec 7, T6N, R19E	F0Kf	Atypical (farmed) Wetland	Panicum dichotomiflorum	Low	Low	N/A	Low	Low	N/A	Medium	Low	1.18

Wetland Summary: Type, Dominant Vegetation, Function and Values

Wetland	PLSS Location	Wisconsin Wetland Inventory Classification	Wetland Type[1]	Dominant Vegetation[1]	Functional Value Significance Summary[2]								Impact Area (Acres)
					Floral Diversity	Wildlife Habitat	Fishery Habitat	Flood/ Stormwater Attenuation	Water Quality Protection	Shoreline Protection	Groundwater	Aesthetics/ Recreation/ Education	
14 (ADID Wetland)	SE ¼, Sec 7, T6N, R19E	S3/E2K	Low Prairie	Andropogon gerardii & Dipsacus laciniatus	High	Medium	Low	Medium	Low	Low	Medium	High	0.35
15 (ADID Wetland)	SE ¼, Sec 7, T6N, R19E	E2K	Shallow Marsh, Wet Meadow, Shrub-Carr, Hardwood Swamp	Typha angustifolia, Phalaris arundinacea, Cornus spp., Salix spp., Acer negundo & Rhamnus cathartica	Medium	High	High	Medium	High	High	High	Medium	0.11
16 (ADID Wetland)	SE ¼, Sec 7, T6N, R19E	T3/E2K	Sedge Meadow, Wet Meadow, Harwood Swamp	Carex stricta, Carex trichocarpa, Phalaris arundinacea, Acer negundo & Populus tremuloides	Medium	High	High	High	High	High	High	Medium	0.60
17 (ADID Wetland)	SE ¼, Sec 7, T6N, R19E	W0Hx	Shallow Open Water, Shallow Marsh, Wet Meadow	Phalaris arundinacea	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	0.95
18	SE ¼, Sec 7, T6N, R19E	Not Mapped	Wet Meadow	Phalaris arundinacea	Medium	Low	N/A	Low	Low	N/A	Low	Low	0.18
19	NE ¼ & SE ¼, Sec 7, T6N, R19E	Not Mapped	Shallow Marsh, Wet Meadow, Shrub-Carr	Phalaris arundinacea, Typha latifolia & Salix interior	Medium	Low	N/A	Medium	Medium	N/A	Medium	Low	0.16
20	NE ¼, Sec 7, T6N, R19E	Not Mapped	Atypical (farmed) Wetland		Low	Low	N/A	Low	Low	N/A	Medium	Low	0.01
21	NE ¼, Sec 7, T6N, R19E	Not Mapped	Atypical (farmed) Wetland		Low	Low	N/A	Low	Low	N/A	Medium	Low	0.28
22 (ADID Wetland)	NE ¼ & SE ¼, Sec 6, T6N, R19E	E2H	Shallow Marsh, Sedge Meadow, Wet Meadow	Typha latifolia, Phalaris arundinacea, Solidago altissima & Carex stricta	Medium	High	Medium	Medium	High	Medium	Medium	High	1.23
23	NE ¼ & SE ¼, Sec 6, T6N, R19E	S3/E2K	Wet Meadow, Hardwood Swamp	Phalaris arundinacea, Acer negundo & Fraxinus pennsylvanica	Medium	Medium	Medium	Medium	Medium	Medium	Low	Medium	0.20
24	NE ¼, Sec 6, T6N, R19E	Not Mapped	Hardwood Swamp	Populus deltoides, Ulmus americana, & Acer negundo	Low	Low	N/A	Low	Low	N/A	Low	Low	0.14
25	SE ¼, Sec 31 & SW ¼, Sec 32, T7N, R19E	Not Mapped	Wet Meadow, Hardwood Swamp	Phalaris arundinacea & Populus deltoides	Low	Low	N/A	Low	Low	N/A	Low	Low	0.08
26	SE ¼, Sec 31, T7N, R19E	E2K	Shallow marsh, Wet Meadow	Phalaris arundinacea & Typha latifolia	Low	Low	N/A	Low	Low	N/A	Low	Low	0.13
27	SW ¼, Sec 32, T7N, R19E	T3/E1K	Shallow Marsh, Shrub-Carr, Hardwood swamp	Typha latifolia, Salix interior & Populus deltoides	Medium	Medium	N/A	Medium	Medium	N/A	Low	Medium	0.88
28	SE ¼, Sec 31, T7N, R19E	Not Mapped	Shallow Marsh	Typha angustifolia	Low	Low	N/A	Low	Low	N/A	Low	Low	0.04
29	SE ¼, Sec 31, T7N, R19E	T3K	Hardwood Swamp	Acer negundo	Medium	Medium	Low	Low	Low	Low	Medium	Low	0.40
31	NE ¼, Sec 31, T7N, R19E	T3K	Hardwood Swamp	Acer negundo	Medium	Medium	Low	Low	Low	Low	Medium	Low	0.21
32	NW ¼, Sec 29, T7N, R19E	Not Mapped	Shallow Marsh, Wet Meadow	Typha latifolia & Phalaris arundinacea	Low	Low	Low	Low	Low	Low	Low	Low	0.003

[1] SEWRPC Wetland Delineation Report, 2012

[2] SEWRPC Rapid Assessment of Wetland Functional Values for the West bypass Alternative Routes Report, 201

Basic Project Information

Project ID: 2788-01-00
Title: West Waukesha Bypass - City Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: April 2015

HIGHWAY:	USH 18
LIMITS:	Wis 59 to I-94 -- City Segment Sta 341+88 to End
COUNTY:	Waukesha
DESCRIPTION OF WORK:	Roadway Expansion
PROJECT MANAGER:	Doug Cain, WisDOT-SER
PS&E DATE:	
DESIGN STAGE	☐ **Planning** ☐ **30%** ☑ **60%** ☐ **90%** ☐ **Final**

Drainage Summary

IS THERE A SIGNIFICANT FLOW INCREASE OR DECREASE WITHIN ANY SUB BASIN OF THE PROJECT? IF YES, DESCRIBE THE CAUSE OF THE CHANGE AND WHY IT IS NECESSARY.

The reconstruction project drains to two storm systems draining significantly larger upstream areas, therefore discharges from the reconstruction project are not considered significant. Water quality BMPs will however mitigate and detain frequent storm events. Also, the City of Waukesha is proposing a larger regional flood mitigation plan which may supersede the current roadway drainage planning and stormwater management approach. This segment of project will be constructed under a local contract and is under NR 151 stormwater standards. If the City of Waukesha project was a standalone project, then it may be considered "minor reconstruction"; however this project is classified as "reconstruction" since it is related to a larger overall expansion project extending south of Northview Drive.

IS THERE A SIGNIFICANT IMPERVIOUS AREA CHANGE TO ANY SUB BASIN OF THE PROJECT? IF YES, DESCRIBE THE CAUSE OF THE CHANGE AND WHY IT IS NECESSARY.

The subbasins include include a conversion of grass/gravel to roadway pavement for the additional driving lane required as part of the projects traffic needs. The reconstruction project drains to two existing storm systems servicing larger upstream areas, therefore the road conversion is not considered significant.

HAVE THE DRAINAGE SUB BASIN AREAS OR FLOW PATHS CHANGED SIGNIFICANTLY? IF YES, DESCRIBE THE CAUSE OF THE CHANGE AND WHY IT IS NECESSARY.

No. Flow paths and drainage areas are preserved as much as possible to limit changes at downstream outfalls.

DESCRIBE THE PROPOSED DRAINAGE CONVEYANCE AND CONTROL SYSTEMS FOR THE PROJECT.

The proposed roadway will continue to drain to storm sewer. The use of two extended dry detention ponds and a grass swale will reduce TSS and detain frequent storms for about 70% of the project. The City of Waukesha may amend this plan with a larger regional plan for flood and water quality control.

DESCRIBE THE AQUATIC ORGANISM PASSAGE ISSUES FOR THE PROJECT, IF ANY.

There are no known AOP issues.

IF THE DESIGN DOES NOT MEET THE DOT FDM CHAPTER 13 DRAINAGE REQUIREMENTS, EXPLAIN HOW AND WHY.

DESCRIBE WDNR COORDINATION. PROVIDE NAME OF WDNR CONTACT AND DATE, AND ATTACH ANY CORRESPONDENCE.

County Segment (STH 59 to Northview Rd): **Craig Webster**, (262) 574-2141, craig.webster@wisconsin.gov City Segment (Northview Rd to Rolling Ridge Dr): **Maureen McBroom**, (262) 574-2126, maureen.mcbroom@wisconsin.gov

IF THE DRAINAGE DESIGN MEETS LOCAL, MUNICIPAL OR REGIONAL GUIDELINES THAT EXCEED FDM CHAPTER 13 DRAINAGE REQUIREMENTS, EXPLAIN HOW AND WHY.

Flood attenuation within the dry ponds is an added benefit since the "reconstruction" classification of this project does not require quantity control.

IF A SIGNIFICANT IMPACT TO THE PROJECT OCCURS DUE TO DRAINAGE, PROJECT MANAGER CONCURRENCE IS REQUIRED. (PM SIGN AND DATE)

Drainage Data

Project ID: 2788-01-00	
Title: West Waukesha Bypass - City Segment	
Designer/Checker:	
DOT Region/Firm Name:	
Date: April 2015	

GR-Added

OUTFALL INFORMATION

Outfall number	**36**	**37**	**38**
Outfall station		348+60	362+00
Outfall discharges to:		Storm Sewer	Storm Sewer
Waterway crossing type		Storm Sewer	Storm Sewer
If discharging to environmentally sensitive area, what kinds of buffers were used at outfall?			
Previous flooding issues or flow restrictions?		DD Menu	DD Menu
Is the drainageway in the DOT ROW a navigable waterway?		No	No
Classify the drainageway in the DOT ROW		N/A	N/A

BASIC SUB BASIN DRAINAGE INFORMATION

Outfall number		**37**	**38**
Stormwater conveyance type		Storm Sewer	Storm Sewer
Outfall station		348+60	362+00
Subbasin starting station		342+00	356+50
Subbasin ending station		356+50	369+20
Proposed roadway length (ft)		1450	1270
Flow conveyance change			
Flood design frequency (yrs)			
Check design frequency (yrs)			
Is the check design storm safely passed?		DD Menu	DD Menu

Drainage Data

Project ID: 2788-01-00	
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Designer/Checker:	
DOT Region/Firm Name:	
Date: April 2015	

26	DOT right-of-way area (acres)			
27	Subbasin drainage area (acres)			
28	DOT right-of-way compared to subbasin drainage area (%)		#DIV/0!	#DIV/0!
29	DOT impervious area - existing (acres)			
30	DOT impervious area - proposed (acres)			
31	Change in impervious area (acres)		0	0
32	Percent change in DOT impervious area		#DIV/0!	#DIV/0!
33	Design software used			
34	Method used to estimate peak flows			
35	*Complete lines 36-46 for culverts only*			
36	Existing peak flow (cfs)			
37	Proposed peak flow (cfs) (before detention)			
38	Proposed peak flow (cfs) (after detention/in-line storage/other)			
39	Change in peak flow (cfs)		0	0
40	Percent change in peak flow		#DIV/0!	#DIV/0!
41	Existing 2-yr peak flow (cfs)			
42	Proposed 2-yr peak flow (cfs) (before detention)			
43	Proposed 2-yr peak flow (cfs) (after detention/in-line storage/other)			
44	Change in 2-yr peak flow (cfs)		0	0
45	Percent change in 2-yr peak flow		#DIV/0!	#DIV/0!
46	Existing Tc (min)			
47	Proposed Tc (min)			
48	C or CN (existing)			
49	C or CN (proposed)			
50	Rainfall intensity (in/hr) (rational method only)		N/A	N/A

1 **Drainage Data**

2	**Project ID: 2788-01-00**			
3	**Title: West Waukesha Bypass - City Segment**			
4	**Designer/Checker:**			
5	**DOT Region/Firm Name:**			
6	**Date: April 2015**			
51	Rainfall depth used for design storm, if applicable (in)			
52	**CULVERT DESIGN**			
53	**Existing Culvert**			
67	**Floodplain Management**			
70	**Drainage District Issues**			
75	**Aquatic Organism Passage**			
78	**Proposed Culvert Design**			
109	**CULVERT LINER DESIGN**			
110	**Existing Culvert**			
131	**Floodplain Management**			
134	**Drainage District Issues**			
138	**Aquatic Organism Passage**			

Project Summary

Project ID: 2788-01-00
Title: West Waukesha Bypass - City Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: April 2015

HIGHWAY:	USH 18
LIMITS:	Wis 59 to I-94 -- City Segment Sta 341+88 to End
COUNTY:	Waukesha
DESCRIPTION OF WORK:	Roadway Expansion
PROJECT MANAGER:	Doug Cain, WisDOT-SER
PS&E DATE:	0
DESIGN STAGE	60% Design Stage

Water Quality Results Discussion

Water Quality Results Summary	**Total Project Drainage Basin Area**	Grass Swales	Filter Strips	Wet Detention Ponds	Catch-basins	Street Cleaning	Biofilters	Dry Extended Detention Ponds	Other Devices	Untreated Areas	
Drainage Area (ac)	**10.720**	2.790		0.000	0.000			7.930			
ROW Drainage Area (ac)	**8.580**	2.050		0.000	0.000			3.970		2.560	STA 341+88 TO END
Percent TSS Reduction by Treatment Type	**37.6%**	80.0%		0.0%	0.0%			40.0%		0.0%	

Project Water Quality Objectives

☐ **THE PROJECT IS EXEMPT FROM TRANS 401 STORMWATER QUALITY REQUIREMENTS AND REQUIRES NO FURTHER WATER QUALITY INFORMATION. DESCRIBE BELOW WHY IT IS EXEMPT.**

DESCRIBE THE STORMWATER QUALITY MANAGEMENT REQUIREMENTS PER TRANS 401 OR THE TMDL WASTELOAD ALLOCATION.

☐ **40 % Reduction** ☐ **80 % Reduction** ☑ **Other Reduction** _____

The bypass project is under two different state stormwater codes: Trans 401 (WisDOT) from the beginning of the project at STH 59 to Northview Rd (sta 341+87), and NR 151 (municipal) from Northview Rd to end at Rolling Ridge Dr. The southern Trans 401 section is generally classified as "New" highway from sta 100+50 to 221+00, and "Reconstruction" from sta 221+00 to 341+87. The northern NR 151 segment (north of Northview Rd, sta 341+87) is also Reconstruction. Weighted TSS reduction goals are therefore: **South Trans 401 segment= 60% TSS reduction goal, and North (City Segment) NR 151 segment= 40% TSS reduction goal.**

IF THE PROJECT REQUIRES STORMWATER MANAGEMENT EXPLAIN HOW THE TRANS 401 2-YR PEAK DISCHARGE REQUIREMENT WAS MET.

