

The Wetlands Evaluation Factor Sheet has been updated to the format currently used by WisDOT, which has been changed considerably. Impacts have been updated to reflect a wetland delineation that was performed in 2011 and design refinements. More information is known about mitigation opportunities. There are few substantive changes from the 2010 FEIS.

## WETLANDS EVALUATION

### Factor Sheet C-1

#### 1. Describe Wetlands:

Wetland locations and evaluations for the project were based on WDNR mapped wetlands and other on- and offline resource mapping provided by WDNR staff. After initial project alignment development, to facilitate early evaluation and quantification, the wetlands were then field-delineated by WisDOT staff and WDNR reviewers using Global Positioning System (GPS) technology.

These field reviews allowed for the early evaluation of locations of wetlands and their general quality and identification of special habitats in need of early avoidance and minimization. The wetland delineations were again updated in 2011.

In Fond du Lac County, high quality wetlands occur in the following areas:

- |   |   |
|---|---|
| A. North of WIS 23 between Pit Road and Triple T Road | – Mixed hardwood and cedar swamp                                      |
| B. At the Sheboygan River area crossing WIS 23        | – Riparian emergent wet meadow  |
| C. South of WIS 23 near Division Road                 | – Shrub swamp   |
| D. South of WIS 23 adjacent to Hillview Road          | – Mullet Creek Wildlife Area, mixed hardwoods and emergent wet meadow |

In Sheboygan County, many of the higher quality wetlands are located south of WIS 23 in the following areas:

- |                                 |                                    |
|---------------------------------|------------------------------------|
| E. West of Spring Valley Drive  | - Meadows and shallow marsh        |
| F. Old Wade House Historic Site | - Meadows and wooded swamp         |
| G. Mullet River                 | - Riparian forest and wooded swamp |

Figure 4.6 C-1.1 schematically illustrates the location of these sites with the letter designations listed above.



**Figure 4.6 C-1.1 High Quality Wetland Sites**

There are three existing wetland mitigation sites adjacent to the WIS 23 corridor, the WisDOT Taycheedah Creek Wetland Mitigation Site near the US 151/WIS 23 connection, the WisDOT/County Pit Road Wetland Mitigation Site, and the State Historical Society's Old Wade House Wetland Enhancement and Mitigation Site.

Prior to the 2009 SDEIS and the 2010 FEIS, WisDOT and WDNR jointly catalogued wetland sites along the potential alternative corridors. The field inventory used GPS to electronically collect wetland boundaries within a 600-foot corridor width of the corridors being considered with GPS. The delineated

boundaries provide greater understanding of the location and type of wetlands than the WDNR wetland mapping. As mentioned, in 2011 WisDOT again field-delineated the wetlands affected by the Preferred Build Alternative as part of the Section 404 permitting process. Table 4.6 C-1.1 describes the various types of the wetlands that would be impacted by the alternatives being considered and the wetland acreage for each alternative and type of wetland. The table also documents the number of wetlands impacted and whether the impacts would be longitudinal encroachments (as typical of the on-alignment alternative) or a bisection of previously nonimpacted wetlands. Figures 4.6 C-1.2 to 4.6 C-1.6 show the location and type of wetland based on the field review.

During initial field reviews, the WDNR identified several Natural Resource Areas it considered to have high habitat value. The WDNR considered these areas as a substantial resource areas involving a combination of habitats or areas of concern regarding potential environmental degradation from the project. (See memo dated March 6, 2003, in Appendix D of the 2010 FEIS.) These WDNR identified Natural Resource Areas are shown in Figures 4.6 C-1.2 to C-1.6 and referenced in Table 4.6 C-1.1.

Table 4.6 C-1.1 shows the impacts for various sections of the alternative evaluated. The acreages have been updated based on the most recent slope intercepts for the Preferred Build Alternative and the recent wetland delineation performed in 2011.

<b>Table 4.6 C-1.1 Wetland Impacts (acres) by Type and Alternative</b>									
	<i>Aquatic Bed</i>	<i>Wooded Swamp</i>	<i>Wet Meadow</i>	<i>Riparian Palustrine Emergent</i>	<i>Riparian Palustrine Forested</i>	<i>Shallow Marsh</i>	<i>Shrub Scrub</i>	Total Impact	WDNR Identified Natural Resource Areas Affected
	AB	WS	M	RPE	RPF	SM	SS		
<b>Preferred Build Alternative</b>									
Alt. 1 - <i>Segment(s) A</i>	0.0	2.0	18.8	1.0	1.9	9.1	4.4	37.1	#3
No. of Wetlands Impacted :	0	5	54	2	2	10	15	88	
Wetland Bisections :	NA	NA	NA	NA	NA	NA	NA	0	
Wetland Longitudinal Encroachments :	0	5	54	2	2	10	15	88	
<b>Old Plank Trail - <i>Segment(s) A</i></b>									
	0.0	1.2	6.5	0.3	0.0	0.4	1.8	10.2	#3
No. of Wetlands Impacted :	0	5	23	1	0	4	7	40	
Wetland Bisections :	NA	NA	NA	NA	NA	NA	NA	0	
Wetland Longitudinal Encroachments :	0	5	23	1	0	4	7	40	
<b>Connection Roads and Interchanges - <i>Segment(s) A</i></b>									
	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.8	
No. of Wetlands Impacted :	0	0	5	0	0	0	0	5	
Wetland Bisections :	0	0	0	0	0	0	0	0	
Wetland Longitudinal Encroachments :	0	0	5	0	0	0	0	5	
<b>Corridor Preservation Alternatives</b>									
<b>WIS 23 Corridor (Connection Roads, Grade Separations, and Interchanges)</b>									
No Preservation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
No. of Wetlands Impacted :	0	0	0	0	0	0	0	0	
Wetland Bisections :	0	0	0	0	0	0	0	0	
Wetland Longitudinal Encroachments :	0	0	0	0	0	0	0	0	
<b>Preferred Preservation - <i>Segment(s) A</i></b>									
	0	0.3	0.7	0.0	0.6	0.0	0.1	1.7	
No. of Wetlands Impacted :	0	3	7	0	3	0	1	12	
Wetland Bisections :	0	0	0	0	0	0	0	0	
Wetland Longitudinal Encroachments :	0	3	7	0	3	0	1	12	
<b>US 151/WIS 23 System Interchange</b>									
Preferred No Preservation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
No. of Wetlands Impacted :	0	0	0	0	0	0	0	0	
Wetland Bisections :	0	0	0	0	0	0	0	0	
Wetland Longitudinal Encroachments:	0	0	0	0	0	0	0	0	

**Table 4.6 C-1.1 Wetland Impacts (acres) by Type and Alternative**

	<i>Aquatic Bed</i>	<i>Wooded Swamp</i>	<i>Wet Meadow</i>	<i>Riparian Palustrine Emergent</i>	<i>Riparian Palustrine Forested</i>	<i>Shallow Marsh</i>	<i>Shrub Scrub</i>	Total Impact	WDNR Identified Natural Resource Areas Affected
	AB	WS	M	RPE	RPF	SM	SS		
Option 23-1 Preservation - <i>Segment F</i>	0.0	0.2	2.7	0.0	8.3	0.0	0.9	12.1	
No. of Wetlands Impacted :	0	1	3	0	2	0	2	8	
Wetland Bisections :	0	0	1	0	0	0	0	1	
Wetland Longitudinal Encroachments :	0	1	2	0	2	0	2	7	

Option 23-2 Preservation - <i>Segment G</i>	0.0	0.0	2.0	1.6	1.2	0.0	2.8	7.6	
No. of Wetlands Impacted :	0	0	3	1	1	0	3	8	
Wetland Bisections :	0	0	0	0	0	0	0	0	
Wetland Longitudinal Encroachments :	0	0	3	1	1	0	3	8	

**Other Build Alternatives**

Alt. 2 - <i>Segments A, B, A</i>	0.0	5.8	14.8	2.8	1.3	7.8	5.5	37.9	#3, #4
No. of Wetlands Impacted :	0	4	39	3	2	3	9	60	
Wetland Bisections :	0	1	1	1	0	1	1	5	
Wetland Longitudinal Encroachments :	0	3	38	2	2	2	8	55	

Alt. 3 - <i>Segments A/C, B, A</i>	0.3	6.0	25.6	2.6	5.5	16.8	2.7	59.5	#1, #2, #5, #6, #7
No. of Wetlands Impacted :	1	2	31	3	2	4	3	46	
Wetland Bisections :	0	1	3	2	1	2	0	9	
Wetland Longitudinal Encroachments :	1	1	28	1	1	2	3	37	

Note: Below are the variations of Alternative 3 with different connection arrangements.

Alt. 4 - <i>Segments A/C, C, D, B, A</i>	0.0	8.0	28.1	4.2	8.6	12.6	2.4	63.9	#1, #2, #4, #6, #7
No. of Wetlands Impacted :	0	3	25	3	3	3	4	41	
Wetland Bisections :	0	2	4	1	1	2	2	12	
Wetland Longitudinal Encroachments :	0	1	21	2	2	1	2	29	

Alt. 5 - <i>Segments A, E, C, B, A</i>	0.3	6.0	25.7	0.5	8.6	15.6	2.3	59.0	#1, #2, #5, #6, #7
No. of Wetlands Impacted :	1	2	23	1	3	4	2	36	
Wetland Bisections :	0	2	4	1	1	3	1	12	
Wetland Longitudinal Encroachments :	1	0	19	0	2	1	1	24	

Alt. 6 - <i>Segments A, E, C, D, B, A</i>	0.3	10.0	25.5	2.1	8.6	15.6	2.4	64.5	#1, #2, #4, #6, #7
No. of Wetlands Impacted :	0	2	22	1	3	3	2	33	
Wetland Bisections :	0	2	4	1	1	2	1	11	
Wetland Longitudinal Encroachments :	0	0	18	0	2	1	1	22	

Source: Evaluations during DEIS/SDEIS period.

**Table 4.6 C-1.1 Wetlands Impacts Type and Alternative**

**2. Are any impacted wetlands considered “wetlands of special status” per WisDOT Wetland Mitigation Banking Technical Guideline, page 10?**

- No
- Yes:
  - Advanced Identification Program (ADID) Wetlands
  - Other – Describe:

Wetlands of special status are those that are unique to their locality or ecologically unique, or a resource agency has placed a nationwide emphasis on its protection. For Wisconsin, these would include bottomland hardwoods. Wetlands of special status also include those that have federal or state threatened and endangered species, lands where public or private funds have been used to restore, protect, or manage a wetland, or the wetland is on a listing of historic/archeological sites.

For the WIS 23 project, these wetlands of special status include:

- The three wetland mitigation areas, Taycheedah Creek Wetland Mitigation Site, Pit Road Wetland Mitigation Site, and the Old Wade House Wetland Enhancement and Mitigation Site. These areas are shown as G3, A42/43, and A64/65 respectively on Figures 4.6 C-1.2 to 4.6 C-1.6
- The Sheboygan River crossing which contains rare freshwater mussels .
- The Mullet River culvert extension where there is wooded swamp and possible fresh water mussels. Blandings turtle may also exist at this location.

### 3. Describe proposed work in the wetland(s), e.g., excavation, fill, marsh disposal, other:

No-Build Alternative This alternative requires no wetland conversion and has no impacts.

#### Build Alternatives

All Build Alternatives would impact wetland areas through a combination of excavation and fill along the 19-mile project. WisDOT design would comply with wetland sequencing. Wetland impacts would first be avoided, then minimized. Wetland areas unable to be avoided or minimized would require appropriate wetland mitigation. In addition to loss of wetland acreage, the project would also affect wetland function and value(s). Table 4.6 C-1.2 summarizes the acres of wetlands within the Build Alternative corridors and how many of them would be filled. Table 4.6 C-1.3 shows the wetland impacts by location and is tied to the wetland numbers designated in Figures 4.6 C-1.2 to C-1.6.

#### Alternative 2

The 4-lane expansion associated with Alternative 2 has many of the same wetland areas that the Preferred Build Alternative 1 would have, including the Sheboygan River crossing (bridge), Natural Resource Area No. 3, and the Mullet River crossing (culvert). Alternative 2 avoids the wetland mitigation bank near Pit Road. The mitigation bank is avoided because this alternative travels on a new alignment 0.25 miles north of WIS 23.

The Alternative 2 corridor that travels off the existing alignment would travel through 16 wetland acres, with an estimated 12 of those acres being directly filled. Alternative 2 travels near or through approximately 60 wetland areas of wetlands, totaling nearly 100 acres within the corridor. Because not all wetlands within the right of way would be filled, the actual wetland impacts would total about 37.9 acres. See Wetland Type Maps on Figures 4.6 C-1.2 to 4.6 C-1.6.

Alternative 2 would also place fill in a high quality cedar swamp, in WDNR identified Natural Resource Area No. 4, in the Town of Forest. This area is found in a wooded ravine with some natural springs on the south edge of a wooded wetland that extends northward about 2 miles to the Sheboygan River. WDNR concerns for this wetland area resulted in a shift in Alternative 2 to avoid as much of the wetland as possible. See the Section 2.4 for a description. An estimated 4 acres of wetlands would still be directly affected.

#### Alternative 3

This alternative has between 116 and 132 acres of wetlands within the studied corridor, varying with the type of connection (Alternative 3 to 6). An estimated 59.5 acres would be directly filled and impacted because of road construction. This alternative impacts the same wetlands described in Alternative 2 in Sheboygan County. In Fond du Lac County, the alternative would bisect wetlands contiguous with Taycheedah Creek, affecting up to 14.3 acres.

Alternative 3 would also place fill adjacent to WDNR identified Natural Resource Area Numbers 1 and 2 near the Sheboygan River in the Forest Township. (Wetland Type Map Figure 4.6 C-1.3 and 1.4.) Alternative 3 would also place fill adjacent to Natural Resource Area No. 5, which is a wetland area at the upper reaches of the Town of Forest Swamp (Wetland Type Map Figure 4.6 C-1.5).

#### Preferred Build Alternative

##### 4-lane Expansion (Alternative 1)

This alternative would be built on-alignment and has 88 individual areas of existing wetlands ranging in size from 0.01 acres to 11.49 acres. Wetland areas would be filled where the new WIS 23 lanes would be added. Likely wetlands that would be filled total about 37.1 acres with avoidance and minimization techniques employed. These impacts include an area of riparian wetland impacts of 0.95 acres (A27/A28) and 1.97 acres (A68/A69) contiguous to the Sheboygan and Mullet Rivers, respectively.

##### Connection Roads and Interchanges

The connection roads and interchanges would fill an additional 0.8 acres of wetlands. These wetlands occur at the proposed local roads.

##### Old Plank Road Trail

The Old Plank Road Trail would fill an additional 10.2 acres of wetlands. These wetlands are generally contiguous with the wetland areas described in the 4-lane expansion associated with Alternative 1.

The Old Wade House Wetland Enhancement and Mitigation site is managed by the Wisconsin Historical Society. The mitigation site was created in the late 1990s when restoration and wetland enhancement work was done. At this location, the 4-lane expansion was built north of WIS 23 to avoid this mitigation site. The Old Plank Road Trail would travel adjacent to WIS 23 and minimize effects to this mitigation site. This site is located on the northern boundary of the Old Wade House property. Figure 4.6 C-1.7 illustrates the Old Plank Road Trail as it travels adjacent to the wetland mitigation site.

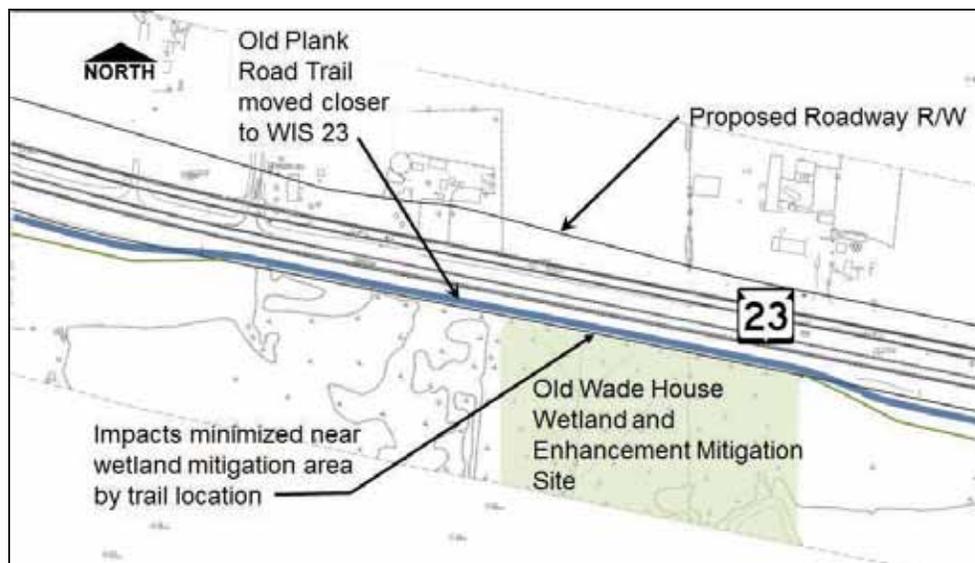


Figure 4.6 C-1.7 Old Plank Road Trail and Old Wade House Wetland Mitigation Site

Utility relocations associated with the project may also affect wetlands. It is anticipated that the majority of these relocations would occur within or directly adjacent to the proposed right of way. Impacts would primarily be associated with pole relocations but may also include conduit placement. These impacts are reasonably represented by the roadway effects described in this section.

Corridor Preservation AlternativesWIS 23 CorridorNo Corridor Preservation

No effects. No wetlands would be affected if the WIS 23 No Corridor Preservation Alternative is chosen.

Preferred WIS 23 Corridor Preservation

The Preferred WIS 23 Corridor Preservation Alternative would preserve areas that contain wetlands. Future transportation improvements associated with these preservation areas, if constructed, would impact wetlands. At that time further NEPA documentation would occur and as part of the NEPA process wetland impacts would first be avoided, then minimized. Wetland areas unable to be avoided or minimized would require appropriate wetland mitigation.

US 151/WIS 23 InterchangePreferred No Corridor Preservation

No effects. No wetlands would be affected for the Preferred US 151/WIS 23 No Corridor Preservation Alternative.

Option 23-1 Corridor Preservation

Option 23-1 Corridor Preservation would not directly affect any wetlands. Future transportation improvements associated with this corridor preservation, if constructed, would fill 8 areas of existing wetlands ranging in size from 0.06 acres to 5.60 acres, totaling 12.1 impacted acres. The Option 23-1 system interchange would not affect the existing wetland mitigation site west of US 151.

Option 23-2 Corridor Preservation

Option 23-2 Corridor Preservation would not directly affect any wetlands. Future transportation improvements associated with this corridor preservation, if constructed, would impact 8 areas of existing wetlands ranging in size from 0.14 acres to 5.60 acres, totaling nearly 7.6 impacted acres. Wetland area G3 is the Taycheedah Creek Wetland mitigation site, an existing wetland mitigation site constructed to offset wetland losses associated with the US 151 Fond du Lac bypass. This wetland is a "red-flag" wetland mitigation site that requires advanced coordination with WDNR. See Figure 4.6 C-1.8. The wetland mitigation bank was a commitment to an individual 404 US Army Corps of Engineers Permit and a WDNR 401 Water Quality Certification associated with the Fond du Lac bypass project.

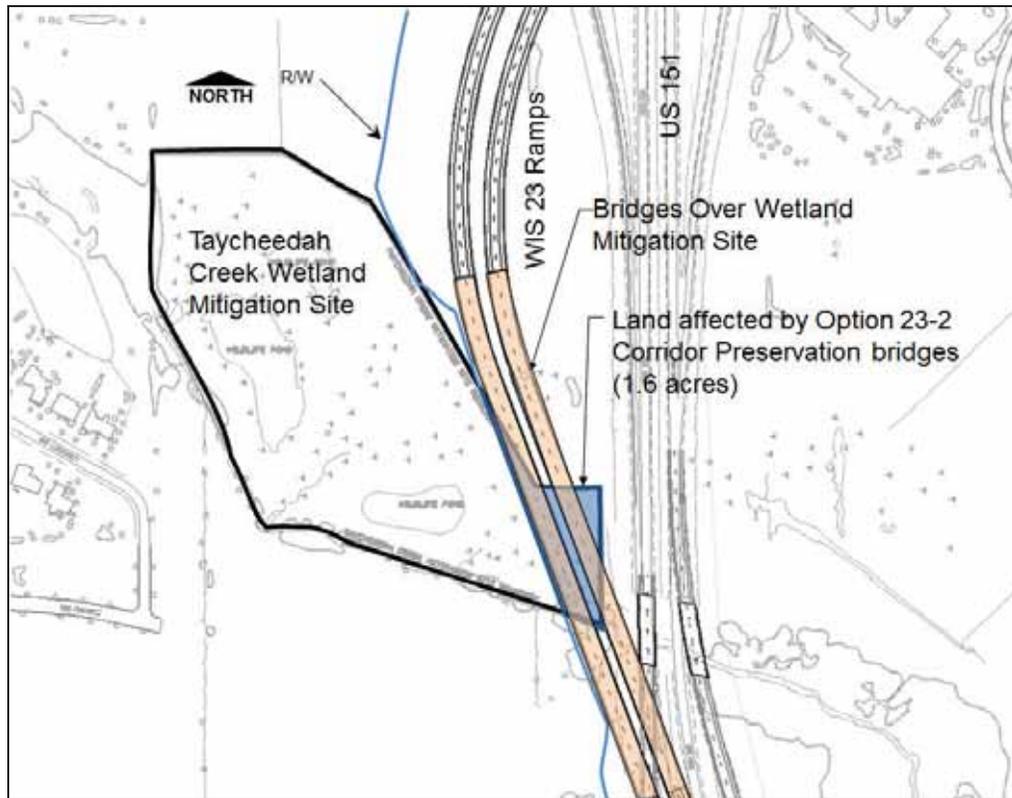


Figure 4.6 C-1.8 Option 23-2 impacts to Taycheedah Creek Wetland Mitigation Site

Table 4.6 C-1.2 summarizes wetland impacts for each alternative. These impacts are updated from the 2010 FEIS based on the delineation that was performed in 2011/2012 and refinements to the slopes of the proposed roadway. A summary of this evaluation and the practicable alternative finding is provided in Section 6.8. Table 4.6 C-1.3 provides a more detailed list of impacts by the locations shown in Figures 4.6 C-1.2 to 4.6 C-1.6. The wetland impacts for Alternatives 2 and 3 were not updated because they were not part of the Preferred Build Alternative.

<b>Table 4.6 C-1.2 Summary of Wetland Impacts</b> (Alternatives 2 and 3 not updated)		
<b>Wetlands Affected</b>	<b>Acres in Corridor+</b>	<b>Estimated Acres Filled for Construction</b>
<b>Preferred Build Alternative</b>		
4-lane expansion (Alt 1)	147.14	37.1
Connection roads and interchanges		0.8
Old Plank Road Trail		10.2
<b>TOTAL PREFERRED ALTERNATIVE</b>	<b>147.14</b>	<b>48.1</b>
<b>Other Build Alternatives (without connection roads and interchanges)</b>		
Alternative 2	99.5*	37.9*
Alternative 3	115.8*	59.5*
Note: Below are the variations of Alternative 3 with different connection arrangements.		
Alternative 4	120.6*	73.0*
Alternative 5	127.0*	70.0*
Alternative 6	131.3*	79.0*
*Note: acres do not include connection roads, interchanges or preservation areas. If connection roads, interchanges, and preservation areas were included, these totals would have an additional 11 acres of wetland impacts and totals would be greater than the Preferred Alternative. + Using a uniform corridor width of 250 feet.		