Project Summary

Project ID: 2788-01-00
Title: West Waukesha Bypass - City Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: April 2015

HIGHWAY:	USH 18
LIMITS:	Wis 59 to I-94 -- City Segment Sta 341+88 to End
COUNTY:	Waukesha
DESCRIPTION OF WORK:	Roadway Expansion
PROJECT MANAGER:	Doug Cain, WisDOT-SER
PS&E DATE:	0
DESIGN STAGE	60% Design Stage

Only sections of roadway classified as "New" highway have a 2-year peak shaving requirement (beginning to Kame Terrace). There will however be quantity control at pond locations regardless of the highway classification. Furthermore, outfall locations within the new roadway section will look at the need for quantity control at individual outfalls based on the quantity of water and receiving waterway (ie. stream, farm field, municipal sewer, etc).

HAS THE DEPARTMENT AGREED TO MEET ANY LOCAL STORMWATER QUALITY ORDINANCES OR REQUIREMENTS FOR THIS PROJECT? IF SO, DESCRIBE.

WisDOT is working with local and WDNR agencies to meet Trans 401 and NR 151 post-construction performance goals.

IF THE PROJECT REQUIRES STORM WATER MANAGEMENT EXPLAIN HOW THE TOTAL SUSPENDED SOLIDS REDUCTION WAS MET. Refer to Water Quality Results Summary above.

Grass swales will be used as the initial primary device for treatment. Stormwater ponds will be used as a secondary device. Stormwater ponds will generally be dry ponds due to early planning concerns regarding thermal impacts to the receiving Pebble Creek. Considerations for a wet pond at sta sta 297 LT will be evaluated due to the natural flow length between the pond outlet and Pebble Creek. Storm sewer discharges directly into wetlands will also use standard outlet pipe sediment traps as a device with a limited footprint (limited wetland impact).

LIST THE POST CONSTRUCTION STORMWATER QUALITY CONTROL TREATMENT MEASURES FOR THE PROJECT.

Grass swales are primary treatment devices. Extended dry detention ponds for is also used for areas without available swale treatment or where flow rate requires attenuation for grass swale treatment. Outlet pipe sediment traps, permanent ditch checks, and catch basins (inlets with sumps) are not included within TSS (WQ-Summary worksheet); but may be implemented for areas currently without treatment.

REGIONAL STORMWATER ENGINEER CONCURRENCE (SIGN AND DATE)

Grass Swale Performance

Project ID:	**2788-01-00**
Title:	**West Waukesha Bypass - City Segment**
Designer/Checker:	
Date:	**April 2015**

Drainage Area Basin Number	**BMP 'GS 361'**						**Total**
Ending Service Area	**363+50**						
Starting Service Area	**356+55**						
Grass Swale End Sta	361+30, 375 RT						
Grass Swale Begin Sta	361+65, 90 RT						
Left, Center, or Right	**R**						
Site Assessment							
Grass Swale Length (ft)	300						
Average Drainage Area Width (ft)	175						
Average ROW Width (ft)	128						
Drainage Area (ac)	2.790						
ROW Area (ac)	2.050						
Flow velocity 2yr (from Channel Grass Lining Design	0.90						
Percent Reduction	80%						
Results Summary							
Drainage Area (ac)	2.790						2.790
ROW Area (ac)	2.050						2.050
Percent Reduction per unit ROW Area	80.0%						80.0%

Wet Detention Pond Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - City Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: April 2015

Drainage Area Basin Number					**Total**
Pond Number	**1**	**2**			
Pond Ending Station Number	**30+00**	**48+00**			
Pond Starting Station Number	**20+00**	**35+00**			
Left, Center, Right, or All	**R**	**R**			
Site Assessment					
Highway Segment Length Treated (ft)	1000	1300			
Drainage Area (ac)	0.000	0.000			0.000
ROW Area (ac)	0.000	0.000			0.000
Percent Reduction	0%	0%			0%
Results Summary					
Percent Reduction per Treated Highway Segment	0.0%	0.0%			0.0%

Enter Line Number and Comment. Add more boxes if necessary

Catchbasin Performance

Project ID:	**2788-01-00**
Title:	**West Waukesha Bypass - City Segment**
Designer/Checker:	
Date:	**April 2015**

Drainage Area Basin Number				**Total**
Catchbasin Number				
Catchbasin Station	**10+00**	**12+00**		
Left, Center, or Right	**R**	**R**		
Site Assessment				
Distance to Next Catchbasin or Drainage Area (ft)	200	250		
Drainage Area (ac)	0.000	0.000		0.000
ROW Area (ac)	0.000	0.000		0.000
Cross Section Type (5 or 8)	5	8	DD Menu	
Catchbasin or Inlet Type/Size	Type 3 Inlet	Type 3 Inlet	DD Menu	
Predominant Cover Type	Mostly Imperv	Mostly Perv	DD Menu	
Design Chart Number	1	10	DD Menu	
Percent Reduction from Design Chart	22%	23%		
Results Summary				
Average Drainage Area Width (ft)	0.0	0.0	#DIV/0!	
Average ROW Width (ft)	0.0	0.0	#DIV/0!	
Percent Reduction per unit ROW Area	0.0%	0.0%	0.0%	0.0%

Dry Extended Detention Pond Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - City Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: April 2015

Drainage Area Basin Number	**BMP 'DP 349'**	**BMP 'DP 363'**		**Total**
Pond Number	**2**	**3**		
Pond Ending Station Number	**350+00**	**363+00**		
Pond Starting Station Number	**349+00**	**362+20**		
Left, Center, Right, or All	**R**	**R**		
Site Assessment				
Highway Segment Length Treated (ft)	820	510		
Drainage Area (ac)	3.270	4.66		7.930
ROW Area (ac)	2.380	1.59		3.970
Percent Reduction	40%	40%		40%
Results Summary				
Percent Reduction per Treated Highway Segment	40.0%	40.0%		40.0%

Enter Line Number and Comment. Add more boxes if necessary

There is limited information and methods for estimating TSS reduction in dry ponds due to the variability between facilities and available research. The main components are infiltration, filtration, and settling. Dry ponds were initially modeled with WinSLAMM for TSS removal estimation. WinSLAMM modeling considered only the infiltration component for TSS reduction, therefore the dry ponds with extended detention times were analyzed based on particle settling velocity to better estimate TSS reduction.

Detention times in the dry ponds were extended for a 40% TSS reduction based on a particle settling velocity of 2.95×10^{-4} ft/sec. Using small low-flow outlet these settling velocities were achieved for 12 micron particles (40 % reduction). Regular maintenance and inspection of these particular These particular dry facilities are expected to achieve an even higher TSS reductions if they are regularly inspected and maintained due to the relatively small drainage area for each pond

If dry pond facilities are considered for final design, then special attention should be given toward clogging (or minimum low-flow orifice size), reduction of scour and particle resuspension with riprap, overflow pathway, and tailwater influence on inflow storm sewers. Pond layouts were utilzed both field and County GIS survey, therefore additional topo survey may be required to accurately match proposed/existing grades.

Basic Project Information

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: June 2015

HIGHWAY:	USH 18
LIMITS:	Wis 59 to Northview Road (sta 341+88)
COUNTY:	Waukesha
DESCRIPTION OF WORK:	New Road Alignment & Roadway Expansion
PROJECT MANAGER:	Doug Cain, WisDOT-SER
PS&E DATE:	
DESIGN STAGE	☐ **Planning** ☐ **30%** ☑ **60%** ☐ **90%** ☐ **Final**

Drainage Summary

IS THERE A SIGNIFICANT FLOW INCREASE OR DECREASE WITHIN ANY SUB BASIN OF THE PROJECT? IF YES, DESCRIBE THE CAUSE OF THE CHANGE AND WHY IT IS NECESSARY.

There are various degrees of flow increases. The increases area mainly from the construction of the new roadway. Some of the resulting flows are relatively small due to the small size of the overall drainage basins (both onsite and offsite areas). Other locations have larger offsite areas which make the onsite (roadway) areas not a significant contributor for peak flows. Locations with flow increases in the new roadway segment will be reviewed individually to determine if peak flow mitigation is required.

IS THERE A SIGNIFICANT IMPERVIOUS AREA CHANGE TO ANY SUB BASIN OF THE PROJECT? IF YES, DESCRIBE THE CAUSE OF THE CHANGE AND WHY IT IS NECESSARY.

Some subbasin which are small and predominately the area of the new roadway have the largest change in impervious area percentage. These changes are required to build the typical roadway section of the roadway.

HAVE THE DRAINAGE SUB BASIN AREAS OR FLOW PATHS CHANGED SIGNIFICANTLY? IF YES, DESCRIBE THE CAUSE OF THE CHANGE AND WHY IT IS NECESSARY.

Flow paths and drainage areas are preserved as much as possible to limit changes downstream of outfalls. The greatest change to drainage areas and flow paths is in the new roadway areas with small subbasins. Smaller subbasins generally have existing sheet flow that will be converted to a point discharge as a result of the development.

DESCRIBE THE PROPOSED DRAINAGE CONVEYANCE AND CONTROL SYSTEMS FOR THE PROJECT.

The project promotes the use of rural grass swales and lateral outfalls to limit mainline storm sewer. Mainline storm sewer is used where grass swales are not accessible to the storm sewer outlets. Interceptor ditches outside of the improved street/sidewalk are used to limit flow to the system, and for operational icing concerns.

DESCRIBE THE AQUATIC ORGANISM PASSAGE ISSUES FOR THE PROJECT, IF ANY.

There are no known AOP issues.

IF THE DESIGN DOES NOT MEET THE DOT FDM CHAPTER 13 DRAINAGE REQUIREMENTS, EXPLAIN HOW AND WHY.

DESCRIBE WDNR COORDINATION. PROVIDE NAME OF WDNR CONTACT AND DATE, AND ATTACH ANY CORRESPONDENCE.

County Section (STH 59 to Northview Rd): **Craig Webster**, (262) 574-2141, craig.webster@wisconsin.gov City Section (Northview Rd to Rolling Ridge Dr): **Maureen McBroom**, (262) 574-2126, maureen.mcbroom@wisconsin.gov

IF THE DRAINAGE DESIGN MEETS LOCAL, MUNICIPAL OR REGIONAL GUIDELINES THAT EXCEED FDM CHAPTER 13 DRAINAGE REQUIREMENTS, EXPLAIN HOW AND WHY.

Flood attenuation within dry ponds is an added benefit since the "reconstruction" classification of this project does not require quantity control.

IF A SIGNIFICANT IMPACT TO THE PROJECT OCCURS DUE TO DRAINAGE, PROJECT MANAGER CONCURRENCE IS REQUIRED. (PM SIGN AND DATE)

Drainage Data

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name:
Date: June 2015

GR-Added

OUTFALL INFORMATION

Outfall number	1		2	3	4	5	6	7		8	9	10	11	12
Outfall station	11+00 'SAY'	19+00 'SAY'	116+00	126+50	130+50	134+00	141+00	147+00	45+20 'SUN'	152+50	153+50	156+00	160+00	50+00 'GRE'
Outfall discharges to:	Ditch	Ditch	Wetland	Wetland	Wetland	Wetland	Overland	Wetland	Ditch	Wetland	Storm Sewer	Ditch	Overland	Ditch
Waterway crossing type	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
If discharging to environmentally sensitive area, what kinds of buffers were used at outfall?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Previous flooding issues or flow restrictions?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Is the drainageway in the DOT ROW a navigable waterway?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Classify the drainageway in the DOT ROW	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu

BASIC SUB BASIN DRAINAGE INFORMATION

Outfall number	1	0	2	3	4	5	6	7	0	8	9	10	11	12
Stormwater conveyance type	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale
Outfall station	11+00 'SAY'	19+00 'SAY'	116+00	126+50	130+50	134+00	141+00	147+00	45+20 'SUN'	152+50	153+50	156+00	160+00	50+00 'GRE'
Subbasin starting station	00+00 'SAY'	37+25 'STH 59'	111+73	123+49	129+95	131+03	138+10	146+01	37+70	32+45	152+62	154+60	156+71	163+82
Subbasin ending station	12+50 'SAY'	12+50 'SAY'	123+49	129+95	131+03	138+10	146+01	152+62	45+25	50+06	154+60	156+71	163+82	165+85
Proposed roadway length (ft)	3706	3706	1176	646	108	707	791	661	755	1761	198	211	711	203
Flow conveyance change														
Flood design frequency (yrs)	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Check design frequency (yrs)	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Is the check design storm safely passed?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
DOT right-of-way area (acres)	9.1	9.1	11.5	2.1	0.4	2.2	2.6	2.4	1.8	1.8	0.7	1.7	2.4	1.4
Subbasin drainage area (acres)	64.6	6.7	59.7	133.7	30.2	10.9	29.7	8.1	22	22	0.8	11.8	8.5	5.5
DOT right-of-way compared to subbasin drainage area (%)	14%	136%	19%	2%	1%	20%	9%	30%	8%	8%	88%	14%	28%	25%
DOT impervious area - existing (acres)	3.3	3.3	4.4	0	0	0	0.5	0	1.9	1.9	0.1	1	0	0.1
DOT impervious area - proposed (acres)	3.3	3.3	7.5	1.2	0.2	0.6	1.9	1.4	2.1	2.1	0.7	1.1	1.5	0.9
Change in impervious area (acres)	0	0	3.1	1.2	0.2	0.6	1.4	1.4	0.2	0.2	0.6	0.1	1.5	0.8
Percent change in DOT impervious area	0%	0%	70%	#DIV/0!	#DIV/0!	#DIV/0!	280%	#DIV/0!	11%	11%	600%	10%	#DIV/0!	800%
Design software used	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA
Method used to estimate peak flows	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology

Drainage Data

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name:
Date: June 2015

Complete lines 36-46 for culverts only														
Existing peak flow (cfs)	85.24	85.24	121.29	219.02	81.84	34.26	94.42	21.42						23.75
Proposed peak flow (cfs) (before detention)	85.24	85.24	123.94	220.57	82.35	35.84	97.15	24.07						25.84
Proposed peak flow (cfs) (after detention/in-line storage/other)	85.24	85.24	123.94	220.57	82.35	35.84	97.15	24.07						25.84
Change in peak flow (cfs)	0	0	2.65	1.55	0.51	1.58	2.73	2.65				0		2.09
Percent change in peak flow	0%	0%	2%	1%	1%	5%	3%	12%				#DIV/0!		9%
Existing 2-yr peak flow (cfs)	25.42	25.42	42.92	66.25	28.02	10.66	30.73	6.59						7.9
Proposed 2-yr peak flow (cfs) (before detention)	25.42	25.42	44.97	67.25	28.35	11.72	32.56	8.32						9.38
Proposed 2-yr peak flow (cfs) (after detention/in-line storage/other)	25.42	25.42	44.97	67.25	28.35	11.72	32.56	8.32						9.38
Change in 2-yr peak flow (cfs)	0	0	2.05	1	0.33	1.06	1.83	1.73				0		1.48
Percent change in 2-yr peak flow	0%	0%	5%	2%	1%	10%	6%	26%				#DIV/0!		19%
Existing Tc (min)	32	32	50	54	30	20	20	25						7
Proposed Tc (min)	32	32	50	54	30	20	20	25						7
C or CN (existing)	77	77	82	78	81	78	79	77	78	78	82	80	79	79
C or CN (proposed)	77	77	83	78	81	79	80	81	79	79	96	80	83	82
Rainfall intensity (in/hr) (rational method only)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rainfall depth used for design storm, if applicable (in)	5.1	6.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1

CULVERT DESIGN

Existing Culvert

Outfall number	1	0	2	3	4	5	6	7	0	8	9	10	11	12
Culvert present? (Yes or No)	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Existing culvert shape	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Existing culvert material	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Existing culvert size (ft)														
Existing number of culverts														
Existing Manning's n														
Inlet entrance type	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Inlet loss coefficient (Ke)														
Upstream invert (ft)														
Downstream invert (ft)														
Length (ft)														
Slope (%)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Floodplain Management														
Drainage District Issues														
Aquatic Organism Passage														
Proposed Culvert Design														

CULVERT LINER DESIGN

Drainage Data

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segmer
Designer/Checker:
DOT Region/Firm Name:
Date: June 2015

GR-Added

OUTFALL INFORMATION

Outfall number	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Outfall station	167+50	173+00	181+50	52+50 'MAC'	202+00	216+00	221+00	227+00	232+00	254+50	50+00 'MAD'	51+00 'MAD'	261+00	270+00
Outfall discharges to:	Overland	Ditch	Creek	Wetland	Ditch	Overland	Ditch	Ditch	Wetland	Wetland	Ditch	Storm Sewer	Ditch	Wetland
Waterway crossing type	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Storm Sewer	Culvert	DD Menu	Storm Sewer	Culvert	Culvert
If discharging to environmentally sensitive area, what kinds of buffers were used at outfall?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Previous flooding issues or flow restrictions?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Is the drainageway in the DOT ROW a navigable waterway?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Classify the drainageway in the DOT ROW	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu

BASIC SUB BASIN DRAINAGE INFORMATIO

Outfall number	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Stormwater conveyance type	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale
Outfall station	167+50	173+00	181+50	52+50 'MAC'	202+00	216+00	221+00	227+00	232+00	254+50	50+00 'MAD'	51+00 'MAD'	261+00	270+00
Subbasin starting station	165+85	168+06	180+51	186+22	201+82	211+70	219+00	221+40	226+86	249+98	255+17	255+17	258+73	263+54
Subbasin ending station	168+06	174+03	186+22	201+82	211+70	221+40	221+40	226+86	238+49	255+17	258+73	258+73	263+54	270+25
Proposed roadway length (ft)	221	597	571	1560	988	970	240	546	1163	519	356	356	481	671
Flow conveyance change														
Flood design frequency (yrs)	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Check design frequency (yrs)	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Is the check design storm safely passed?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
DOT right-of-way area (acres)	1.4	2.4	2.5	3.5	3.7	3.4	1.5	2.4						
Subbasin drainage area (acres)	2.7	6.4	6.3	22.4	12.8	3.6	8	25.2	24.7	6.3	1.3	6.1	11.6	8.7
DOT right-of-way compared to subbasin drainage area (%)	52%	38%	40%	16%	29%	94%	19%	10%	0%	0%	0%	0%	0%	0%
DOT impervious area - existing (acres)	0.0	0.0	0.2	0.6	0.3	0.2	0.3	0.4	0.3	1.8	0.3	1.6	2.6	1.2
DOT impervious area - proposed (acres)	0.8	1.4	1.7	0.8	2.4	2.2	0.5	1.8	2.6	2.7	0.8	1.7	3.2	1.9
Change in impervious area (acres)	0.8	1.4	1.5	0.2	2.1	2.0	0.2	1.4	2.3	0.9	0.5	0.1	0.6	0.7
Percent change in DOT impervious area	#DIV/0!	#DIV/0!	750%	33%	700%	1000%	67%	350%	767%	50%	167%	6%	23%	58%
Design software used	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA
Method used to estimate peak flows	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology

Drainage Data

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segmer
Designer/Checker:
DOT Region/Firm Name:
Date: June 2015

Complete lines 36-46 for culverts only														
Existing peak flow (cfs)	9.05	21.74		43.92	38.37	14.22	27.32	77.68	80.57	25.28	5.43	24.55	43.87	25.43
Proposed peak flow (cfs) (before detention)	10.82	25.72		44.49	44.65	14.66	28.17	80.02	86.6	26.99	6.33	24.81	44.93	26.93
Proposed peak flow (cfs) (after detention/in-line storage/other)	10.82	25.72		44.49	44.65	14.66	28.17	80.02	86.6	26.99	6.33	24.81	44.93	26.93
Change in peak flow (cfs)	1.77	3.98		0.57	6.28	0.44	0.85	2.34	6.03	1.71	0.9	0.26	1.06	1.5
Percent change in peak flow	20%	18%		1%	16%	3%	3%	3%	7%	7%	17%	1%	2%	6%
Existing 2-yr peak flow (cfs)	2.88	5.32		9.17	10.87	4.88	9.01	24.63	26	9.77	2.09	9.2	17.3	8.61
Proposed 2-yr peak flow (cfs) (before detention)	4.41	7.67		9.47	14.9	5.18	9.59	26.3	30.2	11.17	2.9	9.39	18.18	9.7
Proposed 2-yr peak flow (cfs) (after detention/in-line storage/other)	4.41	7.67		9.47	14.9	5.18	9.59	26.3	30.2	11.17	2.9	9.39	18.18	9.7
Change in 2-yr peak flow (cfs)	1.53	2.35		0.3	4.03	0.3	0.58	1.67	4.2	1.4	0.81	0.19	0.88	1.09
Percent change in 2-yr peak flow	53%	44%		3%	37%	6%	6%	7%	16%	14%	39%	2%	5%	13%
Existing Tc (min)	15	5		29	17	12	17	20	18	17	15	15	21	26
Proposed Tc (min)	15	5		29	17	12	17	20	18	17	15	15	21	26
C or CN (existing)	78	71	79	69	75	81	79	78	78	84	84	83	85	80
C or CN (proposed)	84	76	84	70	79	91	80	79	81	87	91	84	86	82
Rainfall intensity (in/hr) (rational method only)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rainfall depth used for design storm, if applicable (in)	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1

CULVERT DESIGN														
Existing Culvert														
Outfall number	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**
Culvert present? (Yes or No)	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	Yes	No
Existing culvert shape	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	Circular	Circular	DD Menu	DD Menu	Circular	DD Menu	Circular	DD Menu
Existing culvert material	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	CMP	CMP	DD Menu	DD Menu	RCP	DD Menu		DD Menu
Existing culvert size (ft)							1.5	1.5			2			
Existing number of culverts							1	1			1			
Existing Manning's n														
Inlet entrance type	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	AEW		DD Menu	DD Menu		DD Menu		DD Menu
Inlet loss coefficient (Ke)														
Upstream invert (ft)							866.07	857.44			851.83		867.98	
Downstream invert (ft)							864.98	857.39			847.65		866.19	
Length (ft)							39.5	33.2			112		60	
Slope (%)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2.76%	0.15%	#DIV/0!	#DIV/0!	3.73%	#DIV/0!	2.98%	#DIV/0!
Floodplain Management														
Drainage District Issues														
Aquatic Organism Passage														
Proposed Culvert Design														

CULVERT LINER DESIGN

Drainage Data

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segmer
Designer/Checker:
DOT Region/Firm Name:
Date: June 2015

GR-Added

OUTFALL INFORMATION

Outfall number	27	28	29	30	31	32	33	34	35	36
Outfall station	49+50 'FID'	280+00	43+00 'SUM'	57+00 'SUM'	306+00	341+00	49+50 'JOA'	349+00	362+00	365+00
Outfall discharges to:	Ditch	Wetland	Ditch	Storm Sewer	Storm Sewer	Storm Sewer	Storm Sewer	Storm Sewer	Storm Sewer	Storm Sewer
Waterway crossing type	Storm Sewer	Culvert	Culvert	Storm Sewer	Storm Sewer	Storm Sewer	Storm Sewer	Storm Sewer	Storm Sewer	Storm Sewer
If discharging to environmentally sensitive area, what kinds of buffers were used at outfall?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Previous flooding issues or flow restrictions?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Is the drainageway in the DOT ROW a navigable waterway?	No	No	No	No	No	No	No	No	No	No
Classify the drainageway in the DOT ROW	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu

BASIC SUB BASIN DRAINAGE INFORMATIO

Outfall number	27	28	29	30	31	32	33	34	35	36
Stormwater conveyance type	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale	Ditch/Swale
Outfall station	49+50 'FID'	280+00	43+00 'SUM'	57+00 'SUM'	306+00	341+00	49+50 'JOA'	349+00	362+00	365+00
Subbasin starting station	271+16	270+25	32+52	56+71	305+24	340+50	343+25	348+37	355+42	363+58
Subbasin ending station	274+55	282+47	43+05	69+17	316+28	343+25	348+37	355+42	363+58	369+61
Proposed roadway length (ft)	339	1222	1053	1246	1104	275	512	705	816	603
Flow conveyance change										
Flood design frequency (yrs)	50	50	50	50	50	50	50	50	50	50
Check design frequency (yrs)	50	50	50	50	50	50	50	50	50	50
Is the check design storm safely passed?	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
DOT right-of-way area (acres)										
Subbasin drainage area (acres)	3.7	27.5	43.2	8.4	14.1	2.6	1.7	3.9	4.3	6.2
DOT right-of-way compared to subbasin drainage area (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DOT impervious area - existing (acres)	0.4	3.5	2.8	0.7	1.2	0.9	0.1	1.1	0.8	1.1
DOT impervious area - proposed (acres)	0.8	4.3	2.8	0.8	0.2	1.4	0.3	1.7	1.8	1.7
Change in impervious area (acres)	0.4	0.8	0.0	0.1	-1.0	0.5	0.2	0.6	1	0.6
Percent change in DOT impervious area	100%	23%	0%	14%	-83%	56%	200%	55%	125%	55%
Design software used	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA	SSA
Method used to estimate peak flows	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology	SCS Hydrology

Drainage Data

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segmer
Designer/Checker:
DOT Region/Firm Name:
Date: June 2015

Complete lines 36-46 for culverts only										
Existing peak flow (cfs)	16.31	83.44					5.72	15.05	14.17	19.84
Proposed peak flow (cfs) (before detention)	18.64	86.28					6.16	16.09	15.92	20.93
Proposed peak flow (cfs) (after detention/in-line storage/other)	18.64	86.28					6.16	16.09	15.92	20.93
Change in peak flow (cfs)	2.33	2.84				0	0.44	1.04	1.75	1.09
Percent change in peak flow	14%	3%				#DIV/0!	8%	7%	12%	5%
Existing 2-yr peak flow (cfs)	6.84	27.7					1.9	6.07	5.47	7.73
Proposed 2-yr peak flow (cfs) (before detention)	9.32	29.72					2.21	7.01	6.98	8.64
Proposed 2-yr peak flow (cfs) (after detention/in-line storage/other)	9.32	29.72					2.21	7.01	6.98	8.64
Change in 2-yr peak flow (cfs)	2.48	2.02				0	0.31	0.94	1.51	0.91
Percent change in 2-yr peak flow	36%	7%				#DIV/0!	16%	15%	28%	12%
Existing Tc (min)	16	42					18	20	26	25
Proposed Tc (min)	16	42					18	20	26	25
C or CN (existing)	88	80	73	74	79	87	79	86	85	85
C or CN (proposed)	95	81	76	74	77	90	82	89	90	87
Rainfall intensity (in/hr) (rational method only)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rainfall depth used for design storm, if applicable (in)	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1

CULVERT DESIGN

Existing Culvert

Outfall number	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**
Culvert present? (Yes or No)	No	Yes	No	Yes	No	No	No	No	No	No
Existing culvert shape	DD Menu	Circular	DD Menu	Circular	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Existing culvert material	DD Menu	CMP	DD Menu	CMP	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Existing culvert size (ft)		1.25		2						
Existing number of culverts		1		1						
Existing Manning's n										
Inlet entrance type	DD Menu		DD Menu	AEW	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu	DD Menu
Inlet loss coefficient (Ke)										
Upstream invert (ft)		852.61		868.69						
Downstream invert (ft)		852.53		863.36						
Length (ft)		72		145.8						
Slope (%)	#DIV/0!	0.11%	#DIV/0!	3.66%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Floodplain Management										
Drainage District Issues										
Aquatic Organism Passage										
Proposed Culvert Design										

CULVERT LINER DESIGN

Project Summary

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: June 2015

HIGHWAY:	USH 18
LIMITS:	Wis 59 to Northview Road (sta 341+88)
COUNTY:	Waukesha
DESCRIPTION OF WORK:	New Road Alignment & Roadway Expansion
PROJECT MANAGER:	Doug Cain, WisDOT-SER
PS&E DATE:	0
DESIGN STAGE	60% Design Stage

Water Quality Results Discussion

Water Quality Results Summary	**Total Project Drainage Basin Area**	Grass Swales	Filter Strips	Wet Detention Ponds	Catch-basins	Street Cleaning	Biofilters	Dry Extended Detention Ponds	Other Devices - Outlet Pipe Sed Traps	Untreated Areas
Drainage Area (ac)	**122.9**	110.454		0.000	0.000			7.700	4.720	
ROW Drainage Area (ac)	**89.3**	58.080		0.000	0.000			4.700	4.720	21.790
Percent TSS Reduction by Treatment Type	**57.9%**	79.3%		0.0%	0.0%			80.0%	40.0%	0.0%

	ROW Area
North County: STA 261+00 TO 341+88	28.49 ac
South County: Begin to STA 261+00	60.8 ac
	89.29 ac

Project Water Quality Objectives

☐ **THE PROJECT IS EXEMPT FROM TRANS 401 STORMWATER QUALITY REQUIREMENTS AND REQUIRES NO FURTHER WATER QUALITY INFORMATION. DESCRIBE BELOW WHY IT IS EXEMPT.**

DESCRIBE THE STORMWATER QUALITY MANAGEMENT REQUIREMENTS PER TRANS 401 OR THE TMDL WASTELOAD ALLOCATION.

☐ **40 % Reduction** ☐ **80 % Reduction** ☑ **Other Reduction** **60 %**

The bypass project is under two different state stormwater codes: Trans 401 (WisDOT) from the beginning of the project at STH 59 to Northview Rd (sta 341+87), and NR 151 (municipal) from Northview Rd to end at Rolling Ridge Dr. The southern Trans 401 section is generally classified as "New" highway from sta 100+50 to 221+00, and "Reconstruction" from sta 221+00 to 341+87. The northern municipal NR 151 segment (north of Northview Rd, sta 341+87) is also Reconstruction. Weighted TSS reduction goals are therefore: **WisDOT Trans 401 segment= 60% TSS reduction goal (based on weighted average for New and Reconstruct), and City NR 151 segment= 40% TSS reduction goal.**

IF THE PROJECT REQUIRES STORMWATER MANAGEMENT EXPLAIN HOW THE TRANS 401 2-YR PEAK DISCHARGE REQUIREMENT WAS MET.

Only sections of roadway classified as "New" highway have a 2-year peak shaving requirement (beginning to Kame Terrace). There will however be quantity control at pond locations regardless of the highway classification. Furthermore, outfall locations within the new roadway section will look at the need for quantity control at individual outfalls based on the quantity of water and receiving waterway (ie. stream/wetland, farm field, municipal sewer, etc).