<b>Table 4.6 C-1.2 Summary of Wetland Impacts</b> (Alternatives 2 and 3 not updated)		
Wetlands Affected	Acres in Corridor+	Estimated Acres Filled for Construction
<b>Preferred Corridor Preservation Alternatives</b>		
Preferred WIS 23 Preservation	~2.1	1.7
Preferred No US 151/WIS 23 Preservation	0.0	0.0
<b>TOTAL PREFERRED CORRIDOR PRESERVATION ALTERNATIVES</b>	<b>NA</b>	<b>1.7</b>
<b>Other Corridor Preservation Alternatives</b>		
No WIS 23 Corridor Preservation	0.0	0.0
Option 23-1 Preservation	16.7	12.1
Option 23-2 Preservation	12.6	7.6
<b>TOTAL OTHER CORRIDOR PRESERVATION ALTERNATIVES</b>	<b>12.6 or 16.7</b>	<b>7.6 or 12.1</b>

<b>Table 4.6 C-1.3 Detailed Wetland Impacts by Location</b> (Alternatives 2 and 3 not updated)												
Wetland Number	Wetland Name	Acres	Other Build Alternatives		Preferred Build Alternative			Corridor Preservation Alternatives				
			4-lane expans (Alt 2)	4-lane expans (Alt 3)	4-lane expans (Alt 1)	Connect Roads and Interch	Old Plank Road Trail	WIS 23 Connection Roads, Grade Separation, and Interchange		US 151/WIS 23 System Interchange		
								No Pres	Preferred Pres	Preferred No Pres	23-1 Pres	23-2 Pres
A1 (C1 also)	Meadows	0.23	0.02	0.02	0.02	0	0.02	0	0	0	0	0
A2 (C2 also)	Meadows	0.18	0.07	0.07	0.10	0	0	0	0	0	0	0
A3	Shallow Marsh	0.33	0.15	0	0.15	0	0	0	0	0	0	0
A4	Shrub Scrub	0.45	0.02	0	0.03	0	0.10	0	0	0	0	0
A5	Meadows	1.20	0.13	0	0.15	0	0.26	0	0	0	0	0
A6	Shrub Scrub	0.54	0.12	0	0.19	0	0	0	0	0	0	0
A7	Meadows	0.86	0.70	0	0.72	0	0	0	0	0	0	0
A8	Meadows	0.63	0.02	0	0.02	0	0.37	0	0	0	0	0
A9	Wooded Swamp	0.51	0.01	0	0.01	0	0.17	0	0	0	0	0
A10	Shrub Scrub	0.19	0.08	0	0.07	0	0	0	0	0	0	0
A11	Meadows	0.12	0.07	0	0.04	0	0	0	0	0	0	0
A12	Meadows	1.70	0.02	0	0.21	0	0.41	0	0	0	0	0
A13	Wooded Swamp	0.23	0.03	0	0.08	0	0.05	0	0	0	0	0
A14	Meadows	1.45	0.55	0	1.02	0	0.25	0	0	0	0	0
A15	Shrub Scrub	1.62	0	0	0.15	0	0.54	0	0	0	0	0
A16	Meadows	4.35	2.33	0	2.35	0	0	0	0	0	0	0
A17	Wooded Swamp	0.97	0	0	0.03	0	0.25	0	0	0	0	0
A18	Meadows	0.20	0.04	0	0.10	0	0	0	0	0	0	0
A19	Meadows	1.07	0.06	0	0.07	0	0.35	0	0	0	0	0
A20	Shrub Scrub	1.82	0.23	0	0.23	0	0.44	0	0	0	0	0
A21	Meadows	0.32	0.25	0	0.24	0	0	0	0	0	0	0
A22	Meadows	0.47	0.24	0	0.24	0	0	0	0	0	0	0
A23	Shrub Scrub	3.16	2.15	0	2.37	0	0	0	0.09	0	0	0
A24	Wooded Swamp	3.90	1.73	0	1.91	0	0	0	0	0	0	0
A25	Shallow Marsh	10.84	3.79	0	3.93	0	0	0	0	0	0	0
A26	Meadows	0.07	0	0	0	0	0	0	0	0	0	0

**Table 4.6 C-1.3 Detailed Wetland Impacts by Location**  
(Alternatives 2 and 3 not updated)

Wetland Number	Wetland Name	Acres	Other Build Alternatives		Preferred Build Alternative			Corridor Preservation Alternatives				
			4-lane expans (Alt 2)	4-lane expans (Alt 3)	4-lane expans (Alt 1)	Connect Roads and Interch	Old Plank Road Trail	WIS 23 Connection Roads, Grade Separation, and Interchange		US 151/WIS 23 System Interchange		
								No Pres	Preferred Pres	Preferred No Pres	23-1 Pres	23-2 Pres
A27	Riparian Emergent	1.02	0.61	0	0.68	0	0	0	0	0	0	0
A28	Riparian Emergent	1.99	0.07	0	0.26	0	0.28	0	0	0	0	0
A29	Meadows	0.19	0.10	0	0.10	0	0	0	0	0	0	0
A30	Meadows	0.10	0.05	0	0.09	0	0	0	0	0	0	0
A31	Meadows	2.42	1.04	0	1.06	0	0	0	0.15	0	0	0
A33	Meadows	0.07	0.07	0	0.05	0	0	0	0.03	0	0	0
A34	Meadows	0.01	0.01	0	0.01	0	0	0	0	0	0	0
A35	Meadows	0.95	0.64	0	0.64	0	0.20	0	0	0	0	0
A36	Meadows	0.32	0.29	0	0.07	0	0	0	0	0	0	0
A37	Meadows	1.46	0.30	0	0.05	0	0	0	0	0	0	0
A38	Meadows	0.22	0	0	0	0	0	0	0	0	0	0
A39	Meadows	0.28	0	0	0	0	0	0	0	0	0	0
A40	Meadows	0.06	0	0	0	0	0	0	0	0	0	0
A41	Meadows	1.31	0	0	0.53	0.22	0.44	0	0	0	0	0
A42 (C17 & C18)	Meadows	4.05	0	0	0.96	0	0	0	0	0	0	0
A43 (C19 also)	Aquatic Bed	1.89	0	0	0	0	0	0	0	0	0	0
A44 (C16 also)	Meadows	1.34	0	0	1.30	0	0.04	0	0	0	0	0
A45 (C20 also)	Shallow Marsh	5.98	0	0	1.31	0	0	0	0	0	0	0
A46	Meadows	3.23	0	0	2.08	0	0.77	0	0	0	0	0
A47	Meadows	0.90	0	0	0.06	0	0	0	0	0	0	0
A48	Meadows	0.85	0	0	0.41	0	0.24	0	0	0	0	0
A49	Meadows	0.19	0	0	0.10	0	0.04	0	0	0	0	0
A50	Meadows	0.22	0	0	0.14	0	0	0	0	0	0	0
A51	Aquatic Bed	0.85	0	0	0	0	0	0	0	0	0	0
A53	Shrub Scrub	0.64	0	0	0.06	0	0.03	0	0	0	0	0
A54	Meadows	0.28	0	0	0.08	0	0	0	0	0	0	0
A55	Meadows	0.59	0	0	0.37	0	0	0	0	0	0	0
A56	Meadows	0.76	0	0	0.04	0	0.11	0	0	0	0	0
A57 (B11 also)	Meadows	2.54	0	0	0.24	0	0.72	0	0	0	0	0
A58 (B10 also)	Shrub Scrub	1.51	0.43	0.43	0.44	0	0	0	0	0	0	0
A59	Meadows	0.41	0.20	0.20	0.01	0	0	0	0	0	0	0
A60	Meadows	0.98	0.27	0.27	0.24	0	0	0	0	0	0	0
A61	Shallow Marsh	7.08	3.81	3.81	3.12	0	0	0	0	0	0	0
A62	Meadows	2.32	0.16	0.16	0.02	0	1.08	0	0	0	0	0
A63	Meadows	1.58	0.03	0.03	0.16	0	0.40	0	0	0	0	0
A64	Wooded Swamp	3.56	0	0	0	0	0.35	0	0	0	0	0
A65	Meadows	5.12	0.30	0.30	0	0	0.92	0	0	0	0	0
A66	Wooded Swamp	1.54	0	0	0	0	0.41	0	0.22	0	0	0
A67	Meadows	1.10	0.04	0.04	0.51	0	0	0	0	0	0	0
A68	Riparian Forested	1.48	0	0	0.55	0	0	0	0	0	0	0
A69	Riparian Forested	2.42	1.28	1.28	1.43	0	0	0	0.62	0	0	0
A70	Meadows	0.07	0	0	0	0	0	0	0.07	0	0	0
A71	Meadows	0.29	0.33	0.33	0.30	0	0	0	0	0	0	0

**Table 4.6 C-1.3 Detailed Wetland Impacts by Location**  
(Alternatives 2 and 3 not updated)

Wetland Number	Wetland Name	Acres	Other Build Alternatives		Preferred Build Alternative			Corridor Preservation Alternatives				
			4-lane expans (Alt 2)	4-lane expans (Alt 3)	4-lane expans (Alt 1)	Connect Roads and Interch	Old Plank Road Trail	WIS 23 Connection Roads, Grade Separation, and Interchange		US 151/WIS 23 System Interchange		
								No Pres	Preferred Pres	Preferred No Pres	23-1 Pres	23-2 Pres
A72	Meadows	0.18	0.51	0.51	0.18	0	0	0	0	0	0	0
A73	Meadows	0.15	0.15	0.15	0.15	0	0	0	0	0	0	0
A74	Shrub Scrub	0.21	0.08	0.08	0.15	0	0	0	0	0	0	0
A75	Meadows	0.26	0.26	0.26	0.24	0	0	0	0	0	0	0
A76	Meadows	1.21	0.14	0.14	0.19	0	0	0	0	0	0	0
A77	Meadows	1.17	1.02	1.02	0.96	0.13	0	0	0	0	0	0
A78	Meadows	0.14	0.63	0.63	0.14	0	0	0	0	0	0	0
A79	Meadows	1.51	0	0	0	0	0	0	0	0	0	0
A80	Meadows	0.02	0	0	0	0	0	0	0	0	0	0
A81	Meadows	0.03	0	0	0	0	0	0	0	0	0	0
A82	Meadows	0.62	0	0	0	0	0	0	0	0	0	0
A84	Meadows	0.02	0	0	0	0	0	0	0	0	0	0
A85	Meadows	0.32	0	0	0	0	0.01	0	0.26	0	0	0
A88	Meadows	0.08	0	0	0	0	0	0	0	0	0	0
A89	Meadows	0.81	0	0	0	0	0	0	0	0	0	0
A90	Meadows	0.31	0	0	0	0	0	0	0	0	0	0
A91	Meadows	0.55	0	0	0	0.33	0	0	0	0	0	0
A92	Shallow Marsh	0.06	0	0	0	0	0	0	0	0	0	0
A93	Meadows	0.28	0	0	0	0	0	0	0	0	0	0
A94	Wooded Swamp	1.29	0	0	0	0	0	0	0	0	0	0
A95	Shallow Marsh	1.39	0	0	0	0	0	0	0	0	0	0
A96	Meadows	0.64	0	0	0	0	0	0	0	0	0	0
A97	Wooded Swamp	2.17	0	0	0	0	0	0	0	0	0	0
A98	Wooded Swamp	0.89	0	0	0	0	0	0	0	0	0	0
A99	Shallow Marsh	0.22	0	0	0	0	0	0	0	0	0	0
A100	Wooded Swamp	0.03	0	0	0	0	0	0	0	0	0	0
A101	Meadows	0.08	0	0	0	0	0	0	0	0	0	0
A102	Shallow Marsh	1.14	0	0	0	0	0	0	0	0	0	0
A103	Shrub Scrub	0.28	0	0	0.11	0	0	0	0	0	0	0
A104	Meadows	0.10	0	0	0.06	0	0	0	0	0	0	0
A105	Shrub Scrub	0.12	0	0	0	0	0	0	0	0	0	0
A106	Meadows	0.19	0	0	0	0	0	0	0	0	0	0
A107	Wooded Swamp	1.45	0	0	0	0	0	0	0	0	0	0
A108	Riparian Forested	0.57	0	0	0	0	0	0	0	0	0	0
A109	Wooded Swamp	0.45	0	0	0	0	0	0	0	0	0	0
A110	Wooded Swamp	0.42	0	0	0	0	0	0	0	0	0	0
A111	Riparian Forested	2.28	0	0	0	0	0	0	0.01	0	0	0
A112	Wooded Swamp	0.41	0	0	0	0	0	0	0.03	0	0	0
A113	Wooded Swamp	11.49	0	0	0	0	0	0	0	0	0	0
A114	Meadows	0.18	0	0	0	0	0	0	0	0	0	0
A115	Meadows	0.37	0	0	0.32	0.03	0	0	0	0	0	0
A116	Meadows	0.06	0	0	0	0.06	0	0	0	0	0	0

**Table 4.6 C-1.3 Detailed Wetland Impacts by Location**  
(Alternatives 2 and 3 not updated)

Wetland Number	Wetland Name	Acres	Other Build Alternatives		Preferred Build Alternative			Corridor Preservation Alternatives				
			4-lane expans (Alt 2)	4-lane expans (Alt 3)	4-lane expans (Alt 1)	Connect Roads and Interch	Old Plank Road Trail	WIS 23 Connection Roads, Grade Separation, and Interchange		US 151/WIS 23 System Interchange		
								No Pres	Preferred Pres	Preferred No Pres	23-1 Pres	23-2 Pres
A117	Meadows	0.09	0	0	0	0	0	0	0	0	0	0
A118	Shrub Scrub	0.05	0	0	0	0	0	0	0	0	0	0
A119	Wooded Swamp	0.10	0	0	0	0	0	0	0	0	0	0
A120	Shrub Scrub	0.09	0	0	0	0	0	0	0	0	0	0
A121	Wooded Swamp	3.38	0	0	0	0	0	0	0	0	0	0
A122	Shallow Marsh	3.16	0	0	0	0	0	0	0	0	0	0
A123	Meadow	0.27	0	0	0	0	0	0	0	0	0	0
A200	Meadow	1.48	0	0	0	0	0	0	0.03	0	0	0
A201	Meadow	0.18	0	0	0.17	0	0.01	0	0	0	0	0
A202	Meadow	0.20	0	0	0.20	0	0	0	0	0	0	0
A203	Meadow	0.35	0	0	0.33	0	0.01	0	0.01	0	0	0
A204	Meadow	0.07	0	0	0.07	0	0	0	0	0	0	0
A205	Shallow Marsh	0.13	0	0	0.11	0	0.01	0	0	0	0	0
A206	Wooded Swamp	0.50	0	0	0	0	0	0	0	0	0	0
A207	Meadow	0.31	0	0	0	0	0	0	0.12	0	0	0
A208	Meadow	0.12	0	0	0.12	0	0	0	0	0	0	0
A209	Meadow	0.14	0	0	0.05	0	0.06	0	0	0	0	0
A210	Shallow Marsh	0.05	0	0	0.05	0	0	0	0	0	0	0
A211	Meadow	0.10	0	0	0	0	0.05	0	0	0	0	0
A212	Shallow Marsh	0.34	0	0	0.15	0	0.19	0	0	0	0	0
A213	Shallow Marsh	0.11	0	0	0	0	0.11	0	0	0	0	0
A214	Shrub Scrub	0.06	0	0	0.06	0	0	0	0	0	0	0
A215	Shrub Scrub	0.11	0	0	0.06	0	0.05	0	0	0	0	0
B1 (D2 also)	Shrub Scrub	0.28	0.25	0	0	0	0	0	0	0	0	0
B2 (D3 also)	Meadows	3.72	2.30	0	0	0	0	0	0	0	0	0
B4	Riparian Emergent	3.16	2.10	0	0	0	0	0	0	0	0	0
B5	Meadows	0.01	0	0	0	0	0	0	0	0	0	0
B6	Meadows	0.01	0	0	0	0	0	0	0	0	0	0
B7	Wooded Swamp	9.24	4.00	0	0	0	0	0	0	0	0	0
B8	Meadows	0.28	0.45	0.45	0	0	0	0	0	0	0	0
B9	Meadows	0.42	0.30	0.30	0	0	0	0	0	0	0	0
B10 (A58 also)	Shrub Scrub	1.51	2.18	2.18	0	0	0	0	0	0	0	0
B11 (A57 also)	Meadows	2.54	0.70	0.70	0	0	0	0	0	0	0	0
C1 (A1 also)	Meadows	0.23	0	0.25	0	0	0	0	0	0	0	0
C2 (A2 also)	Meadows	0.18	0	0.14	0	0	0	0	0	0	0	0
C3	Riparian Emergent	2.37	0	1.50	0	0	0	0	0	0	0	0
C4	Riparian Emergent	0.99	0	0.60	0	0	0	0	0	0	0	0

**Table 4.6 C-1.3 Detailed Wetland Impacts by Location**  
(Alternatives 2 and 3 not updated)

Wetland Number	Wetland Name	Acres	Other Build Alternatives		Preferred Build Alternative			Corridor Preservation Alternatives				
			4-lane expans (Alt 2)	4-lane expans (Alt 3)	4-lane expans (Alt 1)	Connect Roads and Interch	Old Plank Road Trail	WIS 23 Connection Roads, Grade Separation, and Interchange		US 151/WIS 23 System Interchange		
								No Pres	Preferred Pres	Preferred No Pres	23-1 Pres	23-2 Pres
C5 (E1 also)	Meadows	3.77	0	1.78	0	0	0	0	0	0	0	0
C6 (E2 also)	Shallow Marsh	10.10	0	5.00	0	0	0	0	0	0	0	0
C7 (E3 also)	Meadows	5.95	0	4.00	0	0	0	0	0	0	0	0
C8	Meadows	23.26	0	12.00	0	0	0	0	0	0	0	0
C9	Wooded Swamp	8.74	0	4.00	0	0	0	0	0	0	0	0
C10	Riparian Forested	7.04	0	4.25	0	0	0	0	0	0	0	0
C11	Shallow Marsh	6.32	0	4.00	0	0	0	0	0	0	0	0
C12 (D1 also)	Meadows	0.03	0	0.09	0	0	0	0	0	0	0	0
C13	Meadows	0.15	0	0.10	0	0	0	0	0	0	0	0
C14	Meadows	0.65	0	0.50	0	0	0	0	0	0	0	0
C15	Riparian Emergent	1.04	0	0.50	0	0	0	0	0	0	0	0
C16 (A44 also)	Meadows	1.34	0	0.70	0	0	0	0	0	0	0	0
C17 (A42 also)	Meadows	4.05	0	0.20	0	0	0	0	0	0	0	0
C18 (A42 also)	Meadows	4.05	0	0.20	0	0	0	0	0	0	0	0
C19 (A43 also)	Aquatic Bed	1.89	0	0.25	0	0	0	0	0	0	0	0
C20 (A45 also)	Shallow Marsh	5.98	0	4.00	0	0	0	0	0	0	0	0
C21	Wooded Swamp	2.87	0	2.00	0	0	0	0	0	0	0	0
C22	Meadows	0.08	0	0.08	0	0	0	0	0	0	0	0
D1 (C12 also)	Meadows	0.03	0	0	0	0	0	0	0	0	0	0
D2 (B1 also)	Shrub Scrub	0.28	0	0	0	0	0	0	0	0	0	0
D3 (B2 also)	Meadows	3.72	0	0	0	0	0	0	0	0	0	0
E1 (C5 also)	Meadows	3.77	0	0	0	0	0	0	0	0	0	0
E2 (C6 also)	Shallow Marsh	10.10	0	0	0	0	0	0	0	0	0	0
E3 (C7 also)	Meadows	5.95	0	0	0	0	0	0	0	0	0	0
F1	Riparian Forested	2.71	0	0	0	0	0	0	0	0	2.71	0
F2 (G1 also)	Riparian Forested	5.60	0	0	0	0	0	0	0	0	5.59	0
F3 (G2 also)	Shrub Scrub	1.48	0	0	0	0	0	0	0	0	0.46	0
F4	Meadows	0.06	0	0	0	0	0	0	0	0	0.06	0
F5	Meadows	1.35	0	0	0	0	0	0	0	0	1.35	0
F6	Wooded Swamp	0.73	0	0	0	0	0	0	0	0	0.19	0

**Table 4.6 C-1.3 Detailed Wetland Impacts by Location**  
(Alternatives 2 and 3 not updated)

Wetland Number	Wetland Name	Acres	Other Build Alternatives		Preferred Build Alternative			Corridor Preservation Alternatives				
			4-lane expans (Alt 2)	4-lane expans (Alt 3)	4-lane expans (Alt 1)	Connect Roads and Interch	Old Plank Road Trail	WIS 23 Connection Roads, Grade Separation, and Interchange		US 151/WIS 23 System Interchange		
								No Pres	Preferred Pres	Preferred No Pres	23-1 Pres	23-2 Pres
F7	Wooded Swamp	0.21	0	0	0	0	0	0	0	0	0	0
F8 (G7 also)	Meadows	1.37	0	0	1.32	0	0.04	0	0	0	1.30	0
F9 (G8 also)	Shrub Scrub	1.58	0	0	0.06	0	0.38	0	0	0	0.48	0
G1 (F2 also)	Riparian Forested	5.60	0	0	0	0	0	0	0	0	0	1.23
G2 (F3 also)	Shrub Scrub	1.48	0	0	0	0	0	0	0	0	0	1.46
G3	Riparian Emergent	1.63	0	0	0	0	0	0	0	0	0	1.61
G4	Shrub Scrub	0.19	0	0	0	0	0	0	0	0	0	0.19
G5	Meadows	0.59	0	0	0	0	0	0	0	0	0	0.59
G6	Meadows	0.14	0	0	0.03	0	0	0	0	0	0	0.11
G7 (F8 also)	Meadows	1.37	0	0	0	0	0	0	0	0	0	1.29
G8 (F9 also)	Shrub Scrub	1.58	0	0	0	0	0	0	0	0	0	1.07

**4. List any observed or expected waterfowl and wildlife inhabiting or dependent upon the wetland: (List should include both permanent, migratory and seasonal residents).**

No-Build No effects. This alternative requires no wetland conversion and has no impacts to inhabiting wildlife.

Build Alternatives  
Alternative 2

Alternative 2 would impact Section 10 in the Town of Forest, which contains a high quality white cedar swamp. This block of white cedar swamp hardwoods has numerous springs and extends into the town of Marshfield. This area provides outstanding wildlife habitat for turkey and deer. Additionally, this area is one of the only ruffed grouse habitat areas in Fond du Lac County. The WDNR recommended that an endangered resource survey be conducted if this alternative were selected. In this forested block, there is a private pheasant restoration project in parts of Fond du Lac and Sheboygan Counties, including the south half of Sections 11 and 12 in the town of Forest. The critical wild pheasant habitat components are securing upland nesting cover, such as alfalfa/brome/timothy or big bluestem, Indian grass, switchgrass, and shrub-carr, or monotypic cattails for winter cover. Any loss of these habitat types would have a negative effect on the success of this restoration project.

Alternative 3

This alternative would affect mature riparian woodlands, upland foraging areas, and the sedge meadow and shallow marsh near the lower reaches of the Sheboygan River which provides nesting habitat for blue-winged teal, mallards, and ring-necked pheasants, and sandhill cranes in Section 18 of the town of Forest (Natural Resource Area No. 2). The adjacent riparian habitat and shrub swamp in this area provides habitat for deer, cottontail rabbit, and wintering ring-necked pheasant. Impacts near Natural Resource Areas No. 6 and No. 7 would affect wildlife travel corridors by minimizing already minor widths and blocks of habitat.

Preferred Build Alternative

Adjacent to the existing roadway, waterways, wetlands, and adjacent upland areas produce broods of mallards, teal, wood ducks, beaver, muskrat and other wetland-

dependent large and small mammals and reptiles. Various state-listed rare woodland bird species such as the red-shouldered hawk, Acadian flycatcher, Cerulean warbler and hooded warbler may use the lowlands found in the Mullet Creek Wildlife Area, south of the existing highway, near Hillview Road or the riparian corridor and woodlands adjacent to the Mullet River east of Greenbush. The Preferred Build Alternative does not bisect existing wetlands but generally creates additional longitudinal filling of wetlands.

#### Corridor Preservation Alternatives

##### WIS 23 Corridor

###### No Corridor Preservation

No effects. This alternative requires no wetland conversion and has no impacts to inhabiting wildlife.

###### Preferred WIS 23 Corridor Preservation

The Preferred WIS 23 Corridor Preservation Alternative would preserve areas that contain wetlands and inhabiting wildlife. Wildlife expected in the corridor preservation areas includes the species listed for the Preferred Build Alternative. The future transportation improvements associated with these corridor preservation areas, if constructed, would have similar impacts as those listed with the Preferred Build Alternative.

##### US 151/WIS 23 Interchange

###### Preferred No Corridor Preservation

No effects. This alternative requires no wetland conversion and has no impacts to inhabiting wildlife.

###### Option 23-1 and Option 23-1 Corridor Preservation

Option 23-1 and Option 23-2 Corridor Preservation Alternatives would not affect wildlife. Wildlife expected in the corridor preservation areas includes the species listed for the Preferred Build Alternative. The future transportation improvements associated with these corridor preservation options, if constructed, would have similar impacts as those listed with the Preferred Build Alternative.

## 5. Federal Highway Administration (FHWA) Wetland Policy:

- Not Applicable - Explain
- Individual Wetland Finding Required - Summarize why there are no practicable alternatives to the use of the wetland.

Avoiding wetland areas was a key factor in the selection of the Preferred Build Alternative. The on-alignment Alternative 1 had fewer wetland impacts than the off-alignment Alternatives 2 and 3. Avoidance of wetlands was also considered in the placement of the additional lanes. Both the Pit Road and Old Wade House wetland mitigation sites were avoided by switching the placement of the new lanes for the 4-lane expansion to the opposite side of the road. Because the project expands the existing 2-lane roadway to a divided 4-lane roadway, there is no practicable alternative to the use of the wetlands that would be affected. Off-alignment alternatives have greater impacts, and alternatives that do not expand WIS 23 do not satisfy the project Purpose and Need. Wetland impacts would be further minimized through design efforts and appropriate mitigation would be provided. See Section 6.8 for a mitigation summary.