HAS THE DEPARTMENT AGREED TO MEET ANY LOCAL STORMWATER QUALITY ORDINANCES OR REQUIREMENTS FOR THIS PROJECT? IF SO, DESCRIBE.

WisDOT is working with local and WDNR agencies to meet Trans 401 and NR 151 post-construction performance goals.

IF THE PROJECT REQUIRES STORM WATER MANAGEMENT EXPLAIN HOW THE TOTAL SUSPENDED SOLIDS REDUCTION WAS MET. Refer to Water Quality Results Summary above.

Project Summary

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: June 2015

Grass swales will be used as the initial primary device for treatment. Stormwater ponds will be used as a secondary device. Stormwater ponds will generally be dry ponds due to early planning concerns regarding thermal impacts to the receiving Pebble Creek. Considerations for a wet pond at sta sta 297 LT was evaluated but a flat-bottom treatment swale was used instead due to r/w constraints and proximity to a private stormater pond. Storm sewer discharging in close proximity to wetlands will also use outlet pipe sediment traps of a standard size as an effective device for small drainage areas with only a limited footprint (minimal or no wetland impacts).
LIST THE POST CONSTRUCTION STORMWATER QUALITY CONTROL TREATMENT MEASURES FOR THE PROJECT.
Grass swales are primary treatment devices. Extended dry detention ponds were also used for areas without available swale treatment or where flow rate requires attenuation for grass swale treatment. Outlet pipe sediment traps were located near wetland limits to treat small storm sewer discharges. Permanent ditch checks and catch basins (inlets with sumps) are not included within TSS (WQ-Summary worksheet); but may be implemented for areas currently without treatment.

REGIONAL STORMWATER ENGINEER CONCURRENCE (SIGN AND DATE)

Grass Swale Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
Date: June 2015

	South	South	South	South	South	South	South	South	South	South	South	South	South	South
Drainage Area Basin Number														
Service Area End Sta	**110+00**	**110+00**	**111+50**	**124+00**	**124+50**	**126+50**	**135+00**	**132+50**	**140+00**	**141+00**	**146+50**	**150+00**	**152+00**	**159+00**
Service Area Begin Sta	**100+40**	**103+00**	**109+50**	**117+00**	**117+50**	**124+50**	**126+50**	**130+50**	**135+50**	**135+50**	**141+50**	**147+50**	**150+00**	**153+50**
Grass Swale End Sta	102+40	109+90	111+50	124+00	124+50	126+25	134+00	132+50	140+00	138+00	146+50	150+00	152+00	159+00
Grass Swale Begin Sta	100+40	103+00	109+50	117+00	117+50	124+25	131+00	130+50	135+50	135+50	141+50	147+50	150+00	154+00
Left, Center, or Right	**R**	**L**	**R**	**L**	**R**	**L**	**L**	**R**	**L**	**R**	**L**	**L**	**L**	**R**
Site Assessment														
Grass Swale Length (ft)	200	690	200	700	700	200	300	200	450	250	500	250	200	500
Average Total Drainage Area Width (ft)	118	80	89	61	120	39	85	98	137	47	236	256	305	55
Average ROW Width (ft)	118	80	89	61	120	39	54	98	71	47	83	64	70	55
GR Ave Road Pavement Width (ft)	63	37	58	0	75	0	39	39	39	21	17	0	0	10
GR Ave SW / Trail Pavement Width (ft)	0	0	0	0	0	0	0	0	0	0	0	0	0	10
GR Ave Grass Width (ft)	55	43	31	61	45	39	15	59	32	26	66	64	70	35
GR ROW Runoff C	0.559	0.520	0.618	0.280	0.605	0.280	0.657	0.487	0.567	0.514	0.387	0.280	0.280	0.461
GR ROW Tc (min)	15	12	5	12	12	6	9	7	9	7	10	7	7	10
GR Total Drainage Area (ROW and Offsite) (ac)	2.590	1.290	0.410	0.980	1.930	0.180	1.660	0.450	1.420	0.590	2.710	1.470	1.400	0.690
GR ROW Area Only (ac)	2.590	1.290	0.410	0.980	1.930	0.180	1.050	0.450	0.730	0.590	0.950	0.370	0.320	0.690
GR Flow velocity 2yr (from Channel Grass Lining Design	1.50	1.40	0.40	1.02	1.49	0.40	1.00	1.05	0.85	0.96	0.90	0.48	0.60	0.71
Percent Reduction	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Results Summary														
Drainage Area (ac)	2.590	1.290	0.410	0.980	1.930	0.180	1.660	0.450	1.420	0.590	2.710	1.470	1.400	0.690
ROW Area (ac)	2.590	1.290	0.410	0.980	1.930	0.180	1.050	0.450	0.730	0.590	0.950	0.370	0.320	0.690
Percent Reduction per unit ROW Area	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%

Grass Swale Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segmen
Designer/Checker:
Date: June 2015

	South	South	South	South	South	South	South	South	South	South	South	South	South	South
Drainage Area Basin Number														
Service Area End Sta	**156+25**	**158+75**	**160+75**	**163+00**	**166+00**	**165+00**	**172+50**	**176+50**	**176+50**	**189+50**	**192+00**	**201+00**	**203+50**	**206+50**
Service Area Begin Sta	**153+75**	**156+50**	**159+00**	**159+00**	**159+00**	**163+00**	**165+25**	**166+00**	**172+50**	**185+00**	**186+25**	**192+00**	**201+50**	**203+50**
Grass Swale End Sta	156+25	158+75	160+75	163+00	165+25	165+00	172+50	171+50	174+50	185+50	192+00	201+00	203+50	203+50
Grass Swale Begin Sta	153+75	156+50	159+00	160+75	159+00	163+00	166+50	168+50	172+50	183+50	186+25	189+50	201+50	201+50
Left, Center, or Right	**L**	**L**	**L**	**L**	**R**	**L**	**L**	**R**	**L**	**R**	**L**	**R**	**L**	**R**
Site Assessment														
Grass Swale Length (ft)	250	225	175	225	625	200	600	300	200	200	575	1150	200	200
Average Total Drainage Area Width (ft)	85	101	70	82	54	100	677	71	115	116	217	265	37	186
Average ROW Width (ft)	85	101	70	82	54	65	58	71	45	116	34	199	37	186
GR Ave Road Pavement Width (ft)	52	59	36	50	10	24	28	35	22	98	0	90	0	101
GR Ave SW / Trail Pavement Width (ft)	0	0	0	0	10	0	0	10	0	8	0	13	0	16
GR Ave Grass Width (ft)	33	42	34	32	34	41	30	26	23	10	34	96	37	69
GR ROW Runoff C	0.597	0.585	0.549	0.598	0.465	0.471	0.532	0.605	0.536	0.751	0.280	0.545	0.280	0.603
GR ROW Tc (min)	7	7	7	7	11	7	11	8	7	7	11	17	7	7
GR Total Drainage Area (ROW and Offsite) (ac)	0.490	0.520	0.280	0.750	0.860	0.460	11.260	1.700	1.060	1.200	2.860	5.480	0.170	1.280
GR ROW Area Only (ac)	0.490	0.520	0.280	0.750	0.860	0.300	0.960	1.700	0.410	1.200	0.450	4.120	0.170	1.280
GR Flow velocity 2yr (from Channel Grass Lining Design	1.54	0.76	0.57	0.50	0.60	0.46	0.81	0.86	0.65	1.21	0.68	1.04	0.52	1.34
Percent Reduction	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Results Summary														
Drainage Area (ac)	0.490	0.520	0.280	0.750	0.860	0.460	11.260	1.700	1.060	1.200	2.860	5.480	0.170	1.280
ROW Area (ac)	0.490	0.520	0.280	0.750	0.860	0.300	0.960	1.700	0.410	1.200	0.450	4.120	0.170	1.280
Percent Reduction per unit ROW Area	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%

Grass Swale Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segmen
Designer/Checker:
Date: June 2015

	South	South	South	South	South	South	South	South	South	South	South	South	South	South
Drainage Area Basin Number														
Service Area End Sta	**206+50**	**215+50**	**215+50**	**221+00**	**221+00**	**230+50**	**235+00**	**233+00**	**237+20**	**243+20**	**244+50**	**251+00**	**254+50**	**261+00**
Service Area Begin Sta	**203+50**	**206+50**	**206+50**	**215+50**	**215+50**	**221+00**	**221+00**	**230+50**	**233+00**	**237+00**	**237+00**	**247+75**	**251+00**	**259+50**
Grass Swale End Sta	206+50	209+50	212+50	218+50	220+50	230+50	232+60	232+75	237+00	243+20	244+00	251+00	254+00	261+00
Grass Swale Begin Sta	203+50	206+50	206+50	215+50	215+50	227+50	227+60	230+50	233+00	240+00	237+00	247+75	251+00	259+50
Left, Center, or Right	**L**	**L**	**R**	**L**	**R**	**R**	**L**	**R**	**R**	**L**	**R**	**R**	**R**	**L**
Site Assessment														
Grass Swale Length (ft)	300	300	600	300	500	300	500	225	400	320	700	325	300	150
Average Total Drainage Area Width (ft)	32	70	81	74	64	58	170	61	63	77	59	58	41	79
Average ROW Width (ft)	32	70	81	74	64	58	106	61	63	77	59	58	41	79
GR Ave Road Pavement Width (ft)	0	30	34	40	22	17	72	20	20	40	20	15	0	43
GR Ave SW / Trail Pavement Width (ft)	0	0	10	0	10	10	5	10	10	5	10	10	10	5
GR Ave Grass Width (ft)	32	40	37	34	32	31	29	31	33	32	29	33	31	31
GR ROW Runoff C	0.280	0.504	0.555	0.559	0.532	0.513	0.655	0.528	0.519	0.580	0.535	0.497	0.394	0.592
GR ROW Tc (min)	8	8	11	8	10	8	12	7	9	9	12	8	8	6
GR Total Drainage Area (ROW and Offsite) (ac)	0.220	1.440	1.680	0.940	0.810	1.270	5.450	0.350	0.610	1.100	1.020	0.430	0.330	0.273
GR ROW Area Only (ac)	0.220	1.440	1.680	0.940	0.810	1.270	3.410	0.350	0.610	1.100	1.020	0.430	0.330	0.273
GR Flow velocity 2yr (from Channel Grass Lining Design	0.55	1.33	1.35	1.18	1.07	0.56	0.87	0.55	0.64	1.32	1.29	0.60	0.56	0.65
Percent Reduction	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Results Summary														
Drainage Area (ac)	0.220	1.440	1.680	0.940	0.810	1.270	5.450	0.350	0.610	1.100	1.020	0.430	0.330	0.273
ROW Area (ac)	0.220	1.440	1.680	0.940	0.810	1.270	3.410	0.350	0.610	1.100	1.020	0.430	0.330	0.273
Percent Reduction per unit ROW Area	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%

Grass Swale Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segmen
Designer/Checker:
Date: June 2015

Consider ditch checks for full 80% reduction

		North	*North*	*North*	*North*	*North*	*North*	*North*	*North*	*North*	*North*	*North*	*North*	*North*	*North*
	Drainage Area Basin Number														
	Service Area End Sta	**263+55**	**273+75**	**270+20**	**277+90**	**279+25**	**287+50**	**292+75**	**316+25**	**297+50**	**301+50**	**307+50**	**312+50**	**316+25**	**325+00**
	Service Area Begin Sta	**261+00**	**270+20**	**267+00**	**270+20**	**275+25**	**283+25**	**283+00**	**292+75**	**293+00**	**297+50**	**306+00**	**307+50**	**312+50**	**316+25**
	Grass Swale End Sta	263+55	273+75	274+10	279+50	279+50	287+50	292+50	298+00	297+50	301+50	307+50	312+50	316+25	323+00
	Grass Swale Begin Sta	257+00	270+20	270+60	275+00	275+00	284+50	289+90	293+00	293+00	297+50	306+00	307+50	312+50	321+00
	Left, Center, or Right	**L**	**L**	**R**	**C-R**	**L**	**L**	**RT**	**C-L**	**R**	**R**	**R**	**R**	**R**	**C-L**
	Site Assessment														
	Grass Swale Length (ft)	250	355	350	450	450	300	260	250 - 800	450	400	150	500	375	200
	Average Total Drainage Area Width (ft)	70	55	1198	106	733	74	138	396	47	48	48	48	47	89
	Average ROW Width (ft)	70	55	75	106	77	74	120	120	47	48	48	48	47	89
GR	Ave Road Pavement Width (ft)	36.0	20.0	54.0	88	30	30.0	100.0	84.2	20.0	20.5	20.0	20.0	20.0	59.5
GR	Ave SW / Trail Pavement Width (ft)	5.0	5.0	10.0	10.0	10.0	5.0	10.0	5.0	0.0	0.0	0.0	0.0	0.0	5.0
GR	Ave Grass Width (ft)	29.0	30.3	10.5	8.0	37.4	39.4	10.0	30.9	27.4	27.0	27.5	27.5	27.5	24.9
GR	ROW Runoff C	0.581	0.510	0.720	0.756	0.542	0.521	0.753	0.664	0.499	0.504	0.499	0.499	0.499	0.653
GR	ROW Tc (min)	5	8	10	8	8	9	10	10	9	9	7	11	9	8
GR	Total Drainage Area (ROW and Offsite) (ac)	0.410	0.451	8.800	1.867	6.729	0.726	3.082	21.373	0.490	0.436	0.164	0.545	0.409	1.795
GR	ROW Area Only (ac)	0.410	0.451	0.548	1.867	0.711	0.726	2.028	6.483	0.490	0.436	0.164	0.545	0.409	1.795
GR	Flow velocity 2yr (from Channel Grass Lining Design	0.75	0.88	0.73	1.20	1.20	0.72	1.10	1.49	1.35	1.30	0.90	1.20	0.70	1.70
	Percent Reduction	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	60%	80%	80%	60%
	Results Summary														
	Drainage Area (ac)	0.410	0.451	8.800	1.867	6.729	0.726	3.082	21.373	0.490	0.436	0.164	0.545	0.409	1.795
	ROW Area (ac)	0.410	0.451	0.548	1.867	0.711	0.726	2.028	6.483	0.490	0.436	0.164	0.545	0.409	1.795
	Percent Reduction per unit ROW Area	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	60.0%	80.0%	80.0%	60.0%

Grass Swale Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segmen
Designer/Checker:
Date: June 2015

Removed swale credit. Flows to Pond 'DP 324'

	North	North	North									Total
Drainage Area Basin Number												
Service Area End Sta	**322+00**	**326+50**	**334+00**									
Service Area Begin Sta	**316+25**	**322+00**	**326+50**									
Grass Swale End Sta	322+00	326+50	332+25									
Grass Swale Begin Sta	316+25	322+00	326+50									
Left, Center, or Right	**R**	**R**	**R**									
Site Assessment												
Grass Swale Length (ft)	575	450	575									
Average Total Drainage Area Width (ft)	47	47	41	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Average ROW Width (ft)	47	47	41	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
GR Ave Road Pavement Width (ft)	20.0	20.0	20.0									
GR Ave SW / Trail Pavement Width (ft)	0.0	0.0	0.0									
GR Ave Grass Width (ft)	27.5	27.3	21.3	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
GR ROW Runoff C	0.499	0.500	0.532	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
GR ROW Tc (min)	11	10	12									
GR Total Drainage Area (ROW and Offsite) (ac)	0.627	0.489	0.712									
GR ROW Area Only (ac)	0.627	0.489	0.712									
GR Flow velocity 2yr (from Channel Grass Lining Design	0.60	1.00	1.48									
Percent Reduction	80%	80%									80%	
Results Summary												
Drainage Area (ac)	0.627	0.489		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	110.454
ROW Area (ac)	0.627	0.489		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	58.080
Percent Reduction per unit ROW Area	80.0%	80.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	80.0%	79.3%

Dry Extended Detention Pond Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: June 2015

Drainage Area Basin Number	**BMP '324'**				**Total**
Pond Number	**1**				
Pond Ending Station Number	**326+00**				
Pond Starting Station Number	**324+00**				
Left, Center, Right, or All	**R**	**R**			
Site Assessment					
Highway Segment Length Treated (ft)	1600	0			
Drainage Area (ac)	7.700	0.000			7.700
ROW Area (ac)	4.700	0.000			4.700
Percent Reduction	80%				80%
Results Summary					
Percent Reduction per Treated Highway Segment	80.0%	0.0%			80.0%

Enter Line Number and Comment. Add more boxes if necessary

Dry pond '324' discharges to a grass swale (200' long @ 1.5 fps) for 80% TSS reduction.

Outlet Pipe Sediment Trap Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: June 2015

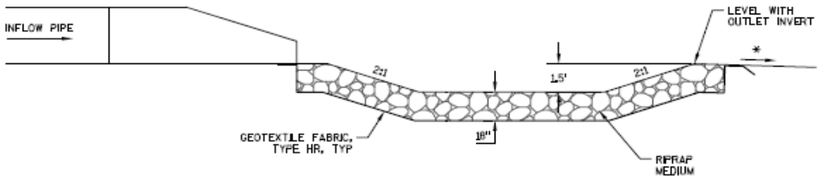
Outlet Pipe Sediment Trap Number	ST '141 RT'	ST '144 RT'	ST '147 RT'	ST '153 RT'	ST '180 RT'	ST '182 LT'	ST '243 LT'													Total
ST Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
ST Ending Station Number	144+00	147+00	150+00	153+50	180+50	185+00	246+00													
ST Starting Station Number	141+00	144+00	147+25	152+50	176+50	180+50	240+00													
Left, Center, Right, or All	R	R	R	R	R	L	C													
Site Assessment																				
Highway Segment Length Treated (ft)	300	300	275	100	400	450	600	0	0	0	0	0	0	0	0	0	0	0	0	
Drainage Area (ac)	0.260	0.310	0.370	0.390	1.100	1.560	0.730	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.720
ROW Area (ac)	0.260	0.310	0.370	0.390	1.100	1.560	0.730													4.720
Percent Reduction	40%	40%	40%	40%	40%	40%	40%													40%
	0.104	*0.124*	*0.148*	*0.156*	*0.44*	*0.624*	*0.292*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1.888*
Results Summary																				
Percent Reduction per Treated Highway Segment	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			40.0%

Enter Line Number and Comment. Add more boxes if necessary

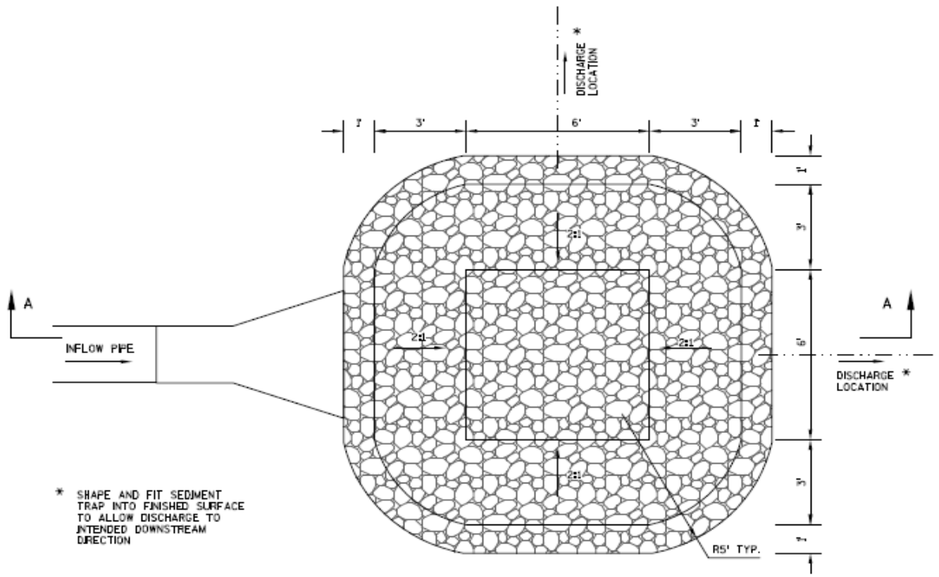
16: TSS reduction based on a qualitative assignment of 40% reduction for removing large particles from small pipe outlets that discharge near waterways and wetlands.

Outlet Pipe Sediment Trap Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: June 2015



SECTION A-A



PLAN VIEW

OUTLET PIPE SEDIMENT TRAP DETAIL

NOT TO SCALE

Wet Detention Pond Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
DOT Region/Firm Name: Gremmer & Associates
Date: June 2015

Drainage Area Basin Number					**Total**
Pond Number	**1**	**2**			
Pond Ending Station Number	**30+00**	**48+00**			
Pond Starting Station Number	**20+00**	**35+00**			
Left, Center, Right, or All	**R**	**R**			
Site Assessment					
Highway Segment Length Treated (ft)	1000	1300			
Drainage Area (ac)	0.000	0.000			0.000
ROW Area (ac)	0.000	0.000			0.000
Percent Reduction	0%	0%			0%
Results Summary					
Percent Reduction per Treated Highway Segment	0.0%	0.0%			0.0%

Enter Line Number and Comment. Add more boxes if necessary

Catchbasin Performance

Project ID: 2788-01-00
Title: West Waukesha Bypass - County Segment
Designer/Checker:
Date: June 2015

Drainage Area Basin Number				**Total**
Catchbasin Number				
Catchbasin Station	**10+00**	**12+00**		
Left, Center, or Right	**R**	**R**		
Site Assessment				
Distance to Next Catchbasin or Drainage Area (ft)	200	250		
Drainage Area (ac)	0.000	0.000		0.000
ROW Area (ac)	0.000	0.000		0.000
Cross Section Type (5 or 8)	5	8	DD Menu	
Catchbasin or Inlet Type/Size	Type 3 Inlet	Type 3 Inlet	DD Menu	
Predominant Cover Type	Mostly Imperv	Mostly Perv	DD Menu	
Design Chart Number	1	10	DD Menu	
Percent Reduction from Design Chart	22%	23%		
Results Summary				
Average Drainage Area Width (ft)	0.0	0.0	#DIV/0!	
Average ROW Width (ft)	0.0	0.0	#DIV/0!	
Percent Reduction per unit ROW Area	0.0%	0.0%	0.0%	0.0%

LEGEND

- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES

MADISON ST

MERRILL HILLS RD CTH TT

254 255 256 257 258 259 260 261 262 263 264 265 266 267 268

261+00-263+55
0.41 ac
Drains to: GS_262+00 to 263+55 LT

267+00-270+20 RT
0.55 ac
Drains to: GS_270+60 to 274+10 RT

Off_270+00
6.98 ac
Drains to: GS_270+60 to 274+10 RT

STA 269+00

MATCH LINE

N

Off_49'Fld'+50
2.86 ac
Drains to: GS_275+00 to 279+50 LT

270+20-273+75 LT
3.36 ac
Drains to: GS_270+60 to 274+10

275+25-279+25
0.71 ac
Drains to: GS_275+00 to 279+50 LT

270 271 272 273 274 275 276 277 278 279 280 281 282 283 284

270+22-277+90
1.87 ac
Drains to: GS_275+00 to 279+50 LT

MEADOWBROOK RD CTH TT

FIDDLERS CREEK DR

SUMMIT AVE / STH 18

STA 269+00

STA 284+00

MATCH LINE

MATCH LINE

PROJECT NO: 2788-01-00 (NORTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY.DWG PLOT DATE : 4/24/2015 1:57 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : 1:100_XREF

WISDOT/CADDS SHEET 42

LEGEND

- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES

N

STA 284+00

MATCH LINE

283+25-287+50 LT
0.73 ac
Drains to: GS_284+50 to 287+50 LT

283+00-292+75
2.03 ac
Drains to: GS_289+90 to 292+50 RT

292+75-316+25
6.48 ac
Drains to: GS_293+00 to 298+00 LT

293+00-297+50 RT
0.58 ac
Drains to: GS_293+00 to 297+50 RT

284 285 286 287 288 289 290 291 292 293 294 295 296 297 298

MEADOWBROOK RD CTH TT

Off_to swale 289+90 RT
1.05 ac
Drains to: GS_289+90 to 292+50 RT

STA 299+00

MATCH LINE

N

Off_306+00 LT
14.20 ac
Drains to: GS_293+00 to 298+00 LT

Off_Cold strip
0.79 ac
Drains to: GS_293+00 to 298+00 LT

STA 299+00

MATCH LINE

299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314

292+75-316+25
6.48 ac
Drains to: GS_293+00 to 298+00 LT

297+50-301+50 RT
0.58 ac
Drains to: GS_297+50 to 301+50 RT

306+00-307+50
1.16 ac
Drains to: GS_306+00 to 307+50 RT

307+50-312+50 RT
0.98 ac
Drains to: GS_307+50 to 312+50 RT

312+50-316+25 RT
0.74 ac
Drains to: GS_312+50 to 316+25 RT

MEADOWBROOK RD CTH TT

COLDWATER CREEK DR

PROJECT NO:2788-01-00 (NORTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY.DWG PLOT DATE : 4/24/2015 1:57 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

2

STA 314+00

MATCH LINE

Off_306+00 LT
14.20 ac
Drains to: GS_293+00 to 298+00 LT

316+25-325+00 C-LT
1.80 ac
Drains to: GS_314+00 to 323+00 RT

StreetCorridor-324
4.86 ac
Drains to: BMP_DP-324

MEADOWBROOK RD CTH TT

312+50-316+25 RT
0.41 ac
Drains to: GS_312+50 to 316+25 RT

Drains to: GS_316+25 to 320+00 RT

Drains to: GS_320+00 to 323+00 RT

Off_misc grass west
2.39 ac
Drains to: BMP_DP-324

BMP 'GS 324'
GRASS SWALE
EXTENDING EAST
FROM POND
V-SHAPE
4:1 SIDE SLOPE
1.0 FT MIN DEPTH
SLOPE: 1.0% - 2.0%

BMP 'DP 324'
DRY POND
BOTTOM: 916.5'
TOP: 922.0'

LEGEND
- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES

STA 329+00

MATCH LINE

2

COUNTY SEGMENT

CITY SEGMENT

Off_basin 341+00
1.25 ac
Drains to: BMP_DP-324

Off_basin Northview SB
0.59 ac
Drains to: BMP_DP-324

StreetCorridor-324
4.86 ac
Drains to: BMP_DP-324

MEADOWBROOK RD CTH TT

Off_misc grass west
2.39 ac
Drains to: BMP_DP-324

NORTHVIEW RD

STA 344+00

MATCH LINE

PROJECT NO: 2788-01-00 (NORTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY.DWG PLOT DATE : 4/24/2015 1:57 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

2

N

JOANNE DR

Off_res basin west
0.90 ac
Drains to: BMP_DP-349

Off_res basin
0.74 ac
Drains to: BMP_GS-361

StreetCorridor-349
2.38 ac
Drains to: BMP_DP-349

STA 344+00

MATCH LINE

344 345 346 347 348 349 350 351 352 353 354 355 356 357 358

MEADOWBROOK RD CTH TT

StreetCorridor-361
2.05 ac
Drains to: BMP_GS-361

STA 359+00

MATCH LINE

LANCASTER DR

BMP 'DP 349'
DRY POND
BOTTOM: 970.8'
TOP: 974

WOODRIDGE LANE

ROLLING RIDGE DR

Off_res basin @
3.01 ac
Drains to: BMP_DP-363

N

Off_res basin
0.74 ac
Drains to: BMP_GS-361

STA 359+00

MATCH LINE

358 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374

StreetCorridor-361
2.05 ac
Drains to: BMP_GS-361

StreetCorridor-363
1.59 ac
Drains to: BMP_DP-363

MEADOWBROOK RD CTH TT

BMP 'GS 361'
GRASS SWALE
4 FT BOTTOM
4:1 SIDE SLOPE
1.5 FT MIN DEPTH
SLOPE: 0.5%

BMP 'DP 363'
DRY POND
BOTTOM: 980.5'
TOP: 985.0

LEGEND

- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES

PROJECT NO: 2788-01-00 (NORTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY.DWG PLOT DATE : 4/24/2015 1:58 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

2

LEGEND

- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES
- OUTLET PIPE SEDIMENT TRAPS