Since the publication of the 2010 ROD, wetland impacts have increased from what was presented in the 2010 FEIS. This is primarily because the updated wetland delineation identified more wetland areas within the WIS 23 area of effect.

- Statewide Wetland Finding: **NOTE: All three boxes below must be checked for the Statewide Wetland Finding to apply.**
- Project is either a bridge replacement or other reconstruction within 0.3 mile of the existing location.
- The project requires the use of 7.4 acres or less of wetlands.

- The project has been coordinated with the DNR and there have been no significant concerns expressed over the proposed use of the wetlands.

**6. Erosion control or storm water management practices which would be used to protect the wetland are indicated on form: (Check all that apply)**

- Factor Sheet D-6, Erosion Control Impact Evaluation  
 Factor Sheet D-5, Stormwater Impact Evaluation  
 Neither Factor Sheet - Briefly describe measures to be used

**7. US Army Corps of Engineers (USACE) Jurisdiction - Section 404 Permit (Clean Water Act):**

- Not Applicable – No fill to be placed in wetlands or wetlands are not under USACE jurisdiction.  
 Applicable - Fill would be placed in wetlands under the jurisdiction of the USACE

Indicate area of wetlands filled: Approximately 48.1 acres of wetlands would be filled with the Preferred Build Alternative. No wetlands would be filled with the corridor preservation measures. See Table 4.6 C-1.3 for a listing of wetlands filled by each alternative that was investigated.

Type of 404 permit anticipated:

- Individual Section 404 Permit required.  
 General Permit (GP) or Letter Of Permission (LOP) required to satisfy Section 404 Compliance.

Indicate which GP or LOP is required:

- Non-Reporting GP  
 Provisional GP  
 Provisional LOP  
 Programmatic GP

Expiration date of 404 Permit, if known \_\_\_\_\_

**8. Section 10 Waters (Rivers and Harbors Act). For navigable waters of the United States (Section 10) indicate which 404 permit is required:**

- No Section 10 Waters.

Indicate whether Pre-Construction Notification (PCN) to the U.S. Corps of Engineers(USACE) is:

- Not applicable.  
 Required: Submitted on: (Date)

Status of PCN

USACE has made the following determination on: (Date)

USACE is in the process of review, anticipated date of determination is: (Date)

Wetland sequencing by WisDOT and an individual Section 404 wetland permit would be required from the USACE. Appropriate wetland mitigation would be required for the 404 permit and the Section 401 Water Quality certification that may be issued by WDNR.

**9. Wetland Avoidance and Impact Minimization:** [Note: Required before compensation is acceptable]

A. Wetland Avoidance:

1. Describe methods used to avoid the use of wetlands, such as using a lower level of improvement or placing the roadway on new location, etc.:

Avoidance of wetlands was first investigated through the construction of a lower-build 2-lane alternative. These alternatives did not satisfy the project purpose and need. The wetlands were avoided through the selection of the WIS 23 alignment location, on-alignment versus off-alignment.

- For the WIS 23 expansion, the Preferred Build Alternative, on-alignment alternative (Alternative 1), when compared to off-alignment Alternatives 2 and 3, has fewer direct impacts (filling). It also has fewer indirect impacts (alteration of associated recharge,

buffering, or critical habitat protection) to more ecologically significant wetlands such as wooded swamp, riparian recharge areas, and shrub/scrub habitats. Such differences are noted by greater impacts to wooded swamps and riparian forested/emergent habitat types shown in Table 4.6 C-1.3.

- The Preferred Build Alternative, Alternative 1, has impacts to more easily restorable wetland habitats such as wet meadow and shallow marsh. Both types are easily restorable through altering hydrology at a determined mitigation site containing hydric soils. The wetland impacts of Alternatives 2 and 3 included wooded swamps and riparian floodplains which are more difficult to restore and/or mitigate.

Further avoidance occurred in the selection of where the additional lanes would be constructed. Generally the additional 2 lanes were placed where the least amount of wetland impacts would occur. This included:

- Placing the additional lanes on the north side of the existing highway near the Old Wade House mitigation site to minimize impacts to this wetland mitigation site.
- Placing the additional lanes on the south side of the existing highway near Pit Road to avoid impacts to the Pit Road Wetland Mitigation Site.

2. Indicate the total area of wetlands avoided:

Selection of Alternative 1 as the Preferred Alternative reduced wetland impacts by 12.4 to 28.9 acres compared to other 4-lane Build Alternatives, depending on which off-alignment alternative it is being compared to.

Altering the placement of lanes is estimated to avoid 3 to 5 additional acres at specific wetland mitigation areas.

B. Minimize the amount of wetlands affected:

1. Describe methods used to minimize the use of wetlands, such as a increasing of side slopes or use of retaining walls, equalizer pipes, upland disposal of hydric soils, etc.:

Specific wetland minimization efforts are noted on the WIS 23 wetland type and alignment maps provided in Figures 4.6 C-1.2 to 4.6 C-1.6. Areas where design modifications minimized wetlands impacts include:

- Steepened slopes near Pit Road.
- Steepened slopes on WIS 23 between Poplar Road and Hinn Road.
- Alignment modifications and shifts to the north at County U and east of Scenic View Drive.
- Steepened slopes near the Mullet River crossing with an extended box culvert.

Further minimization measures will be considered during final design.

2. Indicate the total area of wetlands saved through minimization:

It is estimated that an additional 3-5 acres of wetlands were saved based on increases in side slopes.

#### 10. Compensation for Unavoidable Wetland Loss:

According to Section 401 (b) (1) of the Clean Water Act, unavoidable wetland losses must be mitigated on-site, if possible. If no on-site opportunities exist, near/off-site wetland compensation sites must be considered. If neither exists, the losses may be debited to an existing wetland mitigation bank site.

WisDOT is planning on-site mitigation to compensate for the impacts associated with the WIS 23 Preferred Build Alternative at two sites in Fond du Lac county. The first property is owned by WisDOT

and has approximately 50 acres that could be used for mitigation. This site would be mostly wetland creation. This planned site is in the Mullet River watershed.

A second property is being considered in the town of Empire. As of January 2013, it is in private ownership. If implemented, from 70 to 90 acres would be acquired and mitigation would focus on wetland restoration. About 10 acres of the site is currently wetlands where a preservation credit may be pursued. The other acreage were previously wetlands that have been ditched and drained. With these acres which an enhancement credit will be pursued. This second site is in the Sheboygan River watershed.

It is anticipated that the first property could provide about 20 acres of credit and the second property could provide more than 40 acres of credit. This appears to be sufficient for mitigation needs. If it is not, additional on-site and near site properties will be pursued.

If changes occur that prevent the implementation of these plans, WisDOT would continue the pursuit of on-site mitigation opportunities.

**11. If on-site compensation is not possible, explain why and describe how a search for an off-site compensation site was conducted:**

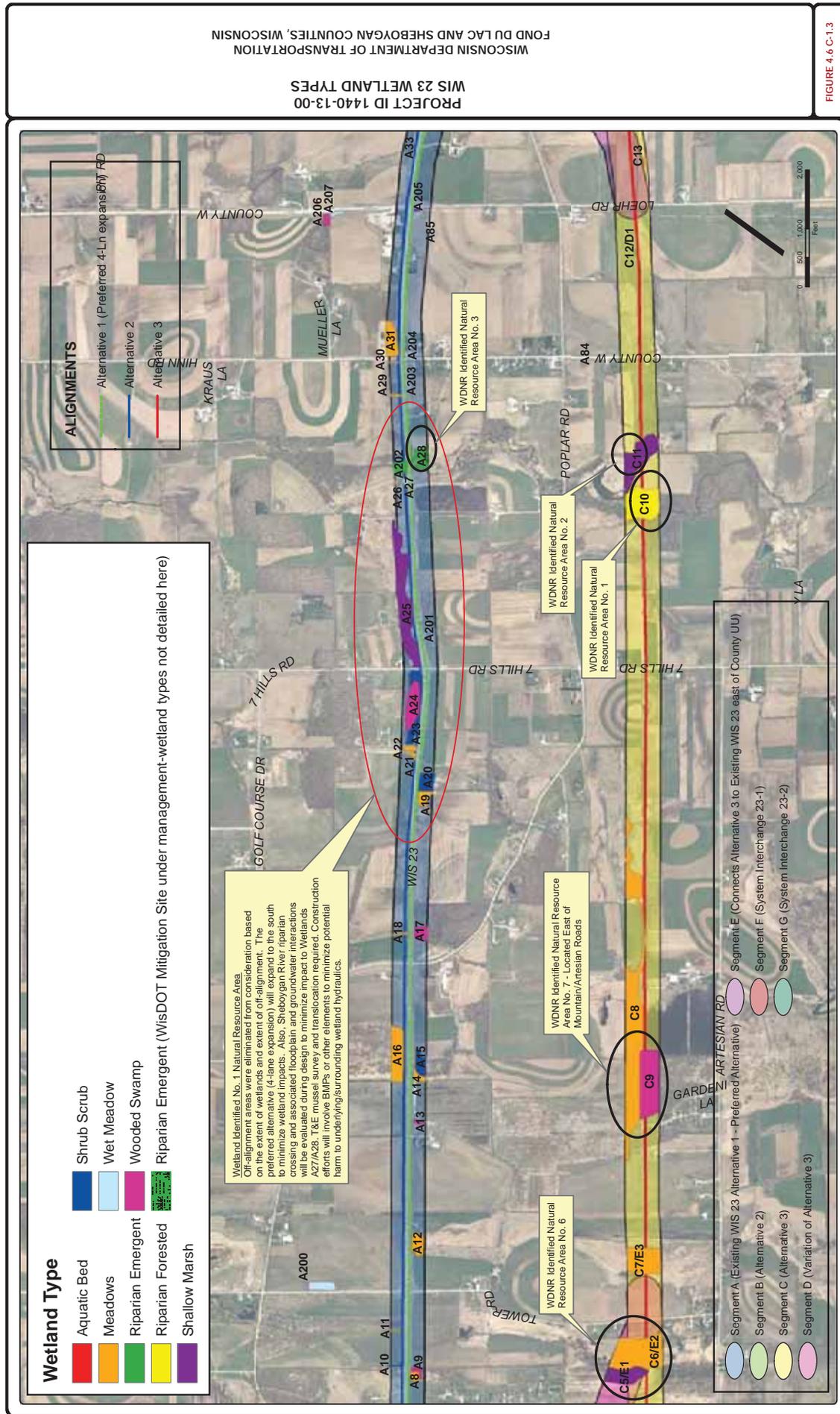
On-site mitigation of highway wetland impacts is a priority of WisDOT. Currently it is not anticipated an off-site mitigation site would be required. If on-site plans are not able to be implemented, WisDOT would work with WDNR to find suitable wetland mitigation site options.

**12. Summarize the coordination with other agencies regarding the compensation for unavoidable wetland losses: Attach appropriate correspondence:**

WisDOT and WDNR staffs have jointly identified impacted wetlands and potential wetland mitigation sites in the vicinity of the highway project as the corridor field reviews were being conducted.

The final wetland mitigation plan would be developed during final design with input from WDNR staff.

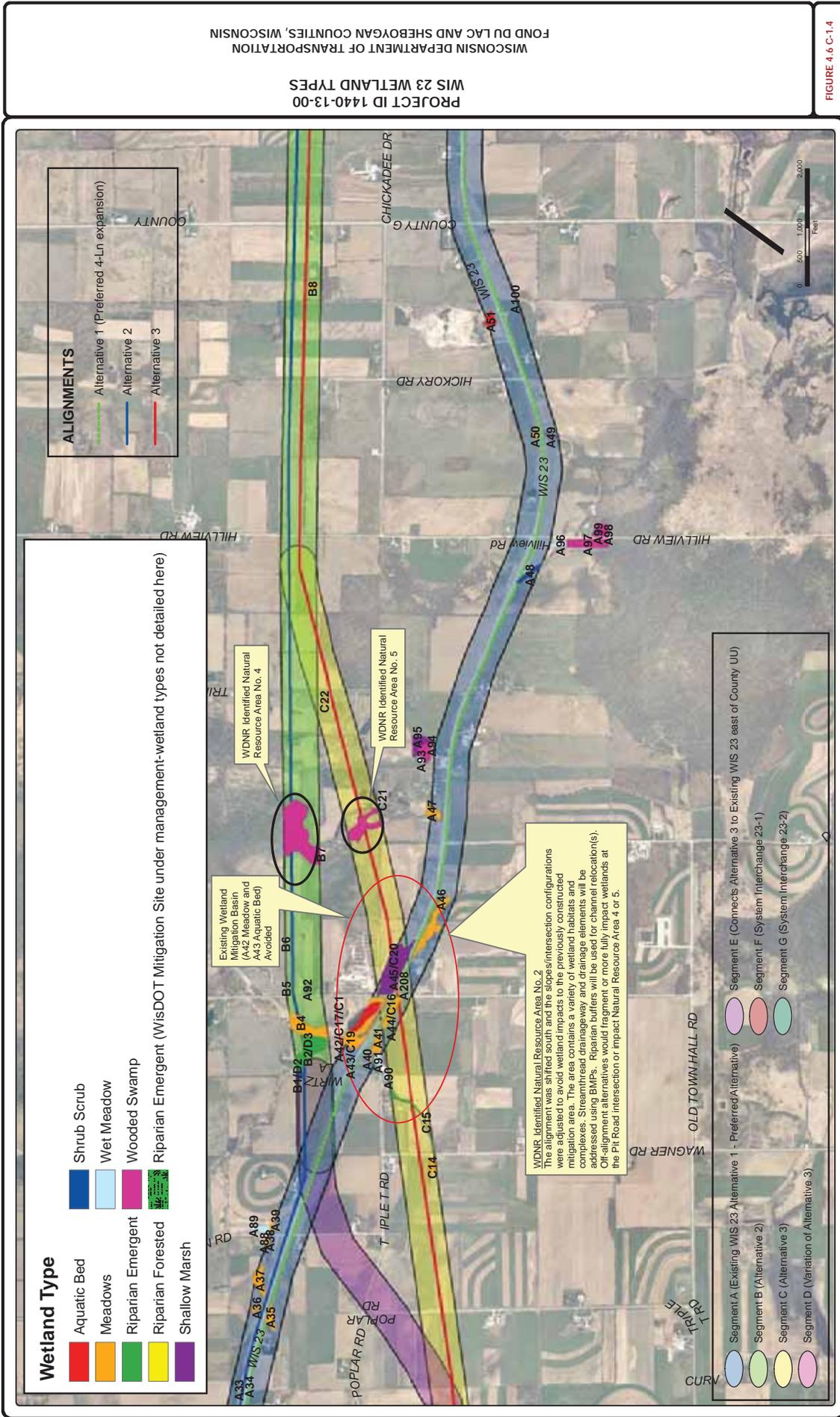




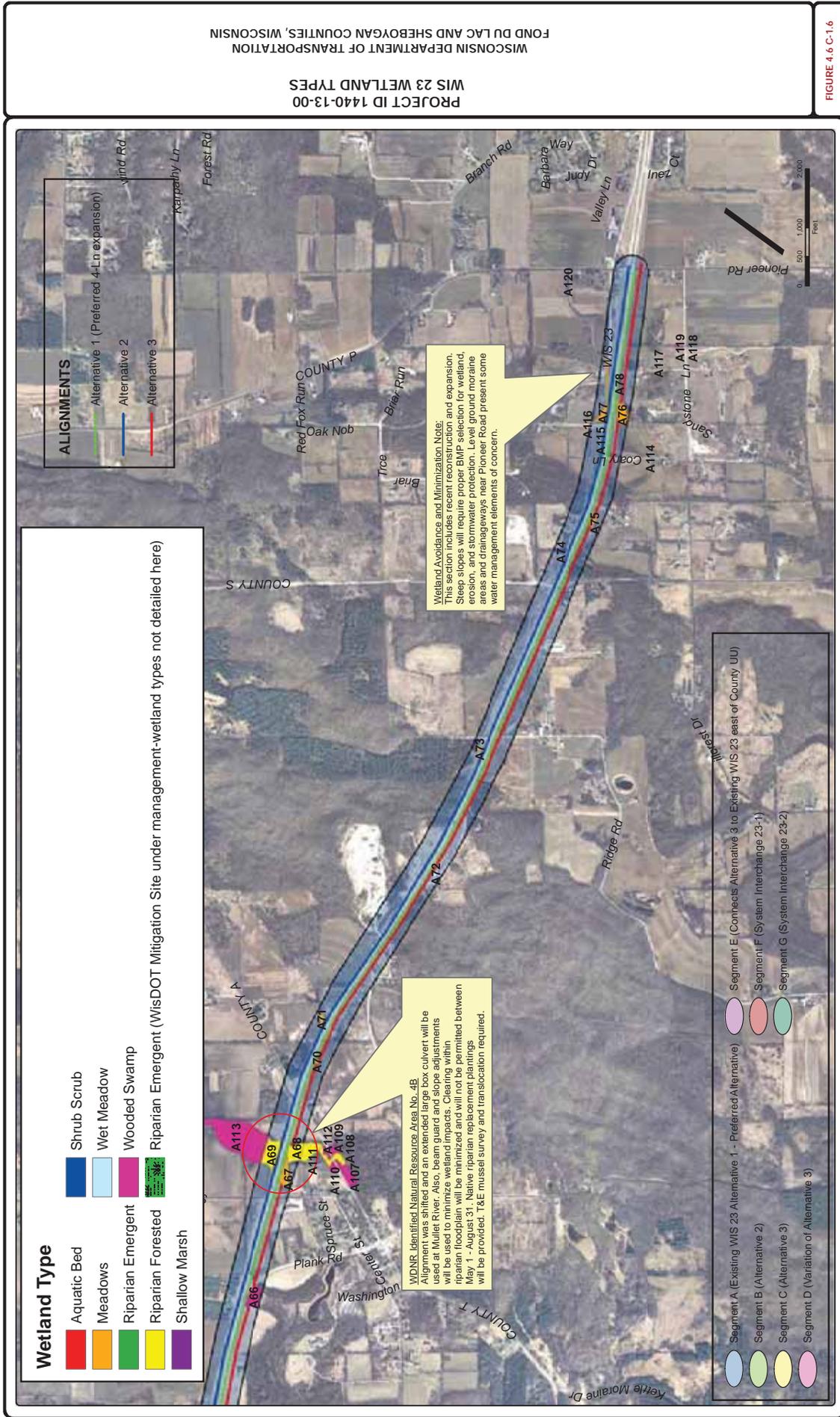
PROJECT ID 1440-13-00  
 WIS 23 WETLAND TYPES  
 WISCONSIN DEPARTMENT OF TRANSPORTATION  
 FOND DU LAC AND SHEBOYGAN COUNTIES, WISCONSIN

FIGURE 4.6 C-1.3

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The Rivers, Streams, and Floodplains Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated, but there are no substantive changes from the 2010 FEIS.

## RIVERS, STREAMS AND FLOODPLAINS EVALUATION

Factor Sheet C-2

1. Stream Name: Sheboygan River

2. Stream Type: (Indicate Trout Stream Class, if known)

- Unknown  
 Warm water  
 Cold water

If trout stream, identify trout stream classification: \_\_\_\_\_

- Wild and Scenic River

3. Size of Upstream Watershed Area: (Square miles or acres)

Approximately 14,580 acres

4. Stream flow characteristics:

- Permanent Flow (year-round)  
 Temporary Flow (dry part of year)

5. Stream Characteristics:

A. Substrate:

1.  Sand  
 2.  Silt  
 3.  Clay  
 4.  Cobbles  
 5.  Other-describe: **Gravel**

B. Average Water Depth: 0.5 to 1.5 feet

C. Vegetation in Stream

- Absent  
 Present - If known describe: Unknown at this time

D. Identify Aquatic Species Present:

Northern pike, bullheads, carp, forage fish. Upstream stretches are brook trout waters. Freshwater mussels identified in 2003 survey at this road crossing included cylindrical papershell, creek heel splitter, and the state threatened slippershell mussel (*Alasmidonta Viridus*). Based on WDNR threatened and endangered species coordination, there is the possibility that additional mussels could be located in the watershed or project area. The WDNR specialists indicate this could include ellipse mussel (*Venustaconta Viridus*) and endangered rainbow shell mussel (*Villosa Iris*).

E. If water quality data is available, include this information:

General Stream water quality: Good in headwaters, fair to poor in lower reaches, very poor in lower 14 miles of the Sheboygan River (near Lake Michigan) because of PCB contamination. The river segment on the WIS 23 project is not listed as impaired. Greatest threats to stream water quality include contaminated sediments habitat modification agricultural runoff municipal point sources industrial point sources urban runoff construction site erosion and dams.



Figure 4.6 C-2.1 Sheboygan River Crossings

F. Is this river or stream on the WDNR's "Impaired Waters" list

- No  
 Yes - List: \_\_\_\_\_

**6. If bridge or box culvert replacement, are migratory bird nests present?**

- Not Applicable  
 None identified  
 Yes – Identify Bird Species present  
 Estimated number of nests is:

**7. Is a U. S. Fish Wildlife Depredation Permit required to remove swallow nests?**

- Not Applicable  
 Yes (7 as of February 2004)  
 No - Describe mitigation measures:  
 The construction project contract documents will contain avoidance language in the Special Provisions.

**8. Describe land adjacent to stream**

The north side of WIS 23 includes a successional wooded floodplain vegetation corridor 50 to 100 feet wide with croplands to the northeast and conservation lands, including a tree farm, to the northwest. Much of these idle lands are in a mapped floodplain both north and south of the WIS 23 river crossing. The south side of WIS 23 is open with wetlands and a utility line that has cleared trees.

For the Preferred Build Alternative (Alternative 1) and Alternative 2, the adjacent land can be characterized as floodplain containing wetlands, wet meadow, mowed and idle pasture, and active agricultural lands.

For Alternative 3, the adjacent land can be characterized as floodplain containing a pond and wetlands described as fairly intact sedge meadow as well as degraded wet meadow. The upland area adjacent to the sedge meadow is half-forested and half-planted in native prairie vegetation.

**9. Identify upstream or downstream dischargers or receivers (if any) within 0.8 kilometers (1/2 mile) of the project site:**

None.

**10. Describe proposed work in, over, or adjacent to stream. Indicate whether the work is within the 100-year floodplain and whether it is a crossing or a longitudinal encroachment:**

[Note: Coast Guard must be notified when Section 10 waters are affected by a proposal. Also see Wetland Evaluation, Factor Sheet C-1, Question 8.]

Wisconsin's administrative rule NR 116 governs floodplain management in Wisconsin. It generally does not allow construction within a floodplain that increases flood levels for the regional 100-year flood by more than 0.01 feet. The 100-year flood has a 1 percent chance of being equaled or exceeded during any given year. It can also be termed the 1 percent flood since this relates the event to an annual time period instead of a 100-year time period. A backwater is the level of a stream or river, upstream of a bridge or culvert. NR 116 regulates the raising of the backwater by more than 0.01 feet during the regional 100-year flood. Culverts and bridges must be sized wide enough so that water flow is unimpeded through the structure. If backwater is raised, coordination must occur with floodplain zoning authorities and property owners must be compensated.

For the Preferred Build Alternative (Alternative 1) and Alternative 2, a new bridge would be constructed adjacent to the existing bridge over the Sheboygan River. The existing bridge would remain. An expanded encroachment would travel across the floodplain. Existing channel conditions would be maintained. The Old Plank Road Trail would require its own separate bridge.

Alternative 3 would require the construction of two bridges spanning the width of the river, also with minimal impact to the waterway. The encroachment would travel across the floodplain and existing channel conditions would be maintained.

**11. Discuss the effects of any backwater which would be created by the proposed action. Indicate whether the proposed activities would be in compliance with NR 116 by creating 0.01 ft. backwater or less:**

At this location a new single span bridge is proposed for the Sheboygan River crossing for the extra set of lanes. A new bridge would be constructed over this river to carry the extension of the Old Plank Road Trail. The combination of the three bridges at this location (eastbound, westbound, and the Old Plank Road Trail) will cause an increase of 1 foot of backwater for a 100-year flood to occur between the westbound and eastbound WIS 23 bridges. Modeling indicated this increase would be contained to the highway right of way and should not flood any adjacent property. The backwater immediately downstream of the westbound structure for a 100-year flood increases by approximately 0.05 feet. Between the eastbound WIS 23 and Old Plank Road Trail structures, the backwater increase for a 100-year flood is between 0.07 feet to 0.26 feet. This backwater increase should be contained on the highway right of way between the roadway and the trail. Upstream of the Old Plank Road Trail structure, the backwater increase for a 100-year flood is approximately a maximum of 0.23 feet immediately upstream of the structure and then dissipates to normal existing levels approximately 0.7 mile upstream. Since the added lanes primarily match the existing profile of the existing WIS 23 roadway, a similar profile is desired for the new lanes to avoid reconstruction of the existing WIS 23 bridge. Different profile alternatives were considered, such as raising both bridge profiles, but effects to backwater were negligible and structure costs increased significantly so they were dismissed. Raising the profile also made it more difficult to construct a single span bridge.