STH 59

88 89 90 91 92 93 94 95 96 97 98 99 100 101 102

100+40-110+00 RT
2.59 ac
Drains to: GS_100+40 to 102+40 RT

STA 103+00

MATCH LINE

N

2

STA 103+00

MATCH LINE

103+00-110+00 LT
1.29 ac
Drains to: GS_103+00 to 109+90 LT

103 104 105 106 107 108 109 110 111 112 113 114 115 116 117

STH 59

100+40-110+00 RT
2.59 ac
Drains to: GS_100+40 to 102+40 RT

109+50-111+50 RT
0.41 ac
Drains to: GS_109+50 to 111+50 RT

STH 59

WAUKESHA BYPASS

CTH X

N

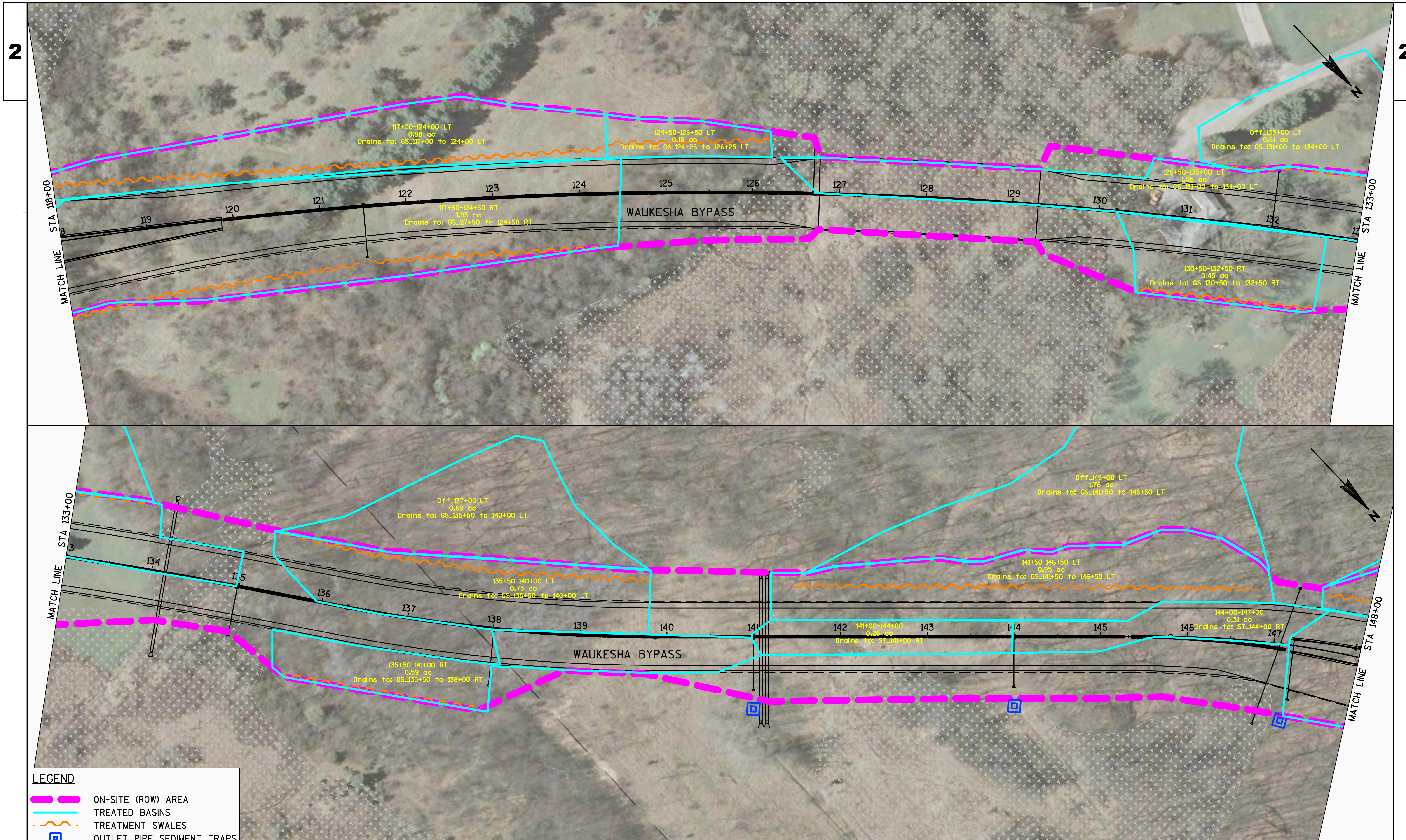
STA 118+00

MATCH LINE

PROJECT NO: 2788-00-71 (SOUTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

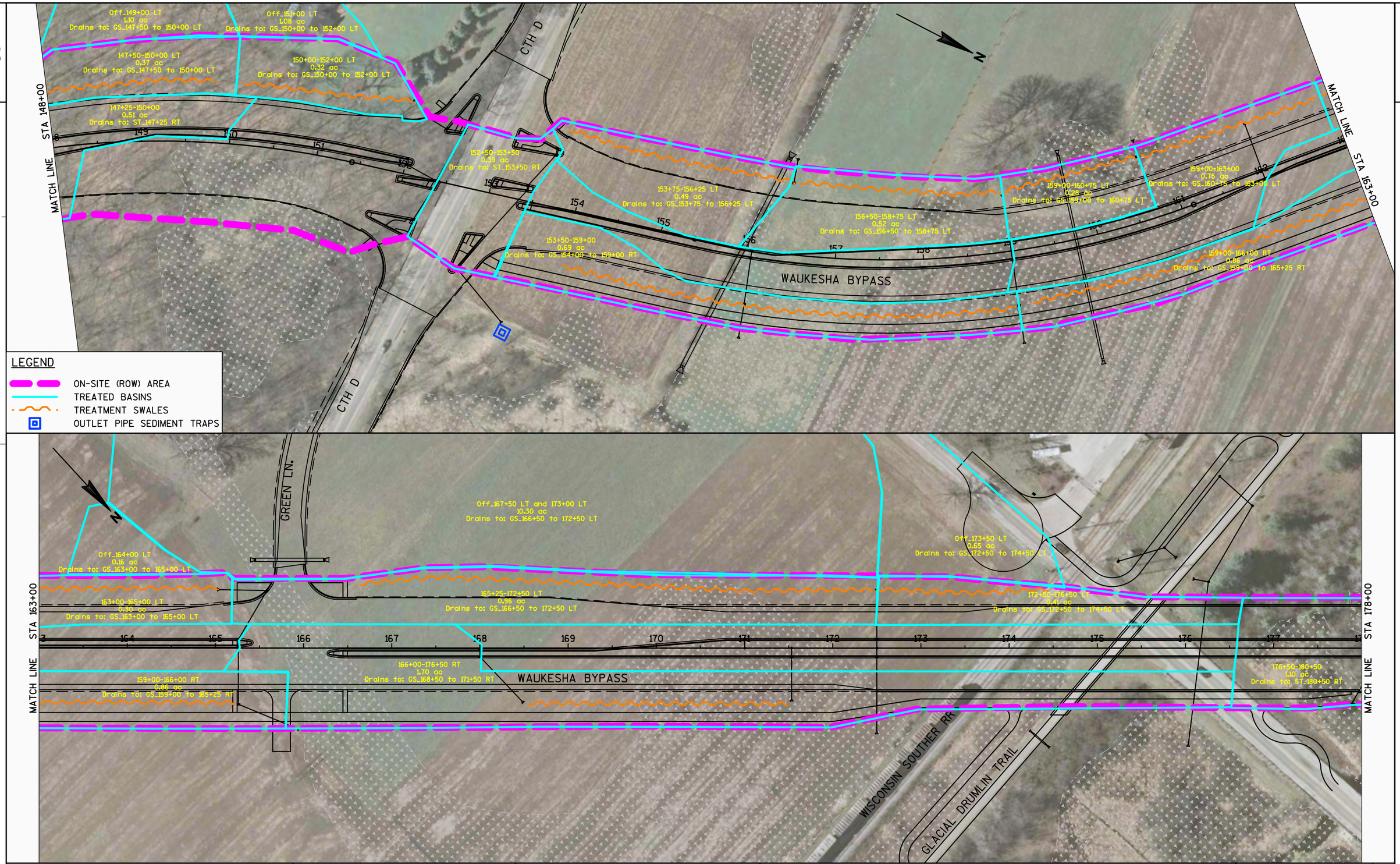
FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY_SOUTH.DWG PLOT DATE : 6/19/2015 1:56 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : 1:100_XREF

WISDOT/CADDS SHEET 42



PROJECT NO:2788-00-71 (SOUTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY_SOUTH.DWG PLOT DATE : 6/19/2015 1:56 PM PLOT BY : AARON SARAUER PLOT NAME : ____________________ PLOT SCALE : ########## WISDOT/CADDS SHEET 42



PROJECT NO: 2788-00-71 (SOUTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY_SOUTH.DWG PLOT DATE : 6/19/2015 1:56 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

LEGEND

- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES
- OUTLET PIPE SEDIMENT TRAPS

N

WAUKESHA BYPASS

MACARTUR RD

MATCH LINE STA 178+00

MATCH LINE STA 193+00

MATCH LINE STA 193+00

MATCH LINE STA 208+00

176+50-180+50
1.40 ac
Drains to: ST_180+50 RT

180+50-185+00
1.56 ac
Drains to: ST_182+50 LT

185+00-189+50
1.20 ac
Drains to: GS_183+50 to 185+50 RT

186+25-189+00 LT
0.45 ac
Drains to: GS_186+25 to 192+00 LT

Off_189+00 LT
2.41 ac
Drains to: GS_186+25 to 192+00 LT

Off_194+00 LT
1.36 ac
Drains to: GS_189+50 to 201+00 RT

192+00-201+00
4.12 ac
Drains to: GS_189+50 to 201+00 RT

Off_194+00 LT
1.36 ac
Drains to: GS_189+50 to 201+00 RT

192+00-201+00
4.12 ac
Drains to: GS_189+50 to 201+00 RT

201+50-203+50 LT
0.17 ac
Drains to: GS_201+50 to 203+50 LT

203+50-206+50 LT
0.22 ac
Drains to: GS_203+50 to 206+50 LT

203+50-206+50
1.28 ac
Drains to: GS_201+50 to 203+50 RT

PROJECT NO: 2788-00-71 (SOUTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY_SOUTH.DWG PLOT DATE : 6/19/2015 1:57 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

LEGEND

- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES
- OUTLET PIPE SEDIMENT TRAPS

STA 208+00

MATCH LINE

206+50-215+50 LT
1.44 ac
Drains to: GS_206+50 to 209+50 LT

206+50-215+50 RT
1.68 ac
Drains to: GS_206+50 to 212+50 RT

WAUKESHA BYPASS

215+50-221+00 LT
0.94 ac
Drains to: GS_215+50 to 218+50 LT

215+50-221+00 RT
0.81 ac
Drains to: GS_215+50 to 220+50 RT

221+00-235
3.41 ac
Drains to: GS_227+60 to 232+60 LT

KAME TERR

STA 223+00

MATCH LINE

MERRILL HILLS RD

Off_230+00 LT
2.04 ac
Drains to: GS_227+60 to 232+60 LT

221+00-235
3.41 ac
Drains to: GS_227+60 to 232+60 LT

WAUKESHA BYPASS

221+00-230+50 RT
1.27 ac
Drains to: GS_227+50 to 230+50 RT

230+50-233+00 RT
0.35 ac
Drains to: GS_230+50 to 232+75 RT

233+00-237+20 RT
0.61 ac
Drains to: GS_233+00 to 237+00 RT

STA 238+00

MATCH LINE

PROJECT NO:2788-00-71 (SOUTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY_SOUTH.DWG PLOT DATE : 6/19/2015 1:57 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

LEGEND

- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES
- OUTLET PIPE SEDIMENT TRAPS

STA 238+00

MATCH LINE

237+00-243+20
1.10 ac
Drains to: GS_240+00 to 243+20 LT

240+00-246+00
0.73 ac
Drains to: ST_243+50 LT

237+00-244+50 RT
1.02 ac
Drains to: GS_237+00 to 244+00 RT

WAUKESHA BYPASS

247+75-251+00 RT
0.45 ac
Drains to: GS_247+75 to 251+00 RT

251+00-254+50 RT
0.33 ac
Drains to: GS_251+00 to 254+00 RT

STA 253+00

MATCH LINE

MADISON ST

CTH TT
MERRILL HILLS RD

259+50-261+00 LT
0.27 ac
Drains to: GS_259+50 to 261+00 LT

WAUKESHA BYPASS

MADISON ST

KISDON HILL DR

PROJECT NO: 2788-00-71 (SOUTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY_SOUTH.DWG PLOT DATE : 6/19/2015 1:58 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

2

LEGEND

ON-SITE (ROW) AREA
TREATED BASINS
TREATMENT SWALES

MADISON ST

MERRILL HILLS RD

CTH TT

254 255 256 257 258 259 260 261 262 263 264 265 266 267 268

261+00-263+55
0.41 ac
Drains to: GS_262+00 to 263+55 LT

267+00-270+20 RT
0.55 ac
Drains to: GS_270+60 to 274+10 RT

Off_270+00
6.98 ac
Drains to: GS_270+60 to 274+10 RT

STA 269+00

MATCH LINE

N

2

FIDDLERS CREEK DR

Off_49'Fid'+50
2.86 ac
Drains to: GS_275+00 to 279+50 LT

270+20-273+75 LT
4.36 ac
Drains to: GS_270+60 to 274+10

275+25-279+25
0.71 ac
Drains to: GS_275+00 to 279+50 LT

270 271 272 273 274 275 276 277 278 279 280 281 282 283 284

270+22-277+90
1.87 ac
Drains to: GS_275+00 to 279+50 LT

MEADOWBROOK RD

CTH TT

SUMMIT AVE / STH 18

STA 269+00

MATCH LINE

STA 284+00

PROJECT NO: 2788-01-00 (NORTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY.DWG PLOT DATE : 6/19/2015 4:29 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : 1:100_XREF