**12. Describe and provide the results of coordination with any floodplain zoning authority:**

WisDOT is in the process of coordinating with the appropriate zoning coordination (Fond du Lac County)

**13. Would the proposal or any changes in the design flood, or backwater cause any of the following impacts?**

- No impacts would occur.
- Significant interruption or termination of emergency vehicle service or a community's only evacuation route.
- Significant flooding with a potential for property loss and a hazard to life.
- Significant impacts on natural floodplain values such as flood storage, fish or wildlife habitat, open space, aesthetics, etc.

Because all of the increase in backwater effects will occur on WisDOT right of way, no impacts will occur to private property. The backwater effects will not disrupt transportation on WIS 23 or other roadways.

**14. Discuss existing or planned floodplain use and briefly summarize the project's effects on that use:**

The embankment for bridge structures will fill a portion of the floodplain. As mentioned in question 13, the floodplain will rise within WisDOT right of way. Impacts outside of WIS 23 right of way are anticipated to be negligible.

**15. Discuss probable direct impacts to water quality within the floodplain, both during and after construction. Include the probable effects on plants, animals, and fish inhabiting or dependent upon the stream:**

Marsh excavation and replacement fill will likely be placed in floodplain wetlands for approach work for any bridge structure. General grading will also occur within the floodplain for the construction of these structures. Erosion control practices will be implemented during construction to minimize sediments entering waterways. Adverse impacts to water quality will be minimized during and after construction using bank stabilization materials and erosion control devices approved within WisDOT's Product Acceptability List (PAL).

Preferred Build Alternative (Alternative 1) and Alternative 2

Postconstruction impacts would be the same as the existing river crossing. These alternatives will have modest impacts to plant and animal loss because the floodplain wetlands are fairly monotypic and the animals using these wetlands will have similar habitat to move to.

To minimize potential impacts to rare freshwater mussels, the WDNR would be surveying and translocating mussels from the construction area prior to construction. Since a narrow riparian corridor borders the stream to the north and open grass lands exist to the south, the area does not provide as much habitat or plant and wildlife refuge as other waterways near theettle Moraine State Forest.

#### Alternative 3

This alternative would create new runoff to the floodplain and wetland areas. Alternative 3 will have a negative impact to plants and animals within the floodplain as the floodplain wetland contains highly diverse vegetation for many animal species. There are few sedge meadows for animal species to relocate to therefore, the impact here would be much greater than the Preferred Build Alternative or Alternative 2. Fish impacts would be minimal.

#### 16. Are measures proposed to enhance beneficial effects?

No

Yes. Describe: \_\_\_\_\_

As mentioned, a single span bridge will be used for both the new WIS 23 bridge as well as the Old Plank Road Trail river crossing.

The Rivers, Streams, and Floodplains Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated, but there are no substantive changes from the 2010 FEIS.

**RIVERS, STREAMS AND FLOODPLAINS EVALUATION**

**Factor Sheet C-2**

**1. Stream Name: Unnamed tributary of the Sheboygan River**

**2. Stream Type: (Indicate Trout Stream Class, if known)**

- Unknown
- Warm water
- Cold water

If trout stream, identify trout stream classification: \_\_\_\_\_

- Wild and Scenic River

**3. Size of Upstream Watershed Area: (Square miles or acres)**  
 Approximately 1,445 acres

**4. Stream flow characteristics:**

- Permanent Flow (year-round)
- Temporary Flow (dry part of year)

**5. Stream Characteristics:**

A. Substrate:

- 1.  Sand
- 2.  Silt
- 3.  Clay
- 4.  Cobbles
- 5.  Other-describe: \_\_\_\_\_

B. Average Water Depth: 6 to 12 inches

C. Vegetation in Stream

- Absent
- Present - If known describe: Duckweed and algae with rice cutgrass and reed canary grass.

D. Identify Aquatic Species Present:  
 Warm water forage fish.

E. If water quality data is available, include this information:

The headwaters of this tributary originate just south of WIS 23. General water quality in the Sheboygan River Watershed is good in headwaters, fair to poor in lower reaches, very poor in the lower 14 miles of the Sheboygan River because of PCB contamination. This tributary is distant to the part of the Sheboygan River that is listed as impaired. General threats to stream water quality include contaminated sediments habitat modification agricultural runoff and construction site erosion.

F. Is this river or stream on the WDNR's "Impaired Waters" list

- No
- Yes - List: \_\_\_\_\_



**Figure 4.6 C-2.2 Unnamed Tributary to Sheboygan River**

**6. If bridge or box culvert replacement, are migratory bird nests present?**

- Not Applicable  
 None identified  
 Yes – Identify Bird Species present  
 Estimated number of nests is:

**7. Is a U. S. Fish Wildlife Depredation Permit required to remove swallow nests?**

- Not Applicable  
 Yes  
 No - Describe mitigation measures:

**8. Describe land adjacent to stream**

For Alternative 2, which at this location is north of the existing WIS 23 roadway, adjacent land uses include a shallow marsh. The waterway feeds the cedar swamp to the north and intersects the swamp.

For the Preferred Build Alternative (Alternative 1) and Alternative 3, adjacent land uses include wet meadow, cropland and lightly wooded ditches. The WisDOT Pit Road Wetland Mitigation Site exists northwest of WIS 23 and Pit Road. The wetland area appears to receive flow of the tributary as waters head north.

**9. Identify upstream or downstream dischargers or receivers (if any) within 0.8 kilometers (1/2 mile) of the project site:**

As noted above, the WisDOT Pit Road Wetland Mitigation Site is a receiver of water conveyed with the tributary.

**10. Describe proposed work in, over, or adjacent to stream. Indicate whether the work is within the 100-year floodplain and whether it is a crossing or a longitudinal encroachment: [Note: Coast Guard must be notified when Section 10 waters are affected by a proposal. Also see Wetland Evaluation, Factor Sheet C-1, Question 8.]**

According to FEMA maps, no 100-year floodplain exists in the location of this tributary.

For Alternative 2, the work would include new grading of 4 lanes crossing the tributary and the installation of appropriate culvert pipes for the new roadways.

For the Preferred Build Alternative (Alternative 1) and Alternative 3, the work would include grading for 2 additional lanes with the installation of two new culverts.

**11. Discuss the effects of any backwater which would be created by the proposed action. Indicate whether the proposed activities would be in compliance with NR 116 by creating 0.01 ft. backwater or less:**

Wisconsin's administrative rule NR 116 governs floodplain management in Wisconsin. It generally does not allow construction within a floodplain that increases flood levels for the regional 100-year flood by more than 0.01 feet. The 100-year flood has a 1 percent chance of being equaled or exceeded during any given year. It can also be termed the 1 percent flood since this relates the event to an annual time period instead of a 100-year time period. A backwater is the level of a stream or river, upstream of a bridge or culvert. NR 116 regulates the raising of the backwater by more than 0.01 feet during the regional 100-year flood. Culverts and bridges must be sized wide enough so that water flow is unimpeded through the structure. If the backwater flood elevation is raised, coordination must occur with floodplain zoning authorities and property owners must be compensated.

For the Preferred Build Alternative (Alternative 1) and Alternative 3, backwater level would not change from the existing condition. The new culverts for the additional lanes have been designed to accommodate the regional 100-year flood. Currently one 36-inch pipe carries the flow of this tributary the cattle pass which exists west of the pipe is not designed for drainage. The cattle pass is not being used, so it will be removed with this project. Normal culvert pipe sizing indicated two 54-inch pipes

would adequately carry the flow of this tributary. The size increase was necessary to accommodate the increased length of the culvert as a result of the additional lanes.

For Alternative 2, new culverts would need be constructed that would span the full 4 lanes. These culverts would be designed large enough so that they would accommodate the regional 100-year flood with increasing flood levels or backwater by more than 0.01 feet.

**12. Describe and provide the results of coordination with any floodplain zoning authority:**

Since this culvert is not in a floodplain, no coordination has occurred with any floodplain zoning authority.

**13. Would the proposal or any changes in the design flood, or backwater cause any of the following impacts?**

- No impacts would occur for the Preferred Build Alternative (Alternative 1) or Alternative 3.
- Significant interruption or termination of emergency vehicle service or a community's only evacuation route.
- Significant flooding with a potential for property loss and a hazard to life.
- Significant impacts on natural floodplain values such as flood storage, fish or wildlife habitat, for Alternative 2 which would construct a 4-lane off-alignment roadway through the floodplain.

**14. Discuss existing or planned floodplain use and briefly summarize the project's effects on that use:**

For the Preferred Build Alternative (Alternative 1) and Alternative 3, the embankment associated with the new lanes will not fill a floodplain because according to FEMA maps no floodplain exists.

For Alternative 2, impacts are likely to be minimal and a hydrology and hydraulics study would be performed to be sure the potential impacts are in compliance with NR 116.

Note that a WisDOT-constructed wetland mitigation site exists northwest of the WIS 23-Pit Road intersection and one function of the area is floodplain storage and wetland habitat replacement.

**15. Discuss probable direct impacts to water quality within the floodplain, both during and after construction. Include the probable effects on plants, animals, and fish inhabiting or dependent upon the stream:**

According to FEMA maps, there is no floodplain in this area. The tributary will have a longer culvert to flow through, adversely affecting some aquatic life. General grading would occur near the stream bank for the installation of these pipes. Erosion control practices would be implemented during construction to minimize sediments entering waterways. Adverse impacts to water quality could include sedimentation and increased chlorides from winter maintenance. Adverse impacts to water quality would be minimized during and after construction using bank stabilization materials and erosion control devices approved within WisDOT's PAL. Postconstruction impacts would be similar to the existing channel crossing for the Preferred Build Alternative and Alternative 3. Alternative 2 would create new runoff to the area, downstream from the existing highway.

**16. Are measures proposed to enhance beneficial effects?**

- No
- Yes. Describe: \_\_\_\_\_

The Rivers, Streams, and Floodplains Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated, but there are no substantive changes from the 2010 FEIS.

## RIVERS, STREAMS AND FLOODPLAINS EVALUATION

Factor Sheet C-2

### 1. Stream Name: Mullet River

### 2. Stream Type: (Indicate Trout Stream Class, if known)

- Unknown  
 Warm water  
 Cold water

If trout stream, identify trout stream classification:

The middle of the river, from the city of Plymouth to the village of Glenbeulah, has an increase in spring flow that lowers stream water temperatures and is classified as a Cold Water Community stream (trout). Upstream of Glenbeulah and downstream of WIS 67 near the city of Plymouth, the Mullet River is

classified as a Warm Water Sport Fish Community stream. The Mullet River is unique in that it flows from the warm water headwaters into a cold water segment.

- Wild and Scenic River

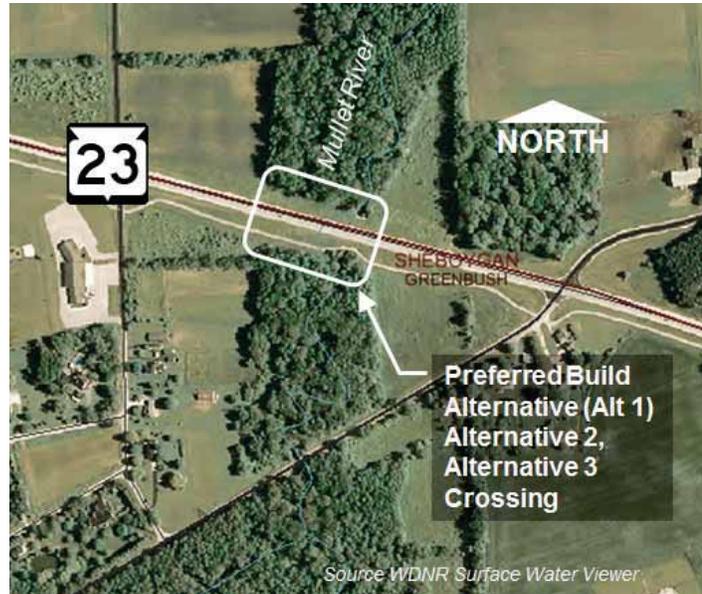


Figure 4.6 C-2.3 Mullet River

### 3. Size of Upstream Watershed Area: (Square miles or acres) Approximately 20,940 acres

### 4. Stream flow characteristics:

- Permanent Flow (year-round)  
 Temporary Flow (dry part of year)

### 5. Stream Characteristics:

#### A. Substrate:

1.  Sand
2.  Silt
3.  Clay
4.  Cobbles
5.  Other-describe: **Gravel**

B. Average Water Depth: 1 to 3 feet

#### C. Vegetation in Stream

- Absent  
 Present - If known describe: Limited emergent vegetation boarded by shrubs and wetland forbs.

#### D. Identify Aquatic Species Present:

Warm water sport fish as well as some warm and cold water forage fish. Species include creek chubs and minnows, suckers, sunfish, bass, bullhead, northern pike and rainbow trout. Freshwater mussels were identified in a wading survey performed in 2000. They included both the ellipse (*Venustaconcha Ellipsiformis*) and slippershell (*Alasmidonta Viridis*) state threatened species. Additional common or rare mussels may also be found.

Factor Sheet C-2.3

E. If water quality data is available, include this information:

This segment of the Mullet River starts at Otter Pond near Glenbeulah and terminates at Mullet Lake. The segment runs through the Little Moraine State Forest Northern Unit, the Mullet Creek State Wildlife Area, and the Old Wade State Park. Water quality conditions are good, but there are fewer springs in this reach. This segment of the Mullet River also has areas of altered flow resulting from channelization and impoundments.

F. Is this river or stream on the WDNR's "Impaired Waters" list

- No  
 Yes - List: \_\_\_\_\_

6. If bridge or box culvert replacement, are migratory bird nests present?

- Not Applicable  
 None identified  
 Yes – Identify Bird Species present  
 Estimated number of nests is:

7. Is a U. S. Fish Wildlife Depredation Permit required to remove swallow nests?

- Not Applicable  
 Yes  
 No - Describe mitigation measures:

8. Describe land adjacent to stream

Waterway and adjacent upland areas produce broods of mallards, teal, and wood ducks and litters of beaver and muskrat.

All Build Alternatives

Land adjacent to the river for all the Build Alternatives, including the Preferred Build Alternative, includes floodplain-containing wetlands described as wet meadow and mowed right of way. Areas north of WIS 23 include forested lowlands and upland hardwood trees of moderate and large size. Areas south of WIS 23 are similarly wooded and include the existing Old Plank Road Trail crossing that was specially designed to minimize disturbance to wetlands and forested lands of the town of Greenbush's property.

9. Identify upstream or downstream dischargers or receivers (if any) within 0.8 kilometers (1/2 mile) of the project site:

The Old Wade House has a mill pond on the Mullet River west and southwest of this crossing.

10. Describe proposed work in, over, or adjacent to stream. Indicate whether the work is within the 100-year floodplain and whether it is a crossing or a longitudinal encroachment: [Note: Coast Guard must be notified when Section 10 waters are affected by a proposal. Also see Wetland Evaluation, Factor Sheet C-1, Question 8.]

Wisconsin's administrative rule NR 116 governs floodplain management in Wisconsin. It generally does not allow construction within a floodplain that increases flood levels for the regional 100-year flood by more than 0.01 feet. The 100-year flood has a 1 percent chance of being equaled or exceeded during any given year. It can also be termed the 1 percent flood since this relates the event to an annual time period instead of a 100-year time period. A backwater is the level of a stream or river, upstream of a bridge or culvert. NR 116 regulates the raising of the backwater by more than 0.01 feet during the regional 100-year flood. Culverts and bridges must be sized wide enough so that water flow is unimpeded through the structure. If the backwater flood elevation is raised, coordination must occur with floodplain zoning authorities and property owners must be compensated.

All Build Alternatives cross the river at the same location and would cross the 100-year floodplain. For each alternative, the work would include a culvert extension adjacent to the existing Mullet River culvert. The existing culvert would remain. The work would include constructing an embankment across the floodplain for the 2 new travel lanes. Existing channel conditions would be maintained. Tree clearing restrictions during the nesting period would apply to minimize potential impacts to rare woodland species. Additionally, freshwater mussel surveys and translocation may be necessary.

**11. Discuss the effects of any backwater which would be created by the proposed action. Indicate whether the proposed activities would be in compliance with NR 116 by creating 0.01 ft. backwater or less:**

A hydraulic analysis has not yet been performed for the Mullet River box culvert extension but is planned prior to construction. Culvert design will address backwater impacts. The culvert would be designed in compliance with NR 116 and NR 320 and would be designed to pass the regional (100-year) flood. Appropriate sizing and placement of structures will be incorporated into the project design to minimize potential hindering of animal and reptile movements along the corridor's waterways.

**12. Describe and provide the results of coordination with any floodplain zoning authority:**

Mapped floodplains border the project. No zoning coordination has been performed but it will occur upon completion of the hydraulic modeling of the culvert.

**13. Would the proposal or any changes in the design flood, or backwater cause any of the following impacts?**

- No impacts would occur.
- Significant interruption or termination of emergency vehicle service or a community's only evacuation route.
- Significant flooding with a potential for property loss and a hazard to life.
- Significant impacts on natural floodplain values such as flood storage, fish or wildlife habitat, open space, aesthetics, etc.

Impacts would be the same for each alternative. No change to design flood evaluation would occur.

**14. Discuss existing or planned floodplain use and briefly summarize the project's effects on that use:**

The existing floodplain consists of wooded swamp and agricultural fields and local plans continue those land uses. The floodplain use would remain for the most part in the same condition as before construction. Some clearing and grubbing and loss of forested riparian habitat would occur. The project would have minimal to moderate effect on the floodplain, with some grading up to the floodplain for the new structure and additional lanes. New structures may fill a portion of the floodplain however a hydrology and hydraulics study would be performed to be sure the potential impacts are in compliance with NR 116.

**15. Discuss probable direct impacts to water quality within the floodplain, both during and after construction. Include the probable effects on plants, animals, and fish inhabiting or dependent upon the stream:**

A portion of the floodplain will be filled to support the additional lanes. Also, extension of the culvert will require excavation. Marsh excavation and replacement fill would be placed in floodplain wetlands for approach work for the culvert. General grading would also occur within the floodplain for the construction of these structures. This will require clearing of the wooded vegetation near the culvert extension. Long term effects to water quality could include increased sedimentation and chlorides from winter maintenance activities. Additionally, the longer culvert could adversely affect some aquatic life. Erosion control practices would be implemented during construction to minimize sediments entering waterways. Adverse impacts to water quality would be minimized during and after construction using bank stabilization materials and erosion control devices approved within WisDOT's PAL.

Postconstruction impacts would be similar to what exists with the current river crossing. Each alternative minimizes impacts to plant and animal loss in the floodplain. Animals using these wetlands would have similar habitat remaining after the project. To minimize potential impacts to rare freshwater mussels, the WDNR would survey and translocate mussels from the construction area prior to construction.

**16. Are measures proposed to enhance beneficial effects?**

- No
- Yes. Describe: \_\_\_\_\_

The Rivers, Streams, and Floodplains Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated, but there are no substantive changes from the 2010 FEIS.

**RIVERS, STREAMS AND FLOODPLAINS EVALUATION**

**Factor Sheet C-2**

1. Stream Name: Taycheedah Creek

2. Stream Type: (Indicate Trout Stream Class, if known)

- Unknown
  - Warm water
  - Cold water
- If trout stream, identify trout stream classification:

Wild and Scenic River

3. Size of Upstream Watershed Area: (Square miles or acres)  
Approximately 16,345 acres

4. Stream flow characteristics:

- Permanent Flow (year-round)
- Temporary Flow (dry part of year)

5. Stream Characteristics:

A. Substrate:

- 1.  Sand
- 2.  Silt
- 3.  Clay
- 4.  Cobbles
- 5.  Other-describe: \_\_\_\_\_

B. Average Water Depth: About 1 foot. Floodplain width is about 1,165 feet at the roadway crossing.

C. Vegetation in Stream

- Absent
- Present - If known describe: Varies from open water to partially emergent **wetland vegetation** in the areas of US 151 and WIS 23 Taycheedah Creek wetland mitigation site.

D. Identify Aquatic Species Present:

Species include, warm water **rough and forage fish** such as minnows, sunfish, bass, suckers, and carp. Also some Lake Winnebago game fish such as bass and northern pike may be present in the system during high flow/high water years.

E. If water quality data is available, include this information:  
Unknown

F. Is this river or stream on the WDNR's "Impaired Waters" list

- No
- Yes - List: \_\_\_\_\_

6. If bridge or box culvert replacement, are migratory bird nests present?

- Not Applicable
- None identified
- Yes – Identify Bird Species present  
Estimated number of nests is: \_\_\_\_\_



Figure 4.6 C-2.4 Taycheedah Creek

Figure 4.6 C-2.4

**7. Is a U. S. Fish Wildlife Depredation Permit required to remove swallow nests?**

- Not Applicable  
 Yes  
 No - Describe mitigation measures:

If improvements associated with the Option 23-1 Corridor Preservation were implemented, the improvement would be reevaluated in a NEPA document and mitigation measures would be implemented. Swallow nests would be reviewed before final design. If nests were found, a depredation permit would be obtained. The need for a permit may be avoided by removing all inactive nests prior to May 15 and installing acceptable netting under the existing superstructure. The netting should be maintained until August 20 or until the existing superstructure is completely removed.

**8. Describe land adjacent to stream**

Areas east of US 151 contain riparian and open woodlands and reverting agricultural lands. Business park development is also active beyond the stream and floodplain to the north. Areas to the west include idle floodplain lands, urban development, WisDOT wetland mitigation lands, and a multiuse trail. Waterway and adjacent upland areas produce broods of mallards, teal, wood ducks, and litters of beaver and muskrat. The floodplain-containing wetlands are described as wet meadow, riparian emergent, and forested emergent creek banks.

A WisDOT wetland mitigation site borders Taycheedah Creek to the west of US 151. The site contains three irregularly shaped basins that provide wildlife habitat, pike rearing waterways, and channels connected to the creek. Additional restored habitat includes wet meadow and wet mesic prairie.

**9. Identify upstream or downstream dischargers or receivers (if any) within 0.8 kilometers (1/2 mile) of the project site:**

WisDOT Taycheedah Creek wetland mitigation area as noted above.

**10. Describe proposed work in, over, or adjacent to stream. Indicate whether the work is within the 100-year floodplain and whether it is a crossing or a longitudinal encroachment: [Note: Coast Guard must be notified when Section 10 waters are affected by a proposal. Also see Wetland Evaluation, Factor Sheet C-1, Question 8.]**

Since the Preferred Corridor Preservation option is no corridor preservation, there is no proposed work. Both US 151/WIS 23 Interchange Corridor Preservation Options would have covered the same portion of the river. The Corridor Preservation in itself would have no impacts to the creek. If implemented, each interchange would include two new bridges and replacement of two existing bridges. The bridges would also cross a proposed road. If implemented, these improvements would be evaluated in a NEPA document.

**11. Discuss the effects of any backwater which would be created by the proposed action. Indicate whether the proposed activities would be in compliance with NR 116 by creating 0.01 ft. backwater or less:**

Bridge design would address backwater impacts. Bridges and culverts would be designed in compliance with NR 116 and NR 320 and would be designed to pass the regional 100-year flood. Appropriate sizing and placement of structures would be incorporated into the project design to minimize potential hindering of animal and reptile movements along the corridor's waterways.

**12. Describe and provide the results of coordination with any floodplain zoning authority:**

Mapped floodplains border the project. No zoning coordination has been completed separate from the public involvement completed to date because no construction improvements are being proposed for this area.

**13. Would the proposal or any changes in the design flood, or backwater cause any of the following impacts?**

- No impacts would occur.
- Significant interruption or termination of emergency vehicle service or a community's only evacuation route.
- Significant flooding with a potential for property loss and a hazard to life.
- Significant impacts on natural floodplain values such as flood storage, fish or wildlife habitat, open space, aesthetics, etc.

Impacts would be similar for each system interchange associated with each Corridor Preservation Option. No changes to flood plain evaluation would occur.