WISDOT/CADDS SHEET 42

LEGEND

- ON-SITE (ROW) AREA
- TREATED BASINS
- TREATMENT SWALES

N

MATCH LINE STA 284+00

MATCH LINE STA 299+00

283+25-287+50 LT
0.73 ac
Drains to: GS_284+50 to 287+50 LT

283+00-292+75
2.03 ac
Drains to: GS_289+90 to 292+50 RT

292+75-316+25
6.48 ac
Drains to: GS_293+00 to 298+00 LT

293+00-297+50 RT
0.69 ac
Drains to: GS_293+00 to 297+50 RT

284 285 286 287 288 289 290 291 292 293 294 295 296 297 298

MEADOWBROOK RD CTH TT

Off_to swale 289+90 RT
1.05 ac
Drains to: GS_289+90 to 292+50 RT

MATCH LINE STA 299+00

MATCH LINE STA 314+00

Off_Cold strip
0.79 ac
Drains to: GS_293+00 to 298+00 LT

Off_306+00 LT
14.20 ac
Drains to: GS_293+00 to 298+00 LT

299 300 301 302 303 304 305 306 307 308 309 310 311 312 313

292+75-316+25
6.48 ac
Drains to: GS_293+00 to 298+00 LT

297+50-301+50 RT
0.69 ac
Drains to: GS_297+50 to 301+50 RT

306+00-307+50
1.16 ac
Drains to: GS_306+00 to 307+50 RT

307+50-312+50 RT
0.88 ac
Drains to: GS_307+50 to 312+50 RT

312+50-316+25 RT
0.44 ac
Drains to: GS_312+50 to 316+25 RT

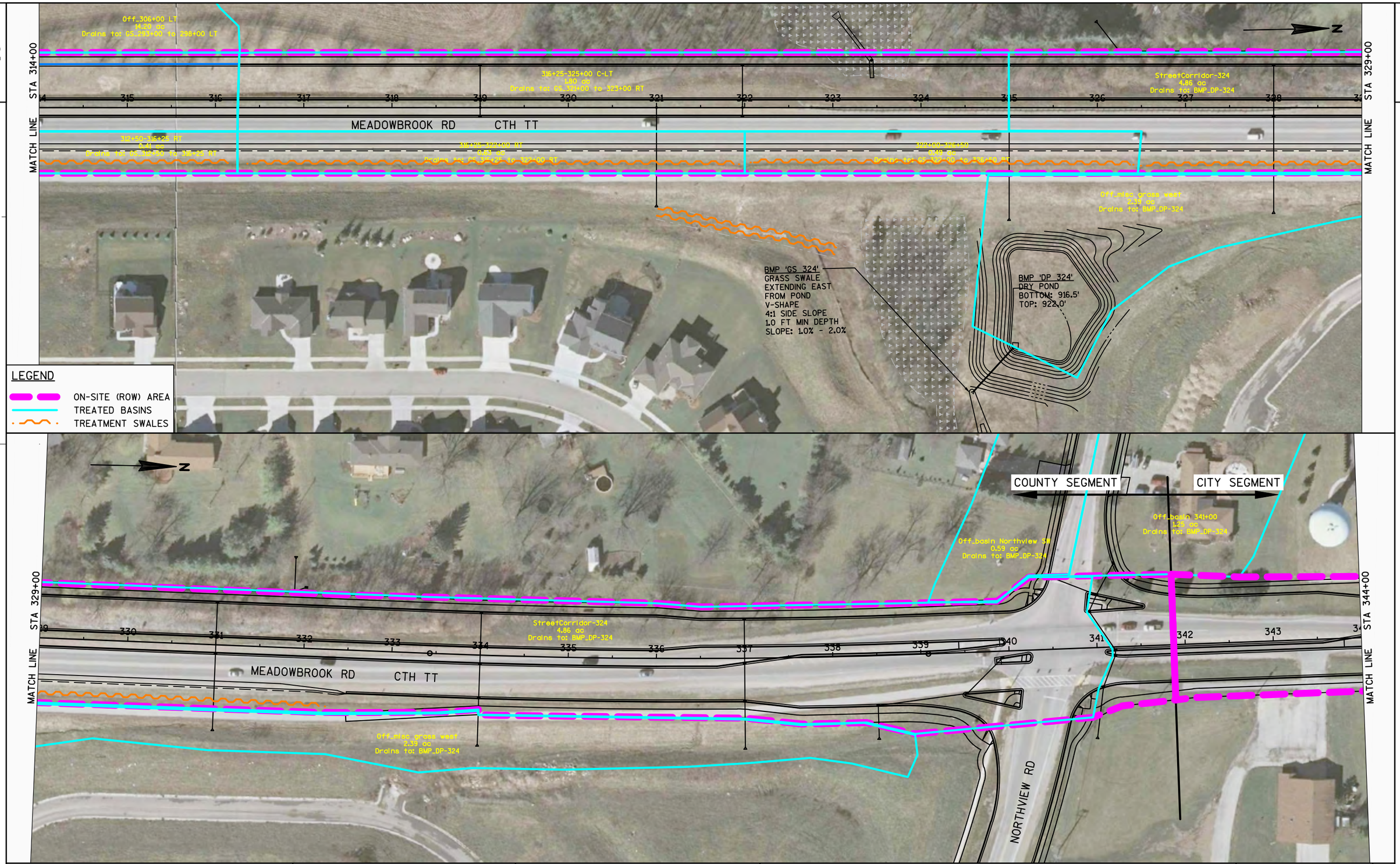
MEADOWBROOK RD CTH TT

COLDWATER CREEK DR

PROJECT NO:2788-01-00 (NORTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY.DWG PLOT DATE : 6/19/2015 4:29 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42



PROJECT NO: 2788-01-00 (NORTH)	HWY: WEST WAUKESHA BYPASS	COUNTY: WAUKESHA	PLAN: WATER QUALITY	SHEET _____	E

FILE NAME : S:\CURRPROJ\WAUKESHA COUNTY\WAUKESHA_BYPASS\CIVIL3D\27880100\SHEETSOTHER\27880100_WATER QUALITY.DWG PLOT DATE : 6/19/2015 4:30 PM PLOT BY : AARON SARAUER PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

Riparian Owners List

Owner Name	Owner Name Cont	Mailing Address	City	State	Zip	Property Address	TAXKEY
ARNO J & LORETTA F MUENCH	<Null>	3404 BRIGHTSIDE RD	WAUKESHA	WI	53188	3404 BRIGHTSIDE RD	WAKC0988109
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2311 SILVER FOX CT	WAKC0979285
DANA B ESSELSTYN SURVIVOR'S	TRUST	505 ARBOR OAKS LN UNIT C	WAUKESHA	WI	53188	505 ARBOR OAKS LN UNIT C	WAKC0988032
KENNETH & CHRISTINE DEMUTH	<Null>	3409 BRIGHTSIDE RD	WAUKESHA	WI	53188	3409 BRIGHTSIDE RD	WAKC0988116
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2301 KAYLA DR	WAKC0979265
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2409 DEERCREST CT	WAKC0979295
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2224 KAYLA DR	WAKC0979256
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2320 KAYLA DR	WAKC0979304
JEFFREY A ROSTAGNO	<Null>	3201 CEDAR HOLLOW CT UNIT A	WAUKESHA	WI	53188	3201 CEDAR HOLLOW CT UNIT A	WAKC0988026
DONALD J & LAURA M FREITAG	<Null>	3334 TURNBERRY OAK DR	WAUKESHA	WI	53188	3334 TURNBERRY OAK DR	WAKC0988086
WAUKESHA COUNTY	PARKS & LAND USE	515 W MORELAND BLVD ROOM AC148	WAUKESHA	WI	53188	<Null>	WAKT1361976004
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2305 SILVER FOX CT	WAKC0979283
ROBERT & J TALLINGER	<Null>	S33W26758 HAWTHORNE HOLLOW DR	WAUKESHA	WI	53189	S33W26758 HAWTHORNE HOLLOW DR	WAKT1362983
TERRANCE G & NANCY E PATIN	<Null>	3424 TURNBERRY OAK DR	WAUKESHA	WI	53188	3424 TURNBERRY OAK DR	WAKC0988133
LOWELL & VIRGINIA A CORWIN JR	<Null>	3425 BRIGHTSIDE RD	WAUKESHA	WI	53188	3425 BRIGHTSIDE RD	WAKC0988112
MICHAEL & SUSAN BELL	<Null>	W261S3415 GENESEE RD	WAUKESHA	WI	53189	W261S3415 GENESEE RD	WAKT1361976003
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2303 KAYLA DR	WAKC0979266
MICHAEL A WILSON	<Null>	3418 TURNBERRY OAK DR	WAUKESHA	WI	53188	3418 TURNBERRY OAK DR	WAKC0988128
JAMES A & RITA H COLE	<Null>	520 COUNTRY CREST LN	WAUKESHA	WI	53188	520 COUNTRY CREST LN	WAKC0988104
NORENE CHRISTOFFEL	<Null>	505 ARBOR OAKS LN UNIT B	WAUKESHA	WI	53188	505 ARBOR OAKS LN UNIT B	WAKC0988031
RONALD D & DIANA L WATERMAN	REV TRUST DTD 11/20/2007	523 COUNTRY CREST LN	WAUKESHA	WI	53188	523 COUNTRY CREST LN	WAKC0988091
NORTHERN FAMILY TRUST	DATED 12/9/96	3403 BRIGHTSIDE RD	WAUKESHA	WI	53188	3403 BRIGHTSIDE RD	WAKC0988119
DAVID C BLEIL	<Null>	516 ARBOR OAKS LN UNIT C	WAUKESHA	WI	53188	516 ARBOR OAKS LN UNIT C	WAKC0988040
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2404 KAYLA DR	WAKC0979291
RONALD R & SHEILA H RAHN	<Null>	3201 CEDAR HOLLOW CT UNIT B	WAUKESHA	WI	53188	3201 CEDAR HOLLOW CT UNIT B	WAKC0988027
EDWARD L & LUCILLE M ERNER	REVOCABLE LIVING TRUST	3201 CEDAR HOLLOW CT UNIT C	WAUKESHA	WI	53188	3201 CEDAR HOLLOW CT UNIT C	WAKC0988028
FHB INVESTMENTS LLC	<Null>	P O BOX 1615	WAUKESHA	WI	53187-1615	MADISON ST	WAKC1317002
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2315 SILVER FOX CT	WAKC0979286
THOMAS & ELLEN FULLER	<Null>	526 COUNTRY CREST LN	WAUKESHA	WI	53188	526 COUNTRY CREST LN	WAKC0988102
FIDDLER'S CREEK III LLC	<Null>	1133 QUAIL CT	PEWAUKEE	WI	53072	3304 TURNBERRY OAK DR	WAKC0988079
PATRICIA LUNDBERG	<Null>	512 ARBOR OAKS LN UNIT C	WAUKESHA	WI	53188	512 ARBOR OAKS LN UNIT C	WAKC0988044
LOUIS J & JANICE W RIGANO TRST	<Null>	512 ARBOR OAKS LN UNIT D	WAUKESHA	WI	53188	512 ARBOR OAKS LN UNIT D	WAKC0988045
JOHN & PATRICIA DURHAM	<Null>	W270N152 ARROWHEAD TRL	WAUKESHA	WI	53188	W270N152 ARROWHEAD TRL	PWT 0984999001
PETER J & THERESA M O'KANE	<Null>	3417 BRIGHTSIDE RD	WAUKESHA	WI	53188	3417 BRIGHTSIDE RD	WAKC0988115
FAITH BAPTIST CHURCH INC	<Null>	2028 SHERRYL LN	WAUKESHA	WI	53188	3250 SUMMIT AV	WAKC0988985
DOUGLAS M LUKAS	<Null>	3314 TURNBERRY OAK DR	WAUKESHA	WI	53188	3314 TURNBERRY OAK DR	WAKC0988082
ROBERT A & DONNA M ROSCIOLI	REVOCABLE TRUST DTD 8/11/06	3304 CEDAR HOLLOW CT UNIT D	WAUKESHA	WI	53188	3304 CEDAR HOLLOW CT UNIT D	WAKC0988053
JEFFREY W & CHERYL L ROHRER	<Null>	3410 BRIGHTSIDE RD	WAUKESHA	WI	53188	3410 BRIGHTSIDE RD	WAKC0988110
NATALIE M FRIED TRUST	<Null>	3404 TURNBERRY OAK DR	WAUKESHA	WI	53186	3404 TURNBERRY OAK DR	WAKC0988123
GEORGE J & SHIRLEY A MAJESKIE	<Null>	2304 SILVER FOX CT	WAUKESHA	WI	53188	2304 SILVER FOX CT	WAKC0979279
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2408 DEERCREST CT	WAKC0979300
ALLEN D BISSONNETTE	<Null>	509 ARBOR OAKS LN UNIT D	WAUKESHA	WI	53188	509 ARBOR OAKS LN UNIT D	WAKC0988037
LYUDMYLA & YURIY SYMKO	<Null>	538 COUNTRY CREST LN	WAUKESHA	WI	53188	538 COUNTRY CREST LN	WAKC0988099
SUMMIT SQUARE LLC	<Null>	16655 BLUEMOUND RD SUITE 170	BROOKFIELD	WI	53005-5957	3228 TURNBERRY OAK DR	WAKC0988149
LORI A BOETTCHER	<Null>	621 GRAND AV	WEST DES MOINES	IA	50265	512 ARBOR OAKS LN UNIT A	WAKC0988042
JOHN M HAAS	<Null>	505 ARBOR OAKS LN UNIT A	WAUKESHA	WI	53188	505 ARBOR OAKS LN UNIT A	WAKC0988030
CAROLYN J CAMPION	<Null>	3301 CEDAR HOLLOW CT UNIT C	WAUKESHA	WI	53188	3301 CEDAR HOLLOW CT UNIT C	WAKC0988056
LORRAINE A KUCZKOWSKI	<Null>	530 COUNTRY CREST LN	WAUKESHA	WI	53188	530 COUNTRY CREST LN	WAKC0988100
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2305 KAYLA DR	WAKC0979267
KLINGLER TRUST DATED	7-Jul-93	525 COUNTRY CREST LN	WAUKESHA	WI	53188	525 COUNTRY CREST LN	WAKC0988090
KATHERINE A HARTMAN REVOCABLE	LIVING TRUST DATED 10/23/03	533 COUNTRY CREST LN	WAUKESHA	WI	53188	533 COUNTRY CREST LN	WAKC0988095
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2221 KAYLA DR	WAKC0979264
DEBORAH THIEM ROLLO	<Null>	S31W26897 SUNSET DR	WAUKESHA	WI	53189	S31W26897 SUNSET DR	WAKT1362998
HEALTH CARE REIT INC	<Null>	ONE SEAGATE SUITE 1500	TOLEDO	OH	43603	3217 FIDDLERS CREEK DR	WAKC0988151
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2214 KAYLA DR	WAKC0979260
MAUREEN GREENBERG	<Null>	3402 TURNBERRY OAK DR	WAUKESHA	WI	53188	3402 TURNBERRY OAK DR	WAKC0988120
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2219 KAYLA DR	WAKC0979263
JERRY W KOSOSKI	<Null>	3310 TURNBERRY OAK DR	WAUKESHA	WI	53188	3310 TURNBERRY OAK DR	WAKC0988080
JOHN M & JUDITH A HASSE	<Null>	3304 CEDAR HOLLOW CT UNIT B	WAUKESHA	WI	53188	3304 CEDAR HOLLOW CT UNIT B	WAKC0988051

Riparian Owners List

Owner Name	Owner Name Cont	Mailing Address	City	State	Zip	Property Address	TAXKEY
RICHARD HASE	<Null>	301 WINDSOR DR	WAUKESHA	WI	53186	W271S2751 MERRILL HILLS RD	WAKT1324995
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2210 KAYLA DR	WAKC0979262
JAMES O & CHARLENE A SULLIVAN	REVOCABLE TRUST DATED 9/9/04	3401 BRIGHTSIDE RD	WAUKESHA	WI	53188	3401 BRIGHTSIDE RD	WAKC0988118
LARRY D & LUCY LEHMANN REV	TRUST DATED MARCH 25, 2005	518 COUNTRY CREST LN	WAUKESHA	WI	53188	518 COUNTRY CREST LN	WAKC0988107
ROBERT D DOYEN &	ARLEEN R DIEM DOYEN	3201 CEDAR HOLLOW CT UNIT D	WAUKESHA	WI	53188	3201 CEDAR HOLLOW CT UNIT D	WAKC0988029
WILLIAM K & ANNA A KREMEL	LIVING TRUST DTD 03/28/06	3304 CEDAR HOLLOW CT UNIT C	WAUKESHA	WI	53188	3304 CEDAR HOLLOW CT UNIT C	WAKC0988052
ROBERT J & JEAN M MOGENSEN	<Null>	18970 HIVIEW DR	BROOKFIELD	WI	53045	MERRILL HILLS RD	WAKC1314997
EDWARD G & PAMELA F SCHULZ	<Null>	536 COUNTRY CREST LN	WAUKESHA	WI	53188	536 COUNTRY CREST LN	WAKC0988098
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2308 SILVER FOX CT	WAKC0979277
ETHEL BARKER HARDY	C/O LEESLEY & JOAN HARDY	W269S3244 MERRILL HILLS RD	WAUKESHA	WI	53189	<Null>	WAKT1327996
CHRISTA LAUBENSTEIN	<Null>	517 COUNTRY CREST LN	WAUKESHA	WI	53188	517 COUNTRY CREST LN	WAKC0988089
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2318 KAYLA DR	WAKC0979303
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2412 DEERCREST CT	WAKC0979298
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2323 KAYLA DR	WAKC0979274
DAVID S & DONNA L HARRIS	FAMILY TRUST	3312 TURNBERRY OAK DR	WAUKESHA	WI	53188	3312 TURNBERRY OAK DR	WAKC0988083
TERRENCE C & SHARON L THOM	<Null>	3427 BRIGHTSIDE RD	WAUKESHA	WI	53188	3427 BRIGHTSIDE RD	WAKC0988113
FIDDLER'S CREEK III LLC	<Null>	1133 QUAIL CT	PEWAUKEE	WI	53072	541 COUNTRY CREST LN	WAKC0988096
WILLIAM C & CARLENE STEARNS	<Null>	512 ARBOR OAKS LN UNIT B	WAUKESHA	WI	53188	512 ARBOR OAKS LN UNIT B	WAKC0988043
STATE OF WISCONSIN	DEPT OF NATURAL RESOURCES	P O BOX 7921	MADISON	WI	53707	BIKE TRAIL	WAKC1329988
TERRY R & JULIANN GRIFFIE	REVOCABLE TRUST DTD 2/23/05	3414 TURNBERRY OAK DR	WAUKESHA	WI	53188	3414 TURNBERRY OAK DR	WAKC0988126
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2216 KAYLA DR	WAKC0979257
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2321 KAYLA DR	WAKC0979273
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2415 KAYLA DR	WAKC0979288
JANET K SMULLEN REVOCABLE	LIVING TRUST	1131 LEISURE WORLD	MESA	AZ	85206	516 ARBOR OAKS LN UNIT B	WAKC0988039
MARY E KAWATSKI	<Null>	3107 MACARTHUR RD	WAUKESHA	WI	53188	MACARTHUR RD	WAKC1324999
SUZANNE R MANTHY	<Null>	3308 TURNBERRY OAK DR	WAUKESHA	WI	53188	3308 TURNBERRY OAK DR	WAKC0988081
MARK F MADSEN &	JANINA WISZNIEWSKA-WIELGUS	509 ARBOR OAKS LN UNIT C	WAUKESHA	WI	53188	509 ARBOR OAKS LN UNIT C	WAKC0988036
KARL J ROSENBERG	<Null>	3415 BRIGHTSIDE RD	WAUKESHA	WI	53188	3415 BRIGHTSIDE RD	WAKC0988114
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2411 DEERCREST CT	WAKC0979296
CHRIS & MARGARET G GLANDT	<Null>	3406 BRIGHTSIDE RD	WAUKESHA	WI	53188	3406 BRIGHTSIDE RD	WAKC0988108
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2208 KAYLA DR	WAKC0979261
STEVEN F DUCKETT	<Null>	509 ARBOR OAKS LN UNIT A	WAUKESHA	WI	53188	509 ARBOR OAKS LN UNIT A	WAKC0988034
RODNEY J & BETH L DENBOER	<Null>	539 COUNTRY CREST LN	WAUKESHA	WI	53188	539 COUNTRY CREST LN	WAKC0988097
DANIEL A & VALERIE J PRAHL	<Null>	535 COUNTRY CREST LN	WAUKESHA	WI	53188	535 COUNTRY CREST LN	WAKC0988094
LEESLEY & JOAN HARDY TRUST	<Null>	W269S3244 MERRILL HILLS RD	WAUKESHA	WI	53189	<Null>	WAKT1362995
WANDA M BEHLING	<Null>	505 ARBOR OAKS LN UNIT D	WAUKESHA	WI	53188	505 ARBOR OAKS LN UNIT D	WAKC0988033
MATHIE FAMILY TRUST	<Null>	3300 CEDAR HOLLOW CT UNIT C	WAUKESHA	WI	53188	3300 CEDAR HOLLOW CT UNIT C	WAKC0988048
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2410 KAYLA DR	WAKC0979289
OWNERS OF LOTS IN HERITGAGE	HILLS	201 DELAFIELD ST	WAUKESHA	WI	53188	HOWELL CT	WAKC1317106
CHRISTINE K WHITSTONE	<Null>	2289-A LUDINGTON AVE	WAUWATOSA	WI	53226	S32W26620 HAWTHORNE HOLLOW DR	WAKT1362981
LEESLEY & JOAN HARDY TRUST	<Null>	W269S3244 MERRILL HILLS RD	WAUKESHA	WI	53189	<Null>	WAKT1362999001
FRANK L & MARILYN C HAYASHI	<Null>	3400 TURNBERRY OAK DR	WAUKESHA	WI	53188	3400 TURNBERRY OAK DR	WAKC0988121
MICHAEL R & PENNY E FEERICK	<Null>	2306 SILVER FOX CT	WAUKESHA	WI	53188	2306 SILVER FOX CT	WAKC0979280
RONALD M & JEAN M FALTER	<Null>	3304 CEDAR HOLLOW CT UNIT A	WAUKESHA	WI	53188	3304 CEDAR HOLLOW CT UNIT A	WAKC0988050
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2410 DEERCREST CT	WAKC0979297
NORMA JEAN SAFFORD	<Null>	3408 TURNBERRY OAK DR	WAUKESHA	WI	53188	3408 TURNBERRY OAK DR	WAKC0988125
GERALD R & LOIS E HAFFNER	LIVING TRUST DATED MAY 13, 200	3422 TURNBERRY OAK DR	WAUKESHA	WI	53188	3422 TURNBERRY OAK DR	WAKC0988130
GERALD R & JUDITH KUSH	<Null>	528 COUNTRY CREST LN	WAUKESHA	WI	53188	528 COUNTRY CREST LN	WAKC0988103
STEPHEN E SMITH	<Null>	3300 CEDAR HOLLOW CT UNIT D	WAUKESHA	WI	53188	3300 CEDAR HOLLOW CT UNIT D	WAKC0988049
LAURIE M SCHMIDT	<Null>	2301 SILVER FOX CT	WAUKESHA	WI	53188	2301 SILVER FOX CT	WAKC0979281
DAVID L & DONNA L CLARK	<Null>	3420 TURNBERRY OAK DR	WAUKESHA	WI	53188	3420 TURNBERRY OAK DR	WAKC0988131
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2407 DEERCREST CT	WAKC0979294
JAMES A ZINZOW	<Null>	3411 BRIGHTSIDE RD	WAUKESHA	WI	53188	3411 BRIGHTSIDE RD	WAKC0988117
JAMES L & TERRY A BESTOR	<Null>	2303 SILVER FOX CT	WAUKESHA	WI	53188	2303 SILVER FOX CT	WAKC0979282
RONALD J PIETROWIAK	<Null>	W271S2754 MERRILL HILLS RD	WAUKESHA	WI	53188	W271S2754 MERRILL HILLS RD	WAKT1324997
JOSEPH A & MARCIA S DIPIAZZA	<Null>	516 COUNTRY CREST LN	WAUKESHA	WI	53188	516 COUNTRY CREST LN	WAKC0988106
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2222 KAYLA DR	WAKC0979255
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2307 SILVER FOX CT	WAKC0979284
GOOD TIMES DAY CAMP LLC	<Null>	PO BOX 1061	WAUKESHA	WI	53187-1061	443 MERRILL HILLS RD	WAKC0991001

Riparian Owners List

Owner Name	Owner Name Cont	Mailing Address	City	State	Zip	Property Address	TAXKEY
CHRISTOPH FAMILY TRUST	<Null>	W271S3016 MERRILL HILLS RD	WAUKESHA	WI	53188	W271S3016 MERRILL HILLS RD	WAKT1327998
SCHOOL DISTRICT OF WAUKESHA	<Null>	222 MAPLE AV	WAUKESHA	WI	53188	W272S2633 MERRILL HILLS RD	WAKT1321995012
JAMES M & MARGARET M CHASE	<Null>	509 ARBOR OAKS LN UNIT B	WAUKESHA	WI	531888	509 ARBOR OAKS LN UNIT B	WAKC0988035
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2309 KAYLA DR	WAKC0979269
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2310 SILVER FOX CT	WAKC0979278
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2315 KAYLA DR	WAKC0979271
ROBERT F SMART ET AL	<Null>	137 WISCONSIN AV	WAUKESHA	WI	53186	MEADOWBROOK RD	WAKC0985999
JOHN G & CHERYL A KRAAK	<Null>	522 COUNTRY CREST LN	WAUKESHA	WI	53188	522 COUNTRY CREST LN	WAKC0988105
MCMAHON PETROLEUM LLC	<Null>	600 S MEADOWBROOK RD	WAUKESHA	WI	53188	600 MEADOWBROOK RD	WAKC0988134
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2412 KAYLA DR	WAKC0979290
MARK W & JOAN A ZAREMBA	<Null>	3301 CEDAR HOLLOW CT UNIT D	WAUKESHA	WI	53188	3301 CEDAR HOLLOW CT UNIT D	WAKC0988057
RICHARD R & JANIS K CAVALCO SR	<Null>	519 COUNTRY CREST LN	WAUKESHA	WI	53188	519 COUNTRY CREST LN	WAKC0988088
WINDINGS MAINTENANCE CORP	<Null>	P O BOX 5001	WAUKESHA	WI	53187-5001	MEADOWBROOK RD	WAKC0978341
MARGARET A IRELAND	<Null>	3416 TURNBERRY OAK DR	WAUKESHA	WI	53188	3416 TURNBERRY OAK DR	WAKC0988129
CITY OF WAUKESHA	(WETLANDS)	201 DELAFIELD ST	WAUKESHA	WI	53188	W SUNSET DR	WAKC1328996
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2324 KAYLA DR	WAKC0979301
MOEBIUS TRUST DATED 10/8/93	<Null>	3408 BRIGHTSIDE RD	WAUKESHA	WI	53188	3408 BRIGHTSIDE RD	WAKC0988111
CHRISTOPH FAMILY TRUST	<Null>	W271S3016 MERRILL HILLS RD	WAUKESHA	WI	53188	W270S1920-1990 MERRILL HILLS	WAKT1320998
MAUREEN E WALKER	<Null>	3301 CEDAR HOLLOW CT UNIT A	WAUKESHA	WI	53188	3301 CEDAR HOLLOW CT UNIT A	WAKC0988054
GLORIA VAN ERT	<Null>	3332 TURNBERRY OAK DR	WAUKESHA	WI	53188	3332 TURNBERRY OAK DR	WAKC0988087
ALAN C & MARIAN H LIPPERT	<Null>	3328 TURNBERRY OAK DR	WAUKESHA	WI	53188	3328 TURNBERRY OAK DR	WAKC0988085
MARY M REARDON	<Null>	3410 TURNBERRY OAK DR	WAUKESHA	WI	53188	3410 TURNBERRY OAK DR	WAKC0988124
ASAEL & DIANE RUIZ	<Null>	3301 CEDAR HOLLOW CT UNIT B	WAUKESHA	WI	53188	3301 CEDAR HOLLOW CT UNIT B	WAKC0988055
PETER F & TONI J SAEWERT	<Null>	3330 TURNBERRY OAK DR	WAUKESHA	WI	53188	3330 TURNBERRY OAK DR	WAKC0988084
MERLYN MINSTER &	GARY LAGON	W261S3547 GENESEE RD	WAUKESHA	WI	53189	<Null>	WAKT1364998001
LARRY & BARBARA RECTOR	<Null>	3412 TURNBERRY OAK DR	WAUKESHA	WI	53188	3412 TURNBERRY OAK DR	WAKC0988127
KATHY A LEEF	<Null>	516 ARBOR OAKS LN UNIT A	WAUKESHA	WI	53188	516 ARBOR OAKS LN UNIT A	WAKC0988038
WAUKESHA COUNTY	PARKS & LAND USE	515 W MORELAND BLVD ROOM AC148	WAUKESHA	WI	53188	<Null>	WAKT1319999
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2406 DEERCREST CT	WAKC0979299
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2406 KAYLA DR	WAKC0979292
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2311 KAYLA DR	WAKC0979270
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2326 KAYLA DR	WAKC0979302
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2317 KAYLA DR	WAKC0979272
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2212 KAYLA DR	WAKC0979259
MEGHAN K SHANNON	<Null>	516 ARBOR OAKS LN UNIT D	WAUKESHA	WI	53188	516 ARBOR OAKS LN UNIT D	WAKC0988041
BERNARD F WINDISCH	<Null>	3300 CEDAR HOLLOW CT UNIT B	WAUKESHA	WI	53188	3300 CEDAR HOLLOW CT UNIT B	WAKC0988047
RICHARD & MARGARET GRABOWSKI	<Null>	3306 TURNBERRY OAK DR	WAUKESHA	WI	53188	3306 TURNBERRY OAK DR	WAKC0988078
RICHARD & LAVERNE PUCHTER &	JAMES F & PATRICIA A PUCHTER	531 COUNTRY CREST LN	WAUKESHA	WI	53188	531 COUNTRY CREST LN	WAKC0988092
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2405 DEERCREST CT	WAKC0979293
JAMES H & JEANNINE D PETERS	<Null>	532 COUNTRY CREST LN	WAUKESHA	WI	53188	532 COUNTRY CREST LN	WAKC0988101
SUMMIT SQUARE LLC	<Null>	16655 BLUEMOUND RD SUITE 170	BROOKFIELD	WI	53005-5957	MERRILL HILLS RD	WAKC0988150
ROBERT V HARTMANN TRUSTEE ETAL	C/O JUDITH MANEY	W271S2759 MERRILL HILLS RD	WAUKESHA	WI	53188	W271S2759 MERRILL HILLS RD	WAKT1324996
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2403 KAYLA DR	WAKC0979276
IRSHAD & SEEMI ALI	<Null>	3200 HOWELL CT	WAUKESHA	WI	53188	3200 HOWELL CT	WAKC1317050
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2401 KAYLA DR	WAKC0979275
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2218 KAYLA DR	WAKC0979258
TURNBERRY DEVELOPMENT LLC	<Null>	7940 N 81ST ST	MILWAUKEE	WI	53223	2307 KAYLA DR	WAKC0979268
BARBARA W HAEFKE	<Null>	2411 KAYLA DR	WAUKESHA	WI	53188	2411 KAYLA DR	WAKC0979287
ROBERT F SMART	<Null>	137 WISCONSIN AV	WAUKESHA	WI	53186	<Null>	WAKT1361975
GIBSON FUND LLP	<Null>	N13W24705 BLUEMOUND RD	PEWAUKEE	WI	53072	<Null>	WAKT1361976002
CITY OF WAUKESHA	<Null>	201 DELAFIELD ST	WAUKESHA	WI	53188	MADISON ST	WAKC1315999
ROGER S & MARY S REES	<Null>	3300 CEDAR HOLLOW CT UNIT A	WAUKESHA	WI	53188	3300 CEDAR HOLLOW CT UNIT A	WAKC0988046
ELAINE K LUKAS	<Null>	529 COUNTRY CREST LN	WAUKESHA	WI	53188	529 COUNTRY CREST LN	WAKC0988093
SUSAN SAXHAUG REVOCABLE TRUST	<Null>	3406 TURNBERRY AOK DR	WAUKESHA	WI	53188	3406 TURNBERRY OAK DR	WAKC0988122
ALLEN J & BONNIE J BELONGER	<Null>	3426 TURNBERRY OAK DR	WAUKESHA	WI	53188	3426 TURNBERRY OAK DR	WAKC0988132