**14. Discuss existing or planned floodplain use and briefly summarize the project's effects on that use:**

The existing floodplain of Taycheedah Creek is extensive and would be impacted **if improvements associated with the corridor preservation options were implemented**. Floodplain and passive recreational lands cover much of the floodplain as well as some fringe areas of existing urban development. Floodplain areas remaining after construction would retain some existing conditions and functions. Option 23-1 Corridor Preservation has the largest footprint within the wooded floodplains east of US 151. Option 23-2 Corridor Preservation improvements, **if implemented**, would require bridging to avoid floodplains, wetlands, and the WisDOT wetland mitigation site west of US 151. **Since the Preferred Corridor Preservation option is no corridor preservation, no effects will occur to this floodplain.**

**15. Discuss probable direct impacts to water quality within the floodplain, both during and after construction. Include the probable effects on plants, animals, and fish inhabiting or dependent upon the stream:**

The corridor preservation options, in themselves, would have no impact on the floodplain. **If improvements associated with the corridor preservation options were implemented**, marsh excavation and replacement fill would likely be placed in floodplain wetlands. General grading would also occur within the floodplain for the construction of these structures. Postconstruction impacts would be the same as the existing river crossing. Each alternative would have impacts to plant and animal life in the floodplain wetlands and riparian habitat. **A warm water fishery construction season limitation would likely apply to this stream. Water quality impacts could include sedimentation and increased chlorides. Since the Preferred Corridor Preservation Option is no corridor preservation, no impacts will occur.**

**16. Are measures proposed to enhance beneficial effects?**

- No
- Yes. Describe: \_\_\_\_\_

**If improvements were implemented**, structure design for the transportation improvements associated with the Corridor Preservation Options would consider existing conditions and items of concern during final design. If constructed, the structures could reduce fill quantities to avoid impacts to the WisDOT wetland mitigation site. Considerations can include use of longer structures that span more of the floodplain, and steeper side slopes that decrease the footprint in the floodplain.

The Upland Wildlife and Habitat Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated, but there are no substantive changes from the 2010 FEIS.

## UPLAND WILDLIFE AND HABITAT EVALUATION

## Factor Sheet C-5

### 1. Proposed Work in Upland Areas:

- A. Describe the nature of proposed work in the upland habitat area (e.g., grading, clearing, grubbing, etc.):

The 4-lane expansion of the Preferred Build Alternative (Alternative 1), Alternative 2, and Alternative 3 includes constructing additional lanes that would require land from adjacent agricultural fields and woodlots. All three alternatives would also acquire land from the Northern Unit of the Little Moraine State Forest and construct an underpass for the Ice Age Trail and State Equestrian Trail. These activities would require clearing of trees and grading uplands. Grading work would include flattening of slopes and ditching.

No-Build Alternative This alternative requires no upland conversion and has no impacts.

All Build Alternatives All alternatives travel through agricultural fields, vacant uplands, and small woodlots. All build alternatives also travel through the Northern Unit of the Little Moraine State Forest in Sheboygan County. This section of the alternatives have upland habitat bordering extensive forested blocks or corridor of substantial habitat. Work would include clearing and grubbing upland areas and the placement of fill for the additional set of lanes.

Alternatives 2 and 3 These alternatives run through Section 10 in the Town of Forest. This forested area within the corridor limits would need to be fully cleared and filled for the new road bed.

Preferred Build Alternative The Preferred Build Alternative would require 47.9 acres of upland habitat. The 4-lane expansion (Alternative 1) requires 38.4 acres of upland including about 2.21 acres required from the Little Moraine State Forest. The connection roads and interchanges require about 2.2 acres of upland and the Old Plank Road Trail requires 7.3 acres of upland. This area would be cleared and grubbed so fill could be placed for the additional set of lanes. These values are lower than those listed in the 2010 FEIS due to minimization efforts during design.

### Corridor Preservation Alternatives

#### WIS 23 Corridor

##### No Corridor Preservation

No effects. The WIS 23 No Corridor Preservation Alternative would leave land unencumbered from development restrictions.

##### Preferred WIS 23 Corridor Preservation

The Preferred WIS 23 Corridor Preservation Alternative would preserve for future transportation improvements 8.5 acres of upland habitat. Initially this land would be undisturbed. If in the future improvements associated with the corridor preservation were constructed, this land would be cleared and fill would be placed for the new road embankments.

#### US 151/WIS 23 Connection

##### Preferred No Corridor Preservation

No effects. The Preferred US 151/WIS 23 No Corridor Preservation Alternative would leave land unencumbered from development restrictions.

## Option 23-1 and Option 23-2 Corridor Preservation

Option 23-1 Corridor Preservation would preserve 5.9 acres of uplands for future transportation improvements. Option 23-2 Corridor Preservation would preserve 0.1 acres of uplands for future transportation improvements. If improvements associated with these preservation areas were constructed, the areas would be cleared for grading of improvements.

**2. Vegetation/Habitat:**

- A. Give a brief description of the upland habitat area. Include prominent plant community(ies) at the project site (list vegetation with a brief description of each community type if more than one present).

No-Build Alternative This alternative requires no upland conversion and has no impacts to plant communities.

All Build Alternatives The majority of the plant communities being altered are the same for all Build Alternatives including the Preferred Build Alternative. The alternatives run through agricultural fields, idle fields, and small woodlots. All build alternatives also travel through the Northern Unit of theettle Moraine State Forest. Wildflowers, native and introduced grasses, sumac, maple, oak, and birch are found in the forest. Disturbances would be limited to the edges of habitat areas. In field reviews, the WDNR identified 7 different high quality habitat areas, Natural Resource Areas, and submitted comments regarding them to WisDOT. These WDNR identified Natural Resource Areas<sup>9</sup> are shown in Figures 4.6 C-1.2 to C-1.6.

Alternatives 2 and 3 These alternatives run predominantly through farmland but also through cedar woodlands and cover plant life such as alfalfa/brome/timothy or big bluestem, Indian grass, and switch grass. Various project identified habitat areas or natural resource areas are described and shown in Figures 4.6 C-1.2 to C-1.6.

Preferred Build Alternative

The Preferred Build Alternative would cover plant communities described in the Build Alternatives. Because the Preferred Build Alternative travels along the existing roadway alignment, disturbances would be limited to the edges of habitat areas. WDNR located Natural Resource Areas are mainly avoided with this alternative. An exception to this is Natural Resource Area No. 3, a river crossing which has more wetland and threatened and endangered mussel species than upland habitat.

Corridor Preservation AlternativesWIS 23 CorridorNo Corridor Preservation

This alternative requires no upland conversion and has no impacts to plant communities.

Preferred WIS 23 Corridor Preservation

The Preferred WIS 23 Corridor Preservation Alternative contains areas with similar plant communities to those described in the Build Alternatives, except they are localized to side-road crossings.

US 151/WIS 23 InterchangePreferred No Corridor Preservation

This preferred alternative requires no upland conversion and has no impacts to plant communities.

<sup>9</sup> The term "Natural Resource Area" is used solely as an identifier within this document and does not connote any special designations or protections.

## Option 23-1 and Option 23-2 Corridor Preservation

US 151/WIS 23 Interchange Corridor Preservation Options (23-1 and 23-2) contain areas described under the Build Alternatives. Option 23-2 also travels adjacent to and over the Taycheedah Creek wetland mitigation site and associated uplands.

## B. Would the project result in changes in the vegetative cover of the roadside

No-Build Alternative

This alternative requires no upland conversion and has no impacts to plant communities.

All Build Alternatives

The majority of the plant communities that would be altered along existing WIS 23 already have some level of disturbance. Disturbances would be limited to the edges of habitat areas. All of the build alternatives would alter fields, woodlands, and WDNR identified Natural Resource Areas. The off-alignment portions of Alternatives 2 and 3 would greatly change the local vegetative cover. However emphases on native species replanting's could help address this issue.

Utility relocations associated with the project may affect some upland habitat. It is anticipated that the majority of these relocations would occur within or directly adjacent to the proposed right of way and are associated primarily with pole relocations and conduit placement. These impacts are reasonably represented by the effects described in this section.

Alternatives 2 and 3

These alternatives run predominantly through farmland but also through cedar woodlands and cover plant life such as alfalfa/brome/timothy or big bluestem, Indian grass, and switch grass. On off-alignment areas the alternatives would clear the habitat area for a corridor width of 200 to 300 feet and place embankment for the new roadbed. Slopes would be seeded with native grasses. When these Alternatives are following the existing WIS 23 alignment, including through theettle Moraine State Forest, they would clear a swath of 100 to 150 feet. This would remove wildflowers, various grasses and sumac. Through the area within the forest, maple, oak, and birch would also be affected.

Preferred Build Alternative

The Preferred Build Alternative would clear one side of the existing WIS 23 roadway for a swath of 100 to 150 feet. Wildflowers, various grasses, and sumac would be cleared. Grass and plant species in the right of way would be based on similarities to adjacent habitat types. Slopes of the new embankment would be planted with native grasses. Where the alternative runs through theettle Moraine State Forest, some clearing of maple, oak, and birch would occur.

Corridor Preservation AlternativesWIS 23 Corridor

## No Corridor Preservation

This alternative requires no upland conversion and would not affect vegetative cover.

## Preferred WIS 23 Corridor Preservation

The Preferred WIS 23 Corridor Preservation Alternative would not affect vegetative cover.

US 151/WIS 23 Interchange

## Preferred No Corridor Preservation

This preferred alternative requires no upland conversion and **would not change vegetative cover.**

## Option 23-1 and Option 23-2 Corridor Preservation

US 151/WIS 23 Interchange Corridor Preservation Options (23-1 and 23-2) **requires no upland conversion and would not change vegetative cover.**

**3. Wildlife:**

- A. Identify and describe any observed or expected wildlife associations with the plant community(ies) **listed in question #1:**

No-Build Alternative

This alternative requires no upland conversion and has no impacts to wildlife associations.

All Build Alternatives

The seven different WDNR-identified Natural Resource Areas within the project (See Figures 4.6 C-1.2 to C-1.6) and the Little Moraine State Forest environment provide excellent wildlife habitat for whitetail deer, hawks, turkeys, raccoons, squirrels, and possums.

Alternatives 2 and 3

These alternatives impact 3 to 5 of the 7 WDNR-identified Natural Resource Areas. One of the WDNR-identified Natural Resource Areas, Section 10 in the Town of Forest, provides excellent wildlife habitat for turkey and deer. Additionally, this area is one of the only ruffed grouse habitat areas in Fond du Lac County. The WDNR recommended that an endangered resource survey be conducted if either of these alternatives were selected. A private Lands Wildlife Biologist has a wild pheasant restoration project in parts of Fond du Lac and Sheboygan Counties, including the south half of Sections 11 and 12 in the town of Forest. The critical wild pheasant habitat areas are preserving nesting cover.

Preferred Build Alternative

The Preferred Build Alternative would have similar wildlife associations as described in the Build Alternatives. **Based on proximity to existing roadways, extensive wildlife habitat associations and communities are limited.**

Corridor Preservation AlternativesWIS 23 Corridor

## No Corridor Preservation

This alternative requires no upland conversion and has no impacts to wildlife associations.

## Preferred WIS 23 Corridor Preservation

Areas within the Preferred WIS 23 Corridor Preservation Alternative would have similar wildlife associations as described within the Build Alternatives.

US 151/WIS 23 Interchange

## Preferred No Corridor Preservation

This preferred alternative requires no upland conversion and has no impacts to wildlife associations.

## Option 23-1 and Option 23-2 Corridor Preservation

Areas within US 151/WIS 23 Corridor Preservation Options (23-1 and 23-2) would have similar wildlife associations as described within the Build Alternatives.

- B. Identify and describe any known wildlife or bird use areas or movement corridors that would be severed or affected by the proposed action:

As with WDNR- identified Natural Resource Areas, other upland areas containing habitat 150-200 feet wide have the opportunity to provide food, shelter, cover, water, and movement corridors. The two primary areas of concern for the Preferred Build Alternative would be the wildlife corridor of the Sheboygan and Mullet Rivers and areas where extensive road fill already direct or redirect wildlife crossings. Theettle Moraine State Forest area is an existing wildlife corridor that is also already severed by the existing WIS 23 roadway. Additional lanes would make this crossing wider. The underpass for the Ice Age Trail and State Equestrian Trail would provide a safe wildlife crossing location. Measures such as fencing will be considered in the design of the underpass to encourage wildlife use of the crossing.

Alternatives 2 and 3 would sever the town of Forest Section 10 upland area as well as between 2 to 5 of the WDNR-identified Natural Resource Areas.

- C. Discuss other direct impacts on wildlife and estimate significance:

The area adjacent to the cedar wetlands on Alternative 2 has a wild pheasant restoration project which could be affected by Alternative 2. Pheasant populations in this area are subject to continued suitable overwintering habitat and nesting habitat protection. Populations may be very cyclical. If populations have declined or if birds have dispersed then habitat loss could be considered an important impact.

All Build Alternatives could affect nesting habitat of blue-winged teal, mallards, ring-necked pheasants and sandhill cranes. Because these species are prevalent, most of these impacts could be considered modest and not significant. Species would relocate their nesting areas to adjacent habitat.

Although the potential direct impacts to wildlife could increase with any Build Alternative, the Preferred Build Alternative is on-alignment and has the opportunity to minimize direct impacts.

- D. Identify and discuss any probable indirect impacts on wildlife in the area expected due to the project:

Currently the State does not own all the land within the proposed forest boundary. Sometimes road improvements can encourage residential development, which can influence the ability of the state to purchase lands within the park boundary. However, with the reduced access associated with the Preferred Build Alternative, the potential for increased development within the proposed park boundary is probably reduced.

An indirect impact to wildlife that may occur is increased wildlife mortality because of increased vehicle-wildlife collisions. This impact may be realized once the width of the highway corridor is increased, and as anticipated, the traffic volumes increase.

- E. Describe measures to avoid and/or minimize adverse effects or to enhance beneficial effects:

Efforts to minimize adverse effects for upland habitat corridor in theettle Moraine State Forest area would include adhering to WDNR specific recommendations regarding environmental protection, providing an underpass for the Ice Age Trail and State Equestrian Trail. WisDOT would continue working with WDNR and the USFWS to design the crossing, as well as suitable fencing and native vegetation plantings. The design characteristics of the underpass would seek to encourage wildlife crossings. The possible use of fencing along the highway would help funnel wildlife to the crossing, possibly improving wildlife crossing conditions compared to the existing conditions.

Throughout the design process, upland forest habitat would be avoided where possible to limit impacts and minimize losses. Disturbed vegetation would be replaced with suitable WisDOT native grasses and native trees and shrubs. In areas that could be considered environmental corridors, clearing would be minimized to limit impacts to native communities and large forest areas.

Lowland and upland habitat exists and would be impacted at the Mullet River crossing and near theettle Moraine forest lands. To minimize potential impacts to breeding areas or populations of rare, woodland birds, the project designers can work with WDNR staff to limit clearing and grubbing in these areas. Restrictions on clearing or tree removal during the nesting period would preclude nesting or disturbance to a nest after it has become active.

The Threatened and Endangered Species Evaluation Factor Sheet is a new factor sheet that was not yet available when the 2010 FEIS was released. This factor sheet collects threatened and endangered species that was present in other portions of the document and relocates it to one place. The Threatened and Endangered Species information has been augmented as a result of updated information from winter of 2012 coordination with the WDNR.

**THREATENED AND ENDANGERED SPECIES EVALUATION**

**Factor Sheet C-7**

**1. Are there any known threatened or endangered species in the vicinity of the project?**

- None identified
- Yes - Identify the species and indicate its status on Federal or State lists:

Threatened, endangered, or special concern species are identified in Table 4.6 C-7.1 (following pages) and represent the single federally protected species and 20 state protected species in the project vicinity.

The singular federally-listed species is the federally-endangered Whooping Crane (*Grus americana*) This species depends on large, open wetland ecosystems to eat, roost, and make their nests. No known nesting or migrational sites are known for the corridor. A migratory nonessential experimental population (NEP) is listed by the United States Fish and Wildlife Service (USFWS) for Fond du Lac and many other counties in Wisconsin. Since this species distribution is not restricted to Wisconsin and because of the extent of the mid-western experimental population expansion project of the USFWS, the species is not extensively tracked by the WDNR within the Natural Heritage Inventory (NHI).

The state protected species designations include 5 state endangered species, 12 threatened species, and 3 state special concern species.

<b>Table 4.6 C-7.1 Rare Species within WIS 23 Townships</b>							
<b>Group Name</b>	<b>Species Common Name</b>	<b>Species Scientific Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Potentially Affected by Project</b>		
END	Endangered, THR	Threatened, SC	Special Concern	N	No, Y	Yes, ND	Not Determined
Plant	Forked Aster	<i>Aster furcatus</i>	-	THR			N
Plant	Yellow Gentian	<i>Gentiana alba</i>	-	THR			N
Plant	Snow Trillium	<i>Trillium nivale</i>	-	THR			Y
Plant	Marsh Valerian	<i>Valeriana sitchensis ssp. ulginosa</i>	-	THR			N
Plant	Many Headed Sedge	<i>Carex sychnocephala</i>	-	SC			N
Plant	Yellow Evening Primrose	<i>Calylophus serrulatus</i>	-	SC			N
Mussel	Slippershell Mussel	<i>Alasmidonta viridis</i>	-	THR			Y
Mussel	Ellipse Mussel	<i>Venustaconcha ellipsiformis</i>	-	THR			Y
Mussel	Rainbow Shell Mussel	<i>Villosa iris</i>	-	END			Y
Bird	Red Shouldered Hawk	<i>Buteo lineatus</i>	-	THR			Y
Bird	Cerulean Warbler	<i>Dendroica cerulea</i>	-	THR			Y
Bird	Acadian Flycatcher	<i>Empidonax virescens</i>	-	THR			Y
Bird	Hooded Warbler	<i>Wilsonia citrina</i>	-	THR			Y
Bird	Whooping Crane	<i>Grus americana</i>	*NEP	-			N
Bird	American Bittern	<i>Botaurus lentiginosus</i>	-	SC/M			N
Snail	Midwest Pleistocene Vertigo Snail	<i>Vertigo hubrichti**</i>	-	END**			N-ND
Snake	Butlers garter snake	<i>Thamnophis butleri</i>	-	THR			N
Snake	Eastern Ribbon Snake	<i>Thamnophis sauritus</i>	-	END			N

Group Name	Species Common Name	Species Scientific Name	Federal Status	State Status	Potentially Affected by Project
END	Endangered, THR	Threatened, SC	Special Concern	N	No, Y Yes, ND Not Determined
Turtle	Blandings Turtle	Emydoidea blandingii	-	THR	Y
Fish	Striped Shiner	Luxilus chrysocephalus	-	END	N
Butterfly	Swamp Metalmark	Calephelis muticum	-	END	N
*Experimental population, nonessential (NEP)					
**WDNR addition though initially distant T16N, R18E currently under evaluation for removal from Threatened List as of May 2012					

## 2. Explain How a Species Is or Is Not Affected by the Action:

Species Not Affected:

Communication with the WDNR indicates that the WDNR has no current concern, as of December 12, 2012, for 10 of the 20 state-listed species and the federally-listed species occurring in the WIS 23 corridor vicinity. Table 4.6 C-7.2 lists species that are considered to be unaffected by the project or not of concern, and the reason why.

Species Type	Species Common Name	Species Scientific Name	State or Fed. Listed	Level of Protection	Reason Not Affected or Not of Concern
END	Endangered, THR	Threatened, SC	Special Concern	NHI	Natural Heritage Inventory
Plant	Forked Aster	Aster furcatus	State	THR	Variable habitat with some dolomite or calcareous soil affinity. No NHI occurrences on-alignment. No identified habitat on-alignment.
Plant	Marsh Valerian	Valeriana sitchensis ssp. ulginosa	State	THR	Occurs in calcareous, coniferous swamps. Wet to mesic, peaty, calcareous soils. No NHI occurrences on-alignment. No identified habitat on-alignment.
Plant	Many Headed Sedge	Carex sychnocephala	State	SC	Muddy, sandy, marly, and peaty shorelines of lakes and ponds. Wet, sandy, peaty, calcareous soils. No NHI occurrences on-alignment. No identified habitat on-alignment.
Plant	Yellow Evening Primrose	Calylophus serrulatus	State	SC	Found mostly on steep bluff prairies along the Mississippi and lower St. Croix Rivers cedar glades and, occasionally, in moist prairies. No identified habitat on-alignment.
Plant	Yellow Gentian	Gentiana alba	State	THR	May exist in ditches and drainages in the corridor. Population stable, Tolerant of disturbance, may be delisted.
Bird	Whooping Crane	Grus americana	Federal	* Non-essential population	Experimental population, no nesting in corridor.
Bird	American Bittern	botaurus lentiginosus	State	SC/M	Avian species. No critical habitat of preference on-alignment.
Butterfly	Swamp Metalmark	Celephelis muticum	State	END	No known fens or swamps impacted. No known habitat or host plants identified in project proximity.
Fish	Striped Shiner	Luxilus chrysocephalus	State	END	Aquatic species with no known local occurrences.

Table 4.6 C-7.2 Unaffected Species					
Species Type	Species Common Name	Species Scientific Name	State or Fed. Listed	Level of Protection	Reason Not Affected or Not of Concern
END	Endangered, THR	Threatened, SC	Special Concern	NHI	Natural Heritage Inventory
Snake	Butlers Garter Snake	Thamnophis butleri	State	THR	Corridor specific investigation. No populations detected. Population stable, may be delisted.
Snake	Eastern Ribbon Snake	Thamnophis sauritus	State	END	Semi-aquatic snake primarily found in bog relics and associated vegetation near or south of the Tension one. Corridor specific investigation. No populations detected.

Species Affected:

WisDOT and the WDNR, and WisDOT consultants have conducted numerous field investigations of the WIS 23 project corridor since the project was initiated in the early 2000s. Currently the WDNR has provided comments for the Preferred Build Alternative regarding the ten rare (threatened, endangered, and special concern species) likely to be affected that are shown in Table 4.6 C-7.3. Recommendations are summarized in the January 2013 WDNR agency coordination record located in Appendix D.

Table 4.6 C-7.3 Affected Species				
Type	Species Common Name	Species Scientific Name	State or Fed. Listed	Level of Protection
END	Endangered, THR	Threatened, SC	Special Concern	
Plant	Snow Trillium	Trillium nivale	State	THR
Snail	Midwest Pleistocene Vertigo upland snail	Vertigo hurichti	State	END
Turtle	Blandings Turtle	Emydoidea blandingii	State	THR
Mussel	Rainbow shell Mussel	Villosa iris	State	END
Mussel	Slippershell mussel	Alasmidonta viridis	State	THR
Mussel	Ellipse mussel	Venustaconcha ellipsiformis	State	THR
Bird	Cerulean warbler	Dendroica cerulean	State	THR
Bird	Acadian flycatcher	Empidonax virescens	State	THR
Bird	Hooded warbler	Wilsonia citrine	State	THR
Bird	Red shouldered hawk	Buteo lineatus	State	THR

There are no known federally threatened or endangered species being impacted by the proposed project. Whooping Cranes are listed as a experimental record/note for the Sheboygan County portion of the project. The USFWS nomenclature does not consider this an actual threatened and endangered species occurrence. It is rather a notation of a migratory area of Whooping Cranes .

3. Describe Coordination:

U.S. Fish & Wildlife Service:

Has Section 7 coordination been completed

No

Yes Describe mitigation required to protect the federally listed endangered species:

USFWS coordination has been completed on March 8, 2010. Neither the most recent threatened and endangered species data investigation nor individual

USFWS coordination has identified federally listed species of concern. No further investigation is required for the non-essential experimental population designation (NEP) for Whooping Crane for this the central portion of Wisconsin.

## WDNR

Has coordination with DNR been completed

No

Yes - December 13, 2012 and April 18, 2013 (See Appendix D)

Describe mitigation required to protect the state-listed species:

## A. Rare Plants:

To date no specific locations of individual plants nor populations of rare plants have been identified for the Preferred Build Alternative. December 2012 Natural Heritage Inventory reviews and coordination with WDNR indicates that some species have occurrences on the project corridor or within similar habitat types nearby. Based on WDNR coordination to date the WDNR has requested that plant surveys be conducted for the snow trillium (*Trillium nivale*)

## B. Rare Animals:

a. Reptiles and Amphibians: Since environmental documentation was initiated there have been changes to the categorization of two rare species. Both of these species have either management techniques that are suitable and easily employable on transportation projects. The following paragraphs summarize WDNR comments for these species. It is noted that based on recent WDNR rare and endangered species coordination, the Butler's garter snake and the Blandings turtle may be delisted from the WDNR threatened species listings. Should revisions occur to NR 27 the recommendations for these species may be reduced accordingly.

i. Butler's Garter Snake (*Thamnophis butleri*) - Threatened - requires no further investigation. Butler's garter snake was initially investigated through a field survey in 2005. These past investigations for Butler's garter snake indicate that neither a population of the snake nor special habitat management is needed for this species in the project area. Statewide the Butler's garter snake populations are stable and the species may be delisted.

ii. Blandings Turtle (*Emydoidea blandingii*) - Threatened - requires construction period protection measures. Blanding's turtle has been a common species of record or one in-need-of-mitigation for numerous years on numerous projects. Because of the more widely distributed Blandings turtle, the WDNR has requested special turtle protection measures, including exclusion fencing, be used to help protect this species.

b. Freshwater Mussels: Freshwater mussel investigations were completed previously by WDNR staff at the Sheboygan River crossing of the current alignment in Section 7 of the town of Forest and in the Mullet River in Section 10/11 of the town of Greenbush. Three rare freshwater mussel species were identified in a Sheboygan River investigation adjacent to the existing crossing and two of the three were identified at the Mullet River. WDNR will conduct wading surveys 6-9 months before construction to determine which if any of the three state-listed mussel species occur in the respective streams. Should freshwater mussel species be identified from WDNR mussel surveys, WisDOT will arrange with WDNR staff to translocate necessary species upstream.

i. Slippershell Mussel (*Alasmidonta viridis*) - Threatened

ii. Ellipse Mussel (*Venustaconcha ellipsiformis*) - Threatened

iii. Rainbow Shell Mussel (*Villosa iris*) - Endangered

c. Local Nesting Migratory Bird Species - Non-state and non-federally listed, but nesting migratory bird species are required to be protected or nests avoided. Site clearing and demolition for bridge and culvert construction will need to be scheduled to avoid migratory bird species nesting and brooding seasons - both for cavity nesting species that may occupy bridge or culvert structures and threatened or endangered woodland nesting species of neotropical migrants (see below). Work on existing structures and in floodplain forests shall be restricted during nesting period to minimize impacts on these species.

- d. Rare State-Listed Woodland Nesting Species - WDNR recommends that WisDOT specifications state that Clearing and Grubbing operations within the Mullet River and wooded environs of theettle Moraine areas will be avoided during nesting season to avoid disturbance to rare woodland nesting bird species. These species are state-listed, but have additional protections from take or disturbance during the nesting and breeding season. These restrictions allow construction at all times provided that tree removals are completed outside of this construction window limitation. If these restrictive clearing measures are not possible, WisDOT or the contractor may consider initiating incidental take arrangements 6-9 months prior to construction. Species that these limitations apply:
- i. Red Shouldered Hawk (*Buteo lineatus*) - Threatened
  - ii. Cerulean Warbler (*Dendroica cerulean*) - Threatened
  - iii. Acadian Flycatcher (*Empidomax virescens*) - Threatened
  - iv. Hooded Warbler (*Wilsonia citrine*) - Threatened

The Air Quality Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated. Updates include the following:

- The current nonattainment status of ozone for Sheboygan County.
- Wisconsin Administrative Code NR 411 which governs non-point source carbon monoxide has been repealed.
- The Mobile Source Air Toxics discussion.

**AIR QUALITY EVALUATION**

**Factor Sheet D-1**

**1. Ozone:**

**A. Is the project located in a county which is designated non-attainment or maintenance for ozone?**

**No**

**Yes. If yes, one of the following boxes must be checked:**

- This project is included in the approved Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) endorsed by the region's Metropolitan Planning Organization (MPO). The TIP was found to conform by the Federal Highway Administration and the Federal Transit Administration.

The proposed WIS 23 project is located in the Lake Michigan Intrastate Air Quality Control Region. Fond du Lac County is presently in attainment of all National Ambient Air Quality Standards (NAAQS). Sheboygan County was designated nonattainment for the 2008 Ozone Standard on April 30, 2012 (Federal Register / Vol. 77, No. 98 / Monday, May 21, 2012). Sheboygan County is also designated nonattainment for the 1997 Ozone standard, but that standard will be revoked effective July 20, 2013.

Although, the majority of the project is located outside of the Sheboygan MPO's boundaries, through interagency consultation (October 31, 2005), it was agreed this project would be included in the Assessment of Conformity of the Year 2035 Sheboygan Area Transportation Plan (SATP) and the 2007-2010 Sheboygan Metropolitan Planning Area Transportation Improvement Program (TIP). A positive conformity determination was issued by the Federal Highway Administration and the Federal Transit Administration on December 19, 2006 SATP. The TIP has since been updated for the years 2013 to 2016 and the WIS 23 project is included in the conformity analysis with a conformity finding date of February 27, 2013.

**Provide RTP Name, TIP name, MPO name, TIP number and conformity finding date(s):**

RTP Name:  
Update to the Year 2035 Sheboygan Area Transportation Plan (SATP)

TIP Name:  
Sheboygan Metropolitan Planning Area Transportation Improvement Program Calendar Years 2013-2016

MPO Name:  
Sheboygan MPO

TIP ID Number:  
No number since not in the MPO planning area

Conformity Finding Date(s):  
February 27, 2013

- This project is located outside of a Metropolitan Planning Organization's boundaries and has received a positive conformity determination per the rural conformity section of the WisDOT/WDNR Memorandum of Agreement regarding determination of conformity. Provide conformity finding date. Completed as part of Sheboygan SATP - February 27, 2013
- This project is located outside of a Metropolitan Planning Organization's boundaries and is exempt from conformity requirements per 40 CFR 93.126
- This project has been determined to be Not Regionally Significant
- Other, describe:

**2. Carbon Monoxide:****A. Is this project exempt from air quality analysis under the repealed Wisconsin Administrative Code NR 411?**

- No – NR 411 exemptions do not apply.
- Yes – NR 411 exemption(s) apply – Identify exemption(s) and explain why project is exempt.

Wisconsin Administrative Code NR 411 used to govern indirect sources of carbon monoxide by establishing a permitting process for highway and parking facilities. Proposed highway projects needed to qualify for an exemption, or model the proposed carbon monoxide emissions and obtain a permit. Wisconsin Act 121 repealed the provisions of Wisconsin Administrative Code NR 411. WisDOT still uses the provisions of NR 411 in NEPA documentation to evaluate air quality impacts of a proposed action.

**B. Was an air quality analysis required?**

- No
- Yes – Identify the air quality modeling technique or program used to perform the analysis. Complete the Maximum Projected Carbon Monoxide (CO) Concentrations Table to illustrate the results:

The WIS 23 expansion associated with the Preferred Build Alternative would have been exempt from indirect source permit requirements under NR 411 because it meets the following exceptions detailed under NR 411.04(2)(b):

- A portion of the modified highway is located in Sheboygan County (a metropolitan county) and the increase in peak-hour volume is less than 1200 motor vehicles per hour for all segments.
- The remaining portion of the modified highway located in Fond du Lac County (a nonmetropolitan county) and the increase in peak-hour volume is less than 1800 motor vehicles per hour for all segments.
- Where there is a shift in intersection approach legs:
  - Roadway edge shifted toward any potential receptor location is 12 or more feet.
  - The highway segment has no more than 2 approach lanes.
  - Any potential receptor is located more than 25 feet from the nearest proposed roadway edge.
  - The peak-hour volume on each approach is less than 1800 motor vehicles per hour for all segments.

**C. If an air quality analysis was performed, will a construction permit be required to address air quality before the project may proceed?**

- No
- Letter of concurrence from WDNR Bureau of Air Management requested. (See attached request letter – Exhibit )
- Letter of concurrence received from WDNR Bureau of Air Management. (See attached Exhibit )
- Yes – Indicate: \_\_\_\_\_ Date Permit Requested \_\_\_\_\_ OR Date of Permit

Air quality analysis was not required or performed. See answer to Question B.

**3. Mobile Source Air Toxics (MSAT)****Discuss the potential MSAT effects of this project.**

Mobile source air toxics are compounds emitted from highway vehicles and nonroad equipment that are known or suspected to cause cancer or other serious health and environmental effects.

The USEPA is the lead federal agency with responsibility for determining the health effects of MSAT and how to best protect human health and the environment from those effects. The USEPA has issued two rules that control MSAT from motor vehicles (66 FR 17229, March 29, 2001 and 72 FR 8427, February 26, 2007). These rules include the following mobile source

control programs: reformulated gasoline, national low emission vehicle standards, Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, heavy duty engine and vehicle standards, and on-highway diesel fuel sulfur control requirements. These controls will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines.

The FHWA's Interim Guidance on MSAT (December 6, 2012) presents a tiered approach to analyzing MSAT in NEPA documents. Using that guidance, the proposed WIS 23 project is considered to have low potential MSAT effects, requiring a qualitative analysis. Examples of the types of projects considered to have low potential MSAT effects include minor widening projects, new interchanges, or projects where design year traffic is projected to be less than 140,000 to 150,000 AADT.

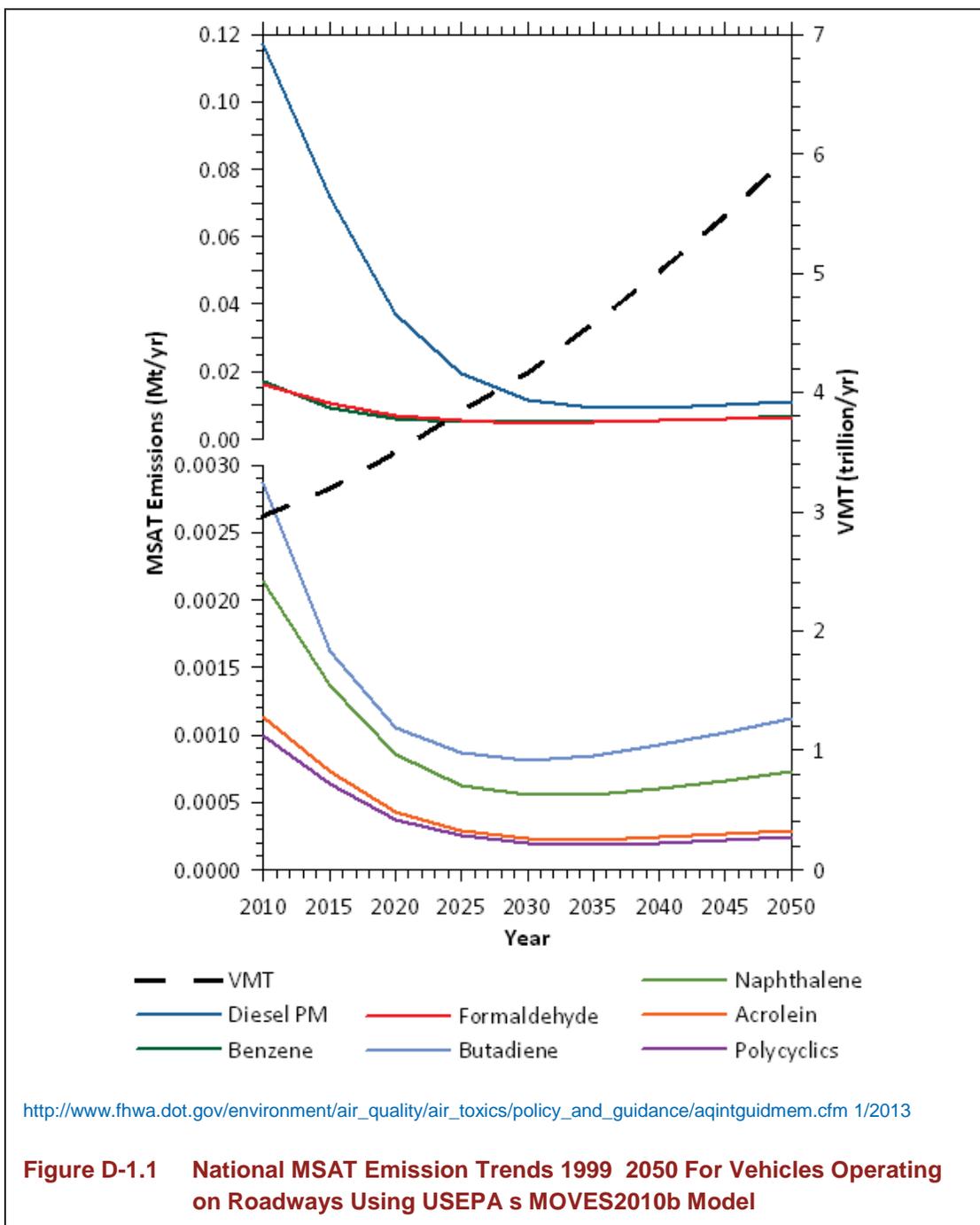
Evaluating the environmental and health impacts from MSAT on a proposed highway project involves several key elements including emissions modeling, dispersion modeling to estimate ambient concentrations resulting from the estimated emissions, exposure modeling to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each model has technical shortcomings or relies on uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

It is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSAT, it can give a basis for identifying and comparing the potential differences among MSAT emissions if any from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA titled *A Methodology for Evaluating Mobile Source Air Quality Emissions Among Transportation Project Alternatives*, found at:

[www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm](http://www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm)

#### Qualitative Assessment

Based on an FHWA analysis using EPA's MOVES2010b (Motor Vehicle Emission Simulator computer model), as shown in Figure 4.6 D-1.1, even if vehicle-miles travelled (VMT) increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period. Figure D.1-1 shows the National MSAT trends for vehicles operating on our nation's roadways.



The Health Effects Institute (HEI) has undertaken efforts to research near-roadway MSAT hot spots and the health implications of mobile source pollutants and has reviewed much of the research and studies done to date. HEI is an independent research organization that provides impartial and relevant science on the effects of air pollution on health. The group is funded by the USEPA (50 percent) and the worldwide motor vehicle industry (50 percent).

In *Special Report 16: Mobile Source Air Toxics: A Critical Review of the Literature on Exposure and Health Effects* (available at [www.healtheffect.org](http://www.healtheffect.org)), HEI analyzed MSAT asking the following questions:

1. To what extent are motor vehicles a significant source of exposure
2. Does it affect human health
3. Does it affect human health at environmental concentrations

In its conclusions, HEI found that exposure to many MSAT comes from sources other than motor vehicles. In addition, for many of the MSAT reviewed, HEI concluded there is insufficient data for an assessment of ambient exposures on human health.

A recent National Cooperative Highway Research Program (NCHRP) report, *Anal ysis, Document ng, and Commun cat ng t e m acts o f o ble Source Ar o cs n t e NE A rocess* (NCHRP 25-25 Task 18, March 2007), analyzed how changes in traffic volumes would relate to changes in contracting cancer from benzene, one of USEPA's seven MSATs. The study suggests for highway projects that result in an incremental change in traffic volumes of 125,000 vpd, a corresponding incremental 1 in 1 million risk of contracting cancer from benzene exposure could be expected. For the WIS 23 project alternatives, the maximum traffic volume change between 2012 and 2035 is 4,800, or about one-twenty sixth of the 125,000 increment. This suggests that if the NCHRP conclusions are correct, the project would have impacts of far less than 1 in 1 million. The 1 in 1 million level is considered to represent negligible risk by both USEPA and the risk assessment community at large. An FHWA assessment of the NCHRP report also indicates the analysis behind the benzene risk conclusions may be pessimistic since practically all benefits of the USEPA's Tier 2 light-duty vehicle emissions standards, additional volatile organic compound (VOC) reductions from motor vehicles (USEPA's 2007 MSAT rulemaking), and a 38 percent reduction in the benzene content of gasoline were not incorporated.

For each alternative in this **LS SDEIS**, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher than that for the No-Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. **Refer to Figure 2.6-7** This increase in VMT would lead to higher MSAT emissions for the Preferred Build Alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates **due to** increased speeds according to EPA's **MOVES2010b** model, emissions of all of the priority MSAT decrease as speed increases. Because the estimated VMT under each of the Alternatives **is similar, varying by 10 to 25 percent**, it is expected there would be **minimal** appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by **over 80 percent** between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes **associated with the Preferred Build Alternative** will have the effect of moving some traffic closer to nearby homes, schools, and businesses therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under **the Preferred Build Alternative** than the No-Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the **side of the highway were the new highway lanes are being constructed**. However, the magnitude and the duration of these potential increases compared to the No-Build alternative cannot be reliably quantified **due to** incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the **Preferred Build Alternative** could be higher relative to the No-Build Alternative, but this could be offset **due to** increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower **on the side of the WIS 23 roadway that does not have the new lanes constructed because traffic will shift away from these lanes onto the new lanes**. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be **substantially** lower than today.

#### 4. Other Air Quality Issues?

Greenhouse gas emissions are also a concern in Northeastern Wisconsin. While there are no accepted quantitative tools to estimate greenhouse gases at the project level, vehicles using WIS 23 can be expected to contribute to greenhouse gas emissions within the region. A 2007 WisDOT report, *Transportation and Global Warming: Developing the Connection and the Solution*<sup>17</sup> noted that greenhouse gas emissions in Wisconsin grew by 26 percent in the last decade, compared to 20 percent across the United States. The Governor's Task Force on Global Warming conducted another study in Wisconsin, which noted that the transportation sector accounts for approximately 24 percent of greenhouse gas emissions in Wisconsin, ranking second behind the energy sector at 35 percent.<sup>18</sup>

Currently, the major way to reduce emissions of greenhouse gases from transportation is to reduce the amount of fuel consumed, which can be accomplished by reducing congestion (more efficient driving conditions), reducing driving, and using more fuel efficient vehicles. Some of the policy recommendations from the Governor's Task Force on Global Warming Report include reducing emissions through improved vehicle technology, using low carbon fuels, and reducing VMT through land use planning and implementing public transit.<sup>19</sup>

Managing and reducing greenhouse gases requires the continued use of appropriate land use and zoning policies that reduce travel demand within individual communities and south central Wisconsin. A recent study published by the Urban Land Institute indicates that the continuing growth of VMT may offset emissions reduction gained through technological improvements in vehicles and fuels.<sup>20</sup> The study points to the importance of reducing VMT by managing growth and land use patterns. Several studies on the relationship between land use and vehicle trips found that where diverse land use, accessible destinations, and interconnected streets exist, households drive 33 percent less compared to households in low-density developments.

WisDOT will continue to participate in statewide initiatives to reduce greenhouse gases, monitor the development of additional findings, and minimize impacts of projects to the greatest extent practicable. Increased amounts of greenhouse gases in the atmosphere can have impacts on the environmental and human health across the planet. Examples of these impacts include rising sea levels, causing erosion of beaches and shorelines, destruction of aquatic plant and animal habitat, floods of coastal cities, and disruption of ocean current flows—a warming trend over much of the planet, broadening the range for many insect-borne diseases and chronic stress of coral reefs. The possible impacts of global warming to Wisconsin include warmer and drier weather decreases in the water levels of the Great Lakes, inland lakes, and streams increases in water temperature (lowering water quality and favoring warm water aquatic species) changes in ecosystem and forest composition increases in droughts and floods (impacting crop productivity) and reduction of snow and ice cover (lessening recreational opportunities).<sup>21</sup>

See Section 4.4, Indirect and Cumulative Effects, for further discussion of WIS 23 air quality impacts.

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<sup>17</sup> CTC and Associates, 2007

<sup>18</sup> World Resources Institute, 2007

<sup>19</sup> WDNR, 2008

<sup>20</sup> Ewing, et al., 2007

<sup>21</sup> Public Service Commission of Wisconsin and WDNR, 2004

The Construction Stage Sound Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated, but there are no substantive changes from the 2010 FEIS.

## CONSTRUCTION STAGE SOUND QUALITY EVALUATION

Factor Sheet D-2

1. Identify and describe residences, schools, libraries, or other noise sensitive areas near the proposed action and which will be in use during construction of the proposed action. Include the number of persons potentially affected:

### No-Build Alternative

No effects since no construction will occur.

### Alternative 2

Noise from the construction of Alternative 2 would have similar impacts to those of Preferred Build Alternative (Alternative 1). The difference would be primarily between County W and County U where the alignment is shifted **off the existing alignment** to the south. Where the alignment is shifted, **fewer construction noise impacts to residential areas are anticipated.**

### Alternative 3

Noise from the construction of Alternative 3 would have similar impacts to those of Preferred Build Alternative (Alternative 1). The difference would be primarily between County UU and County G where the alignment is shifted south of the existing alignment. Where the alignment is shifted, **fewer construction noise impacts to residential areas are anticipated.**

### Preferred Build Alternative

Noise from the construction of the Preferred Build Alternative (Alternative 1) would impact scattered residential, commercial, and industrial areas. Residential development is sparsely scattered throughout the study area with most concentrated along existing WIS 23. Concentrated residential development exists in the community of Greenbush and the western portion of the study area near the City of Fond du Lac. **St. Mary's Springs Academy also exists on the west portion of the corridor.** Individual residences are intermixed with farm residences throughout the project study area. Commercial **and industrial** development is sparsely scattered along WIS 23.

Noise from the construction of the connection roads and interchanges will be similar to the impacts for the 4-lane expansion **associated with the Preferred Build Alternative,** except that it will be localized to the specific intersections being improved.

### Corridor Preservation Alternatives

#### WIS 23 Corridor

##### No Corridor Preservation

There are no effects since no construction will occur.

##### Preferred WIS 23 Corridor Preservation

The Preferred WIS 23 Corridor Preservation would not create construction noise **impacts.** **If** future transportation improvements associated with the Preferred WIS 23 Corridor Preservation **implemented, construction noise impacts would be** similar to the impacts for the connection roads and interchanges. Intersection areas that would experience construction noise impacts include Tower Road, 7 Hills Road, County W, Hillview Road, Scenic View Drive, Sugarbush Road, County A, and County P.

#### US 151/WIS 23 Interchange

##### Preferred No Corridor Preservation

There are no effects since no construction will occur.

Factor Sheet D-2

Option 23-1 and Option 23-2 Corridor Preservation

The US 151/WIS 23 Interchange Corridor Preservation would not create any construction noise. Noise from the construction of the system interchanges associated with Option 23-1 and Option 23-2 Corridor Preservation would impact scattered residential and commercial areas. Construction of Option 23-1 would affect residential and commercial areas primarily north of County T and east of US 151. Option 23-2 Corridor Preservation would affect residential development primarily west of US 151 and south of East Johnson. Construction of Option 23-2 would also affect commercial and retail uses in the northwest quadrant of the interchange.

Table 4.6 D-2.1 estimates how many residents and public facilities are within 1,000 feet of the roadway and could be affected by construction noise of the Build Alternatives. An average of 2.5 residents per household was assumed. Public facilities within the table include parks, trails, schools, churches, and public buildings. Near Fond du Lac, public buildings include a medical facility and shopping center. The Old Wade House State Park, St. Mary's Springs Academy, the Little Moraine State Forest, the Ice Age Trail/State Equestrian Trail, and the Old Plank Road Trail would be impacted equally by each of the Build alternatives. The number of residents for Alternatives 1 and 2 is similar, but about 25 percent less for Alternative 3.

Option/Alternative	Approximate Number of Residents Within 1,000 feet	Approximate Number of Public Facilities Within 1,000 feet
Preferred Build Alternative (4-lane expansion - Alt. 1)	423	8
Alternative 2	403	8
Alternative 3	310	7

Table 4.6 D-2.1 Estimate of Persons Within 1,000 feet of Roadway

2. Describe the types of construction equipment to be used on the project. Discuss the expected severity of noise levels including the frequency and duration of any anticipated high noise levels:

Construction of the Preferred Build Alternative would require the use of earth-moving equipment, materials handling equipment, stationary equipment, and impact equipment.

The noise generated by construction equipment will vary greatly depending on equipment type/model/make, duration of operation, and specific type of work effort. However, typical noise levels may occur in the 67 to 107 dBA range at a distance of 50 feet (15.2 meters).

Table 4.6 D-2.2 shows typical noise levels for a variety of construction equipment. Adverse effects related to construction noise are anticipated to be of a localized, temporary, and transient nature.

Equipment Powered by Internal Combustion Engines	Range Of Sound Levels (dBA) at 15 m (50 ft)
<b>Earth Moving</b>	
Compactors (Rollers)	72-75
Front Loaders	72-85
Backhoes	77-94
Tractors	76-97
Scrapers, Graders	80-94
Pavers	86-89
Trucks	54-95
<b>Materials Handling</b>	
Concrete Mixers	75-87
Concrete Pumps	81-84
Cranes (Movable)	76-86
Cranes (Derrick)	86-89
<b>Stationary</b>	
Pumps	67-72
Generators	72-82
Compressors	75-87
<b>IMPACT EQUIPMENT</b>	
Pneumatic Wrenches	82-89
Jack Hammers & Rock Drills	81-97
Impact Pile Drivers (Peaks)	95-105
<b>OTHER</b>	
Vibrator	69-81
Saws	72-83

Source: Figure 2-36, Report to the President and Congress on Noise, prepared by the U.S. EPA, February, 1972.

**Table 4.6 D-2.2 Construction Equipment Sound Levels**

**3. Describe the construction stage noise abatement measures to minimize identified adverse noise effects. Check all that apply:**

- WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply. Generally, no construction will occur before 6 A.M. or after 10 P.M. without written permission from the project engineer. All equipment will have mufflers in good working order.
- WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply with the exception that the hours of operation requiring the engineer's written approval for operations will be changed to \_\_\_\_\_ P.M. until \_\_\_\_\_ A.M.
- WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply with the exception that the hours of operation requiring the engineer's written approval for operations will be changed to \_\_\_\_\_ P.M. until \_\_\_\_\_ A.M.
- Special construction stage noise abatement measures will be required. Describe:

## TRAFFIC NOISE EVALUATION

Factor Sheet D-3

## 1. Need for Noise Analysis:

- A. Is the proposed action considered a Type I project (A Type I project is defined as a project that involves construction of a roadway on new location or the physical alteration of an existing highway which substantially changes either the horizontal or vertical alignment or increases the number of through-traffic lanes).
- No – Complete only Construction Stage Sound Quality Impact Evaluation.
- Yes – Complete Construction Stage Sound Quality Impact Evaluation and the rest of this sheet.

## 2. Traffic Data:

- A. Indicate whether traffic volumes for sound prediction are different from the Design Hourly Volume (DHV) on Environmental Evaluation of Facilities Development Action, Traffic Summary Basic Sheet
- No
- Yes – Indicate volumes and explain why they were used:

Automobiles	Veh/hr
Trucks	Veh/hr
Or Percentage (T)	

- B. Identify and describe the noise analysis technique or program used to identify existing and future sound levels: (See receptor location map as Receptor Maps Figures 4.6 D-3.1 to D-3.16).

In the 2004 DEIS, the Stamina Computer Noise Program was used to develop noise contours. These noise contours were used to evaluate noise impacts for the on-alignment (Alternative 1) and off-alignment (Alternatives 2 and 3) corridors. With the selection of the Preferred Build Alternative, a more detailed and updated analysis was performed for the on-alignment receptors using the TNM 2.5 computer software. The analysis remodeled the existing and future noise levels for the 4-lane expansion of the Preferred Build Alternative from County to County P. The system interchanges associated with Option 23-1 and Option 23-2 Corridor Preservation Alternatives were also modeled. See the Noise Analysis–Receptors Maps Figures 4.6 D-3.1 to D-3.16 for locations of receptors along the Preferred Build Alternative.

Criteria used to define traffic noise impacts are determined by WisDOT's noise policy which is contained in Chapter 23 of the Facilities Development Manual. Traffic noise impacts occur when the predicted equivalent sound levels approach or exceed the noise level criteria (NLC) established for a type of land use or when predicted sound levels substantially exceed existing levels. WisDOT has determined "approach" to be defined as 1 dBA less than the NLC. WisDOT has determined "substantial increase" to be 15 dBA or more than existing levels. Noise impacts for the various alternatives are compared based on the number of receptors that approach or exceed the activity category and/or experience a substantial increase.

- C. Identify sensitive receptors, e.g., schools, libraries, hospitals, residences, etc. potentially affected by traffic sound: (See attached receptor location map – Figures 4.6 D-3.1 to D-3.16).

Sensitive receptors include residences, St. Mary's Springs Academy, St. Paul's Church and School, the Old Wade House State Park, the Northern Unit of theettle Moraine State Forest, the Ice Age Trail, the State Equestrian Trail, and the Old Plank Road Trail. These receptors are considered Land Use Categories B and C under WisDOT's noise policy and are subject to an exterior NLC of 67 dBA.

D. If this proposal is implemented will future sound levels produce a noise impact

- No
- Yes - The impact will occur because:
  - The Noise Abatement Criteria (NAC) is approached (1 dBA less than the NAC) or exceeded.
  - Existing sound levels will increase by 15 dBA or more.

Preferred Build Alternative, 4-lane expansion (Alternative 1), compared to other 4-lane expansion alternatives:

<b>Table 4.6 D-3.1 Summary Receptors Exceeding NAC</b>				
<b>Distance from receptor to highway:</b>	<b>WIS 23 (4-Lane Expansion)</b>			
	<b>No-Build</b>	<b>Preferred Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>
Households currently approaching or exceeding NLC: (≥66 dBA)	29	29	27	21
Households that will be affected in the design year: (≥66 dBA or increase of 15 dBA or more)	44	47	54	47
Net increase in households affected:	15	18	27	26
* From noise contours developed from Stamina for the 2004 DEIS.				

System Interchanges Associated with Corridor Preservation Option 23-1 and Option 23-2, compared to No-Build Alternative:

<b>Table 4.6 D-3.2 Summary Receptors Exceeding NAC, Corridor Preservation</b>			
<b>Distance from receptor to highway:</b>	<b>Corridor Preservation Measures and US 151/WIS 23 System Interchange</b>		
	<b>Preferred No Preservation</b>	<b>23-1 Preservation</b>	<b>23-2 Preservation</b>
Households currently approaching or exceeding NLC: (≥66 dBA)	0	0	0
Households that will be affected in the design year: (≥66 dBA or increase of 15 dBA or more)	9	2	2
Net increase in households affected:	9	2	2

E. Will traffic noise abatement measures be implemented

- Not applicable – Traffic noise impacts will not occur.
- No – Traffic noise abatement is not reasonable or feasible (explain why). In areas currently undeveloped, local units of government shall be notified of predicted sound levels for land use planning purposes. **A COP OF THIS WRITTEN NOTIFICATION SHALL BE INCLUDED WITH THE FINAL ENVIRONMENTAL DOCUMENT.**
- Yes – Traffic noise abatement has been determined to be feasible and reasonable. Describe any traffic noise abatement measures which are proposed to be implemented. Explain how it will be determined whether or not those measures will be implemented:

For a noise barrier to be reasonable, the total cost may not exceed 30,000 per benefited receptor and meet the following criteria according to WisDOT's Facility Development Manual Chapter 23 (April 2013):

- A minimum of 1 receptor or common use area achieves the department's noise reduction design goal of 9 decibels.
- The noise barrier reduces noise levels by a minimum of 8 decibels for each benefiting receptor used in the cost calculation.

- For purposes of reasonableness determination
  - o Each individual residence benefited is counted as one benefited receptor.
  - o Each dwelling unit benefited in a multi-family dwelling is counted as one benefited receptor.
  - o Each dwelling unit in the multi-family complex eligible to use the benefited common use area is counted as one benefited receptor.
  - o Each discrete parcel benefited in Land Use Categories A, C, D and E is counted as one benefited receptor, except Section 4(f) properties as identified in Land Use Category C, will be evaluated on a case-by-case basis to determine the location of equivalent receptors on the discrete parcel that will each count as one benefited receptor.

The noise analysis for the Preferred Build Alternative from County to County P evaluated the reasonableness of noise walls. The updated modeling and noise wall evaluation found that noise barriers are not reasonable for the section of WIS 23 from County to County UU.

Noise barriers were modeled on the north side of STH 23, west and east of Ledgewood Drive, in the areas of Receptors 16 and 18.

In the area of Receptor 16, a noise barrier was found to be not feasible from a construction standpoint. A noise barrier greater than 50' in height would be needed to achieve the desired noise reduction.

In the area of Receptor 18, a noise barrier was found to be feasible from a construction standpoint, but not reasonable from a cost per receptor standpoint. A 31.5' wall, 635' in length would achieve the desired noise reduction. The estimated cost for this barrier would be approximately 60,000 per benefitted receptor.

A copy of the written notification sent to local governments was provided as Appendix O of the 2010 FEIS. A subsequent notification was provided on June 27, 2013 and is included in Appendix D of this LS SDEIS.

**Table 4.6 D-3.3  
Preferred Build Alternative (Alternative 1) County County UU**

Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}$ <sup>22</sup> (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1	475	business	72	53	52	1	-19	N
3	125	3	67	68	64	4	1	I
4	130	4	67	69	65	4	2	I
5	120	4	67	69	66	3	2	I
7	155	4	67	63	62	1	-4	N
8	275	2	67	60	58	2	-7	N
10	905	school	67	52	50	2	-15	N
11	525	school	67	56	54	2	-11	N
13	130	3	67	69	67	2	2	I

<sup>22</sup> Use whole numbers only.

<sup>23</sup> Insert the actual Noise Abatement Criteria from Wisconsin Administrative Code, Chapter Trans. 405.04, Table 1.

<sup>24</sup> An impact occurs when future sound levels exceed existing sound levels by 15 dB or more, **or**, future sound levels approach or exceed the Noise Abatement Criteria ("approach" is defined as 1 dB less than the Noise Abatement Criteria, therefore an impact occurs when Column (h) is -1 db or greater). I Impact, N No Impact.

Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}^{22}$ (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
14	160	2	67	68	65	3	1	I
15	135	2	67	69	67	2	2	I
16	120	5	67	69	65	4	2	I
17	125	1	67	69	64	5	2	I
18	135	6	67	69	67	2	2	I
19	195	1	67	64	64	0	-3	N
20	255	4	67	62	62	0	-5	N
21	145	1	67	69	65	4	2	I
22	265	3	67	62	62	0	-5	N
24	140	business	72	68	63	5	-4	N
25	125	1	67	69	63	6	2	I
26	100	3	67	70	67	3	3	I
28	130	3	67	68	66	2	1	I
30	95	1	67	70	64	6	3	I
31	240	1	67	61	61	0	-6	N
33	245	1	67	61	61	0	-6	N
34	480	2	67	56	53	3	-11	N
35	210	1	67	61	60	1	-6	N
36	150	1	67	65	64	1	-2	N
37	325	1	67	58	57	1	-9	N
39	230	1	67	62	60	2	-5	N
40	120	1	67	67	65	2	0	I
41	265	1	67	61	57	4	-6	N
42	255	1	67	62	60	2	-5	N
43	345	1	67	58	57	1	-9	N
44	90	1	67	70	68	2	3	I
45	130	2	67	67	65	2	0	I
46	80	1	67	70	69	1	3	I
48	205	1	67	62	62	0	-5	N
49	425	1	67	57	56	1	-10	N
50	160	1	67	65	64	1	-2	N
51	465	1	67	55	54	1	-12	N
52	125	1	67	67	66	1	0	I
53	132	1	67	65	66	-1	-2	N
54	100	1	67	68	67	1	1	I
55	100	1	67	65	67	-2	-2	N
56	150	2	67	64	61	3	-3	N
57	225	1	67	61	61	0	-6	N
58	225	1	67	61	61	0	-6	N
59	325	1	67	58	57	1	-9	N
60	460	1	67	55	55	0	-12	N
61	220	1	67	62	58	4	-5	N
62	150	1	67	65	65	0	-2	N
63	350	1	67	58	55	3	-9	N
64	165	1	67	64	60	4	-3	N
65	135	2	67	65	66	-1	-2	N
66	245	1	67	60	57	3	-7	N
67	335	4	67	58	57	1	-9	N
68	330	1	67	58	58	0	-9	N
69	310	1	67	59	59	0	-8	N
70	145	1	67	65	61	4	-2	N
71	215	1	67	63	62	1	-4	N

Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}^{22}$ (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
72	195	1	67	62	62	0	-5	N
73	240	1	67	61	59	2	-6	N
74	305	1	67	60	58	2	-7	N
76	245	1	67	60	61	-1	-7	N
77	120	1	67	67	62	5	0	I
78	190	1	67	62	59	3	-5	N
79	145	1	67	65	61	4	-2	N

**Table 4.6 D-3.4**  
**Alternative 2 County W County G**

Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}^{22}$ (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
50 feet	50	1	67	75	<i>From readings</i>	Worst case scenario		
100 feet	100	2	67	70	46-52	29	8	I
200 feet	200	1	67	65	46-52	24	3	I
300 feet	300	3	67	63	46-52	19	-2	I
400 feet	400	5	67	61	46-52	17	-4	I
500 feet	500	2	67	59	46-52	15	-6	I
600 feet	600	1	67	58	46-52	13	-8	NI
700 feet	700	2	67	56	46-52	12	-9	NI
1000 feet	1000	2	67	53	46-52	10	-11	NI
						7	-14	NI

\* From noise contours developed from Stamina for the 2004 DEIS.

Note: All other roadway sections same as Alternative 1

**Table 4.6 D-3.5**  
**Alternative 3 County UU County W**

Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}^{22}$ (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
50 feet	50	2	67	74	<i>From reading</i>	<b>Worst case scenario</b>		
100 feet	100	2	67	70	53-56	21	7	I
200 feet	200	1	67	65	53-56	17	3	I
300 feet	300	1	67	62	53-56	12	-2	NI
400 feet	400	4	67	60	53-56	9	-5	NI
500 feet	400	4	67	60	53-56	7	-7	NI
500 feet	500	4	67	59	53-56	6	-8	NI
600 feet	600	2	67	57	53-56	4	-10	NI
700 feet	700	3	67	56	53-56	3	-11	NI
1000 feet	1000	3	67	53	53-56	0	-14	NI

\* From noise contours developed from Stamina for the 2004 DEIS.

**Table 4.6 D-3.6**  
**Alternative 3 County W County G**

Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}^{22}$ (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
50 feet	50	2	67	75	<i>From reading</i>	<b>Worst case scenario</b>		
100 feet	100	1	67	70	46-52	29	8	I
200 feet	200	1	67	65	46-52	24	3	I
300 feet	300	2	67	63	46-52	19	-2	I
400 feet	300	2	67	63	46-52	17	-4	I
400 feet	400	3	67	61	46-52	15	-6	I
500 feet	500	2	67	59	46-52	13	-8	NI
600 feet	600	3	67	58	46-52	12	-9	NI
700 feet	700	2	67	56	46-52	10	-11	NI
1000 feet	1000	4	67	53	46-52	7	-14	NI

\* From noise contours developed from Stamina for the 2004 DEIS.

**Table 4.6 D-7**  
**NO CORRIDOR PRESERVATION (SAME LETTERING AS OPTION 23-2 CORRIDOR PRESERVATION)**

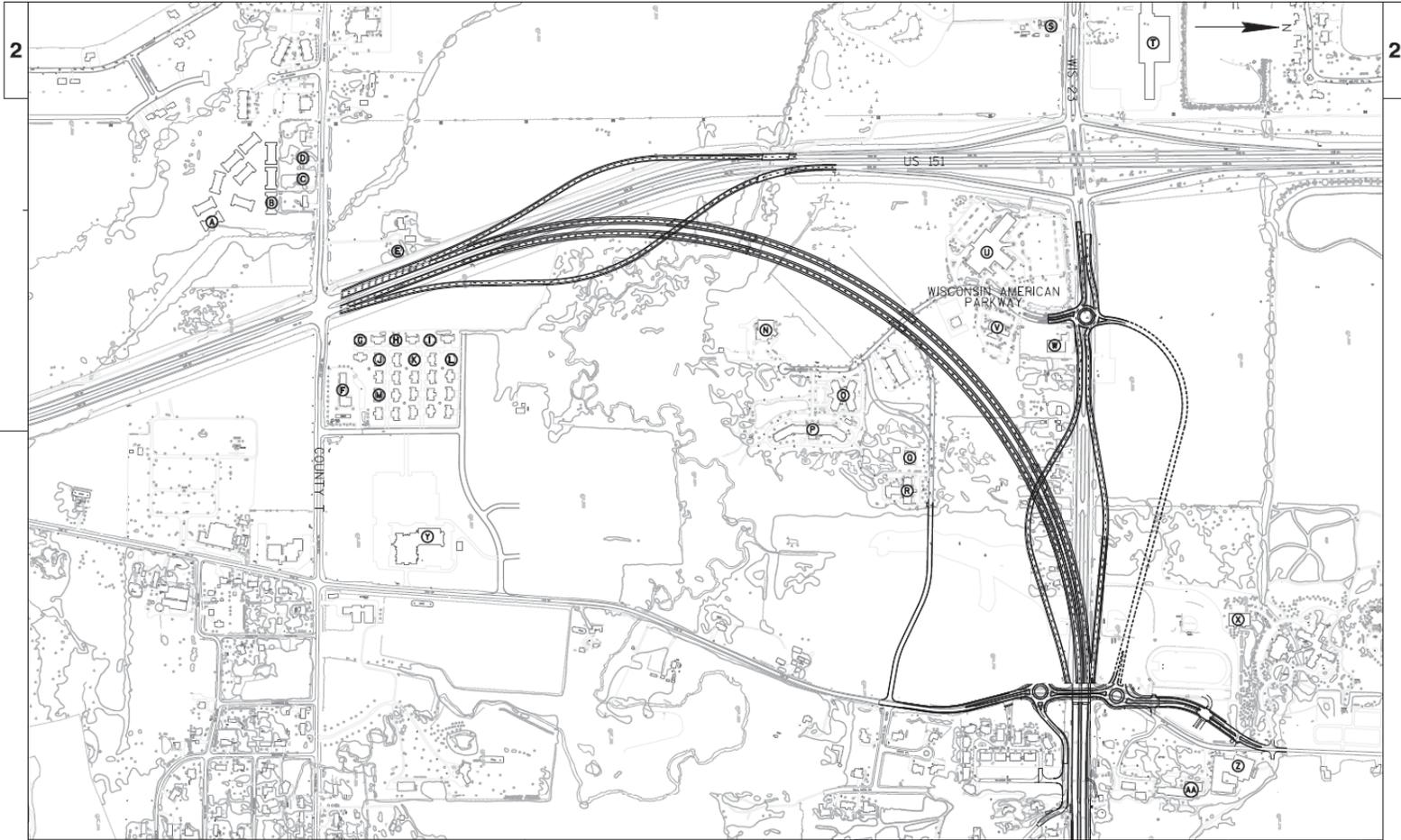
Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}^{22}$ (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
A	756	16	67	54	51	3	-13	N
B	317 (4th Street)	16	67	57	53	4	-10	N
C	97 (4th Street)	1	67	64	59	5	-3	N
D	105 (4th Street)	1	67	64	59	5	-3	N
E	109	1	67	67	63	4	0	I
F	133 (4th Street)	Business	72	66	60	6	-6	N
G	198	2	67	64	60	4	-3	N
H	260	2	67	60	57	3	-7	N
I	324	2	67	59	55	4	-8	N
J	340	2	67	60	56	4	-7	N
	415	2	67	58	54	4	-9	N
L	470	2	67	56	53	3	-11	N
M	577	2	67	59	54	5	-8	N
N	396	Business	72	52	49	3	-20	N
O	466 (WIS 23)	Business	72	58	55	3	-14	N
P	102 (WIS 23)	1	67	66	65	1	-1	I
Q	427 (WIS 23)	Business	72	60	58	2	-12	N
R	84 (WIS 23)	Business	72	70	68	2	-2	N
S	124 (WIS 23)	3	67	66	64	2	-1	I
T	124 (WIS 23)	3	67	66	64	2	-1	I
U	814	Business	72	58	52	6	-14	N
V	96 (CTH )	School	67	68	64	4	1	I
W	417 (CTH )	School	67	59	55	4	-8	N
	179 (CTH )	Church	67	53	51	2	-14	N

**Table 4.6 D-8**  
**OPTION 23-1 CORRIDOR PRESERVATION**

Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}^{22}$ (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
A	756	16	67	54	51	3	-13	N
B	317 (4th Street)	16	67	56	53	3	-11	N
C	97 (4th Street)	1	67	62	59	3	-5	N
D	105 (4th Street)	1	67	62	59	3	-5	N
E	109	1	67	66	63	3	-1	I
F	133 (4th Street)	Business	72	61	60	1	-11	N
G	198	2	67	63	60	3	-4	N
H	260	2	67	61	57	4	-6	N
I	324	2	67	60	55	5	-7	N
J	340	2	67	59	56	3	-8	N
	415	2	67	57	54	3	-10	N
L	470	2	67	56	53	3	-11	N
M	577	2	67	56	54	2	-11	N
N	396	Business	72	53	49	4	-19	N
O	488	Business	72	52	48	4	-20	N
P	813	Business	72	50	47	3	-22	N
Q	556	Business	72	53	49	4	-19	N
R	700	Business	72	52	49	3	-20	N
S	102 (WIS 23)	1	67	66	65	1	-1	I
T	427 (WIS 23)	Business	72	60	58	2	-12	N
U	533	Business	72	57	55	2	-15	N
V	260	Business	72	59	53	6	-13	N
W	91 (WIS 23)	Business	72	69	68	1	-13	N
	909 (WIS 23)	Business	72	54	52	2	-18	N
Y	179 (CTH )	Church	67	53	51	2	-14	N
	96 (CTH )	School	67	63	64	-1	-4	N
AA	417 (CTH )	School	67	57	55	2	-10	N

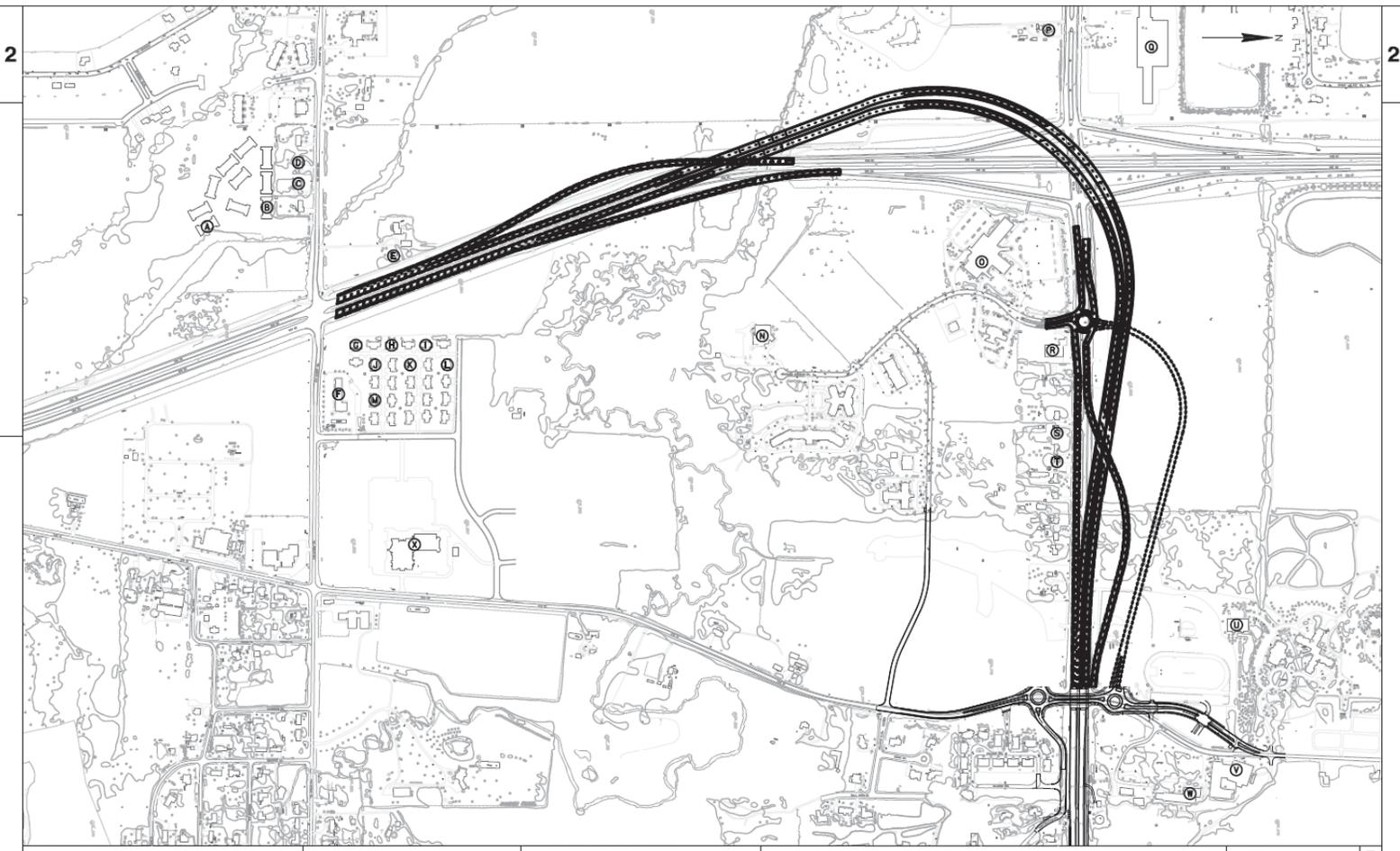
**Table 4.6 D-9**  
**OPTION 23-2 CORRIDOR PRESERVATION**

Receptor Location or Site Identification (See attached map)	Distance from C/L of Near Lane to Receptor in feet (ft.)	Number of Families (Households) Typical of this Receptor Site	Sound Level $L_{eq}^{22}$ (dBA)			Impact Evaluation		
			Noise Abatement Criteria <sup>23</sup> (NAC)	Future Sound Level	Existing Sound Level	Difference in Future and Existing Sound Levels (Col. e minus Col. f)	Difference in Future Sound Levels and Noise Abatement Criteria (Col. e minus Col. d)	Impact <sup>24</sup> or No Impact
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
A	756	16	67	54	51	3	-13	N
B	317 (4th Street)	16	67	56	53	3	-11	N
C	97 (4th Street)	1	67	62	59	3	-5	N
D	105 (4th Street)	1	67	62	59	3	-5	N
E	109	1	67	67	63	4	0	I
F	133 (4th Street)	Business	72	61	60	1	-11	N
G	204	2	67	63	60	3	-4	N
H	292	2	67	61	57	4	-6	N
I	379	2	67	59	55	4	-8	N
J	367	2	67	59	56	3	-8	N
	456	2	67	57	54	3	-10	N
L	544	2	67	56	53	3	-11	N
M	382 (4th Street)	2	67	56	54	2	-11	N
N	972	Business	72	52	49	3	-20	N
O	466 (WIS 23)	Business	72	58	55	3	-14	N
P	102 (WIS 23)	1	67	67	65	2	0	I
Q	427 (WIS 23)	Business	72	60	58	2	-12	N
R	84 (WIS 23)	Business	72	70	68	2	-2	N
S	124 (WIS 23)	3	67	63	64	-1	-4	N
T	124 (WIS 23)	3	67	62	64	-2	-5	N
U	814	Business	72	55	52	3	-17	N
V	96 (CTH )	School	67	65	64	1	-2	N
W	417 (CTH )	School	67	57	55	2	-10	N
	179 (CTH )	Church	67	53	51	2	-14	N



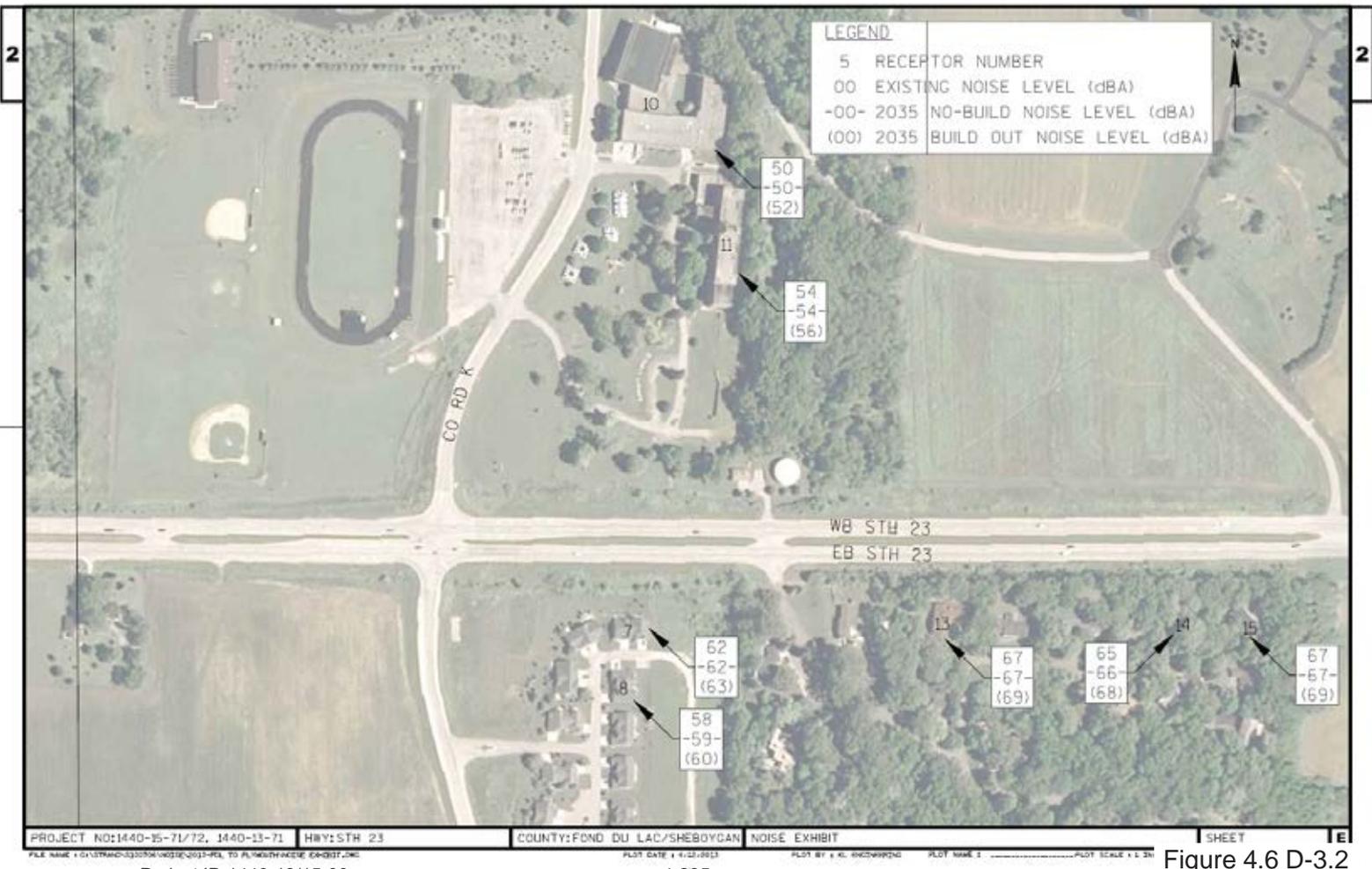
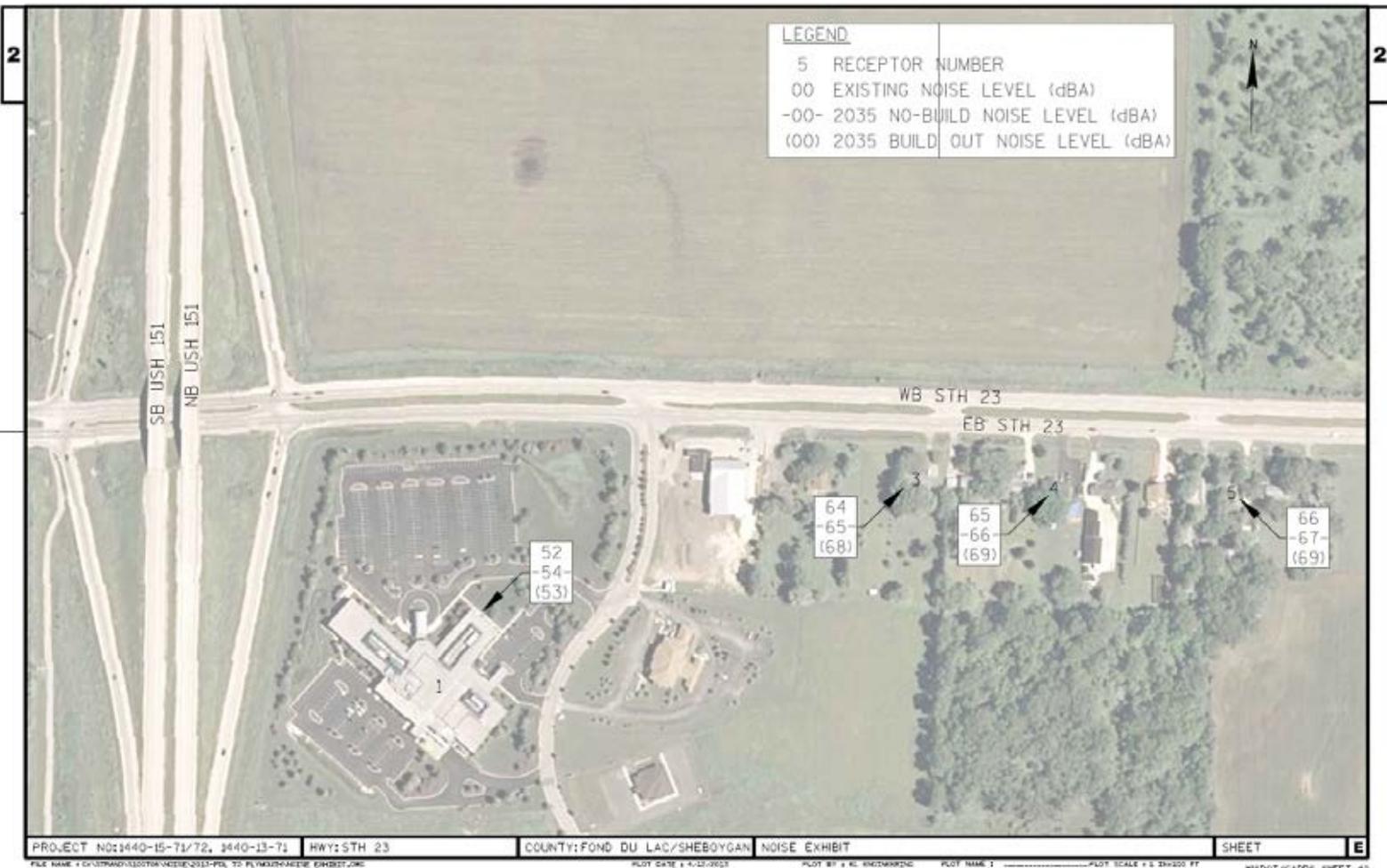
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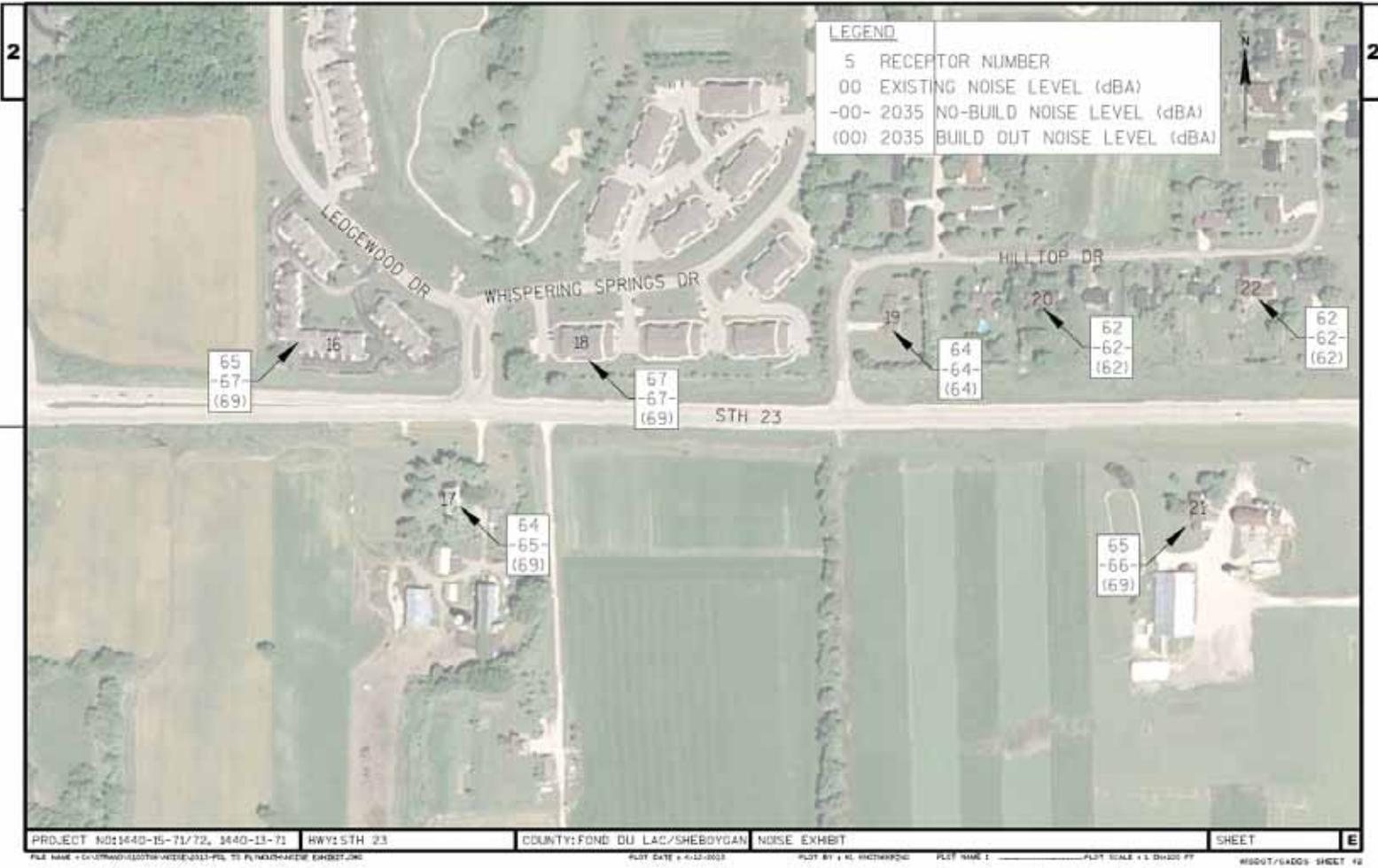
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PROJECT NO:1440-13-00    HWY: WIS 23    COUNTY:FOND DU LAC    WIS 23 NOISE ANALYSIS - RECEPTOR MAP (ALTERNATIVE 23-2)    SHEET E

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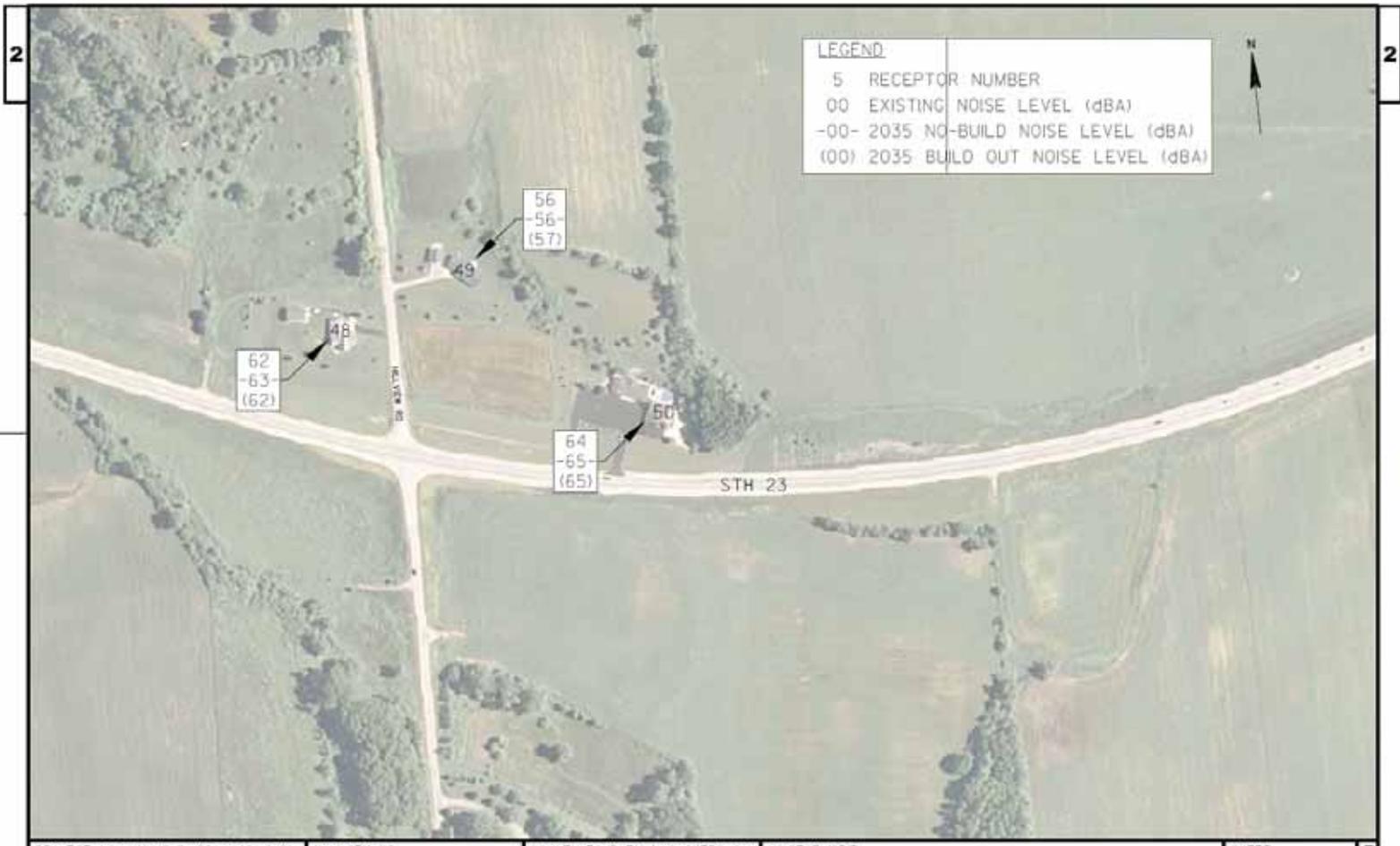










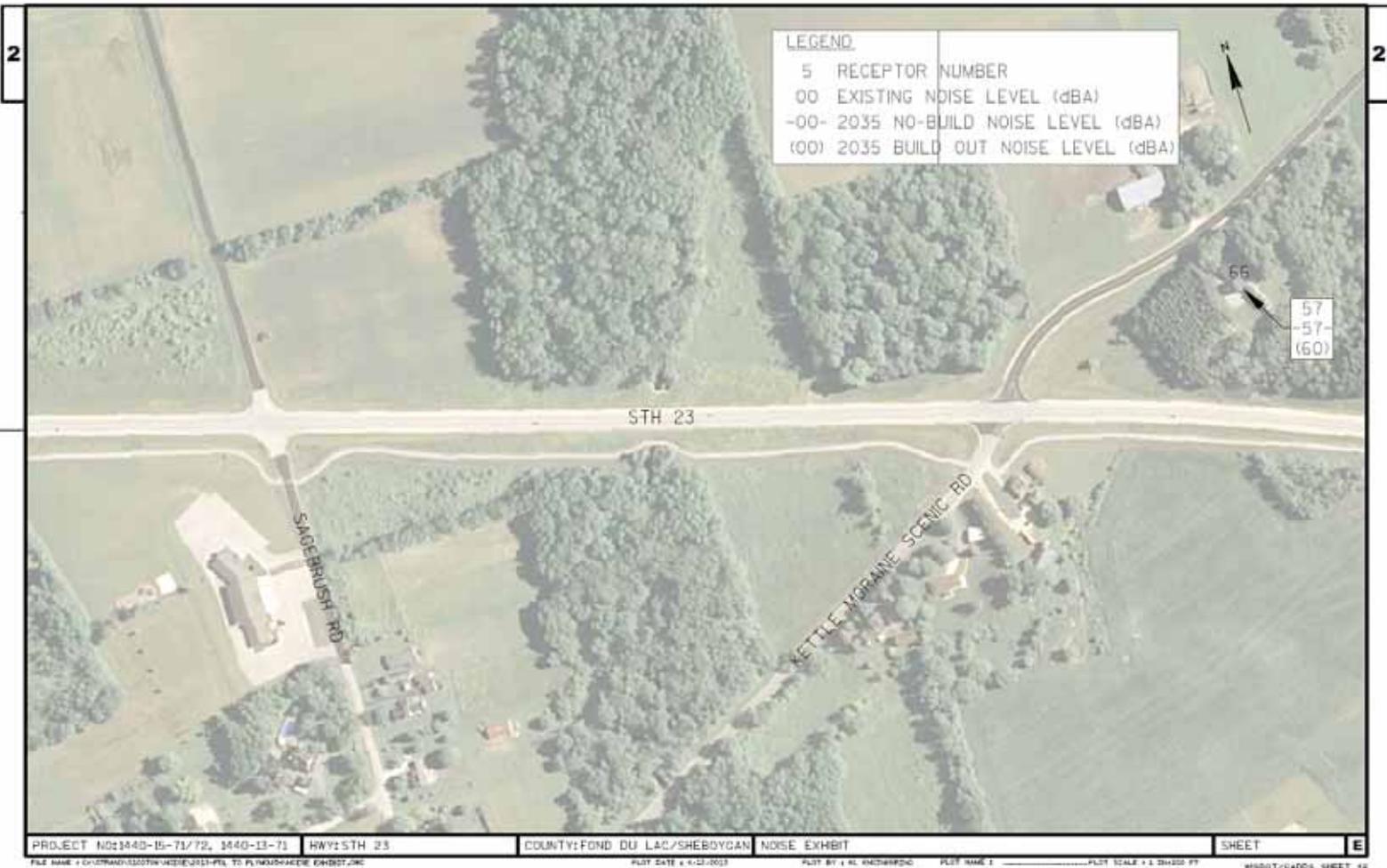
















The Hazardous Substances or Contamination Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated based on right of way acquisition data or completion of Phase 2 investigations. There are no substantive changes from the 2010 FEIS.

**HA ARDOUS SUBSTANCES OR CONTAMINATION EVALUATION Factor Sheet D-4**

**1. Briefly describe the results of the Phase 1 Hazardous Materials Assessment for this alternative. Do not use property identifiers (owner name, address or business name):**

No-Build Alternative There would be no affected parcels with hazardous substances or USTs.

Alternative 2 There are 12 aboveground storage tank (AST) sites, 2 leaking underground storage tank (LUST) sites, and 2 underground storage tank (UST) sites along the Alternative 2 corridor.

Alternative 3 There are 6 AST sites and 1 LUST site along the Alternative 3 corridor.

Preferred Build Alternative (Alternative 1)

An updated assessment indicates 27 sites along the existing roadway alignment. There are 13 AST sites (one is a AST/Junk site), 3 LUST/UST sites, 3 Junk sites, 3 vehicle repair sites, 1 vacant site, and 4 UST sites along the Preferred Build Alternative.

Corridor Preservation Alternatives

WIS 23 Corridor

No Corridor Preservation There are no affected parcels with hazardous substances or USTs.

Preferred WIS 23 Corridor Preservation

There is 1 LUST site and 1 UST site in areas within the Preferred WIS 23 Corridor Preservation.

US 151/WIS 23 Connection

Preferred No Corridor Preservation There would be no affected parcels with hazardous substances or USTs.

Option 23-1 and Option 23-2 Corridor Preservation

There are no additional sites with hazardous substances or USTs.

Site Reference	Land Use of Concern (Past or Present)	Contaminants of Concern	Phase 1 Recommendations	Phase 2 Recommended?
				Y/N
1	LUST/UST	Petroleum	NFA	N
2	AST	Petroleum	NFA	N
3	AST	Petroleum	NFA	N
4	AST/Junk	Petroleum	NFA	N
5	UST	Petroleum	Phase 2	Y
6	Drums/Junk	Petroleum	Phase 1	N
7	Possible UST	Petroleum	Phase 1	N
8	Auto Sales & Repair	Petroleum	NFA	N
9	AST	Petroleum	NFA	N
10	AST	Petroleum	NFA	N
11	LUST/UST	Petroleum	NFA	N
12	Junk	Petroleum	Phase 1 or 2	Y

**Table 4.6 D-4.1 Possibly Contaminated Sites**

Site Reference	Land Use of Concern (Past or Present)	Contaminants of Concern	Phase 1 Recommendations	Phase 2 Recommended?
13	Junk/Old Tractors	Petroleum	NFA	N
14	AST	Petroleum	NFA	N
15	AST	Petroleum	NFA	N
16	UST	Petroleum	Phase 2	Y
17	Vehicle Repair	Petroleum	NFA	N
18	UST	Petroleum	Phase 1	N
19	AST	Petroleum	NFA	N
20	AST	Petroleum	NFA	N
21	Auto Sales & Repair	Petroleum	Phase 1	Y
22	Vacant	Petroleum	Phase 1	Y
23	AST	Petroleum	NFA	N
24	AST	Petroleum	NFA	N
25	AST	Petroleum	NFA	N
26	AST	Petroleum	NFA	N
27	Lust/UST	Petroleum	NFA	N

Attach additional sheets, if necessary  
 Additional comments: \_\_\_\_\_

The updated Hazardous Materials report indicates that along the Preferred Build Alternative (Alternative 1), there are 27 sites with potential for some type of contamination.

**2. Were any parcels not included in the Phase 1 assessment?**

- No
- Yes - How many:  
 Why were they not reviewed

**3. Have Phase 2 or 2.5 Assessments been completed? Discuss the results:**

**Table 4.6 D-4.2 Recommended Phase 2/2.5**

Site Reference	Phase 2/2.5 Recommendations	Remediation Recommended?		Is WisDOT a Responsible Party?	
		Yes	No	Yes	No
5	Phase 2 needs to be completed.				
12	Phase 2 completed				
16	Phase 2 needs to be completed if corridor preservation improvements are implemented				
21	Phase 2 completed				
22	Phase 2 completed				

The results of the investigations are discussed in question 4 below.

**4. Describe the results of any additional investigations performed by WisDOT or others: (Include the number of sites investigated, the level of investigation and results for each site)**

Site 5 has been fully purchased by WisDOT. The need for a Phase 2 investigation will be evaluated during final design.

A Phase 2 was performed on Site 12. Contamination was discovered and an BRRS case was opened. WisDOT is not the Responsible Party. The property is a total acquisition and WisDOT purchased the property in highway easement. The Responsible Party does not have the ability to proceed with the investigation WisDOT will complete the remaining items necessary for site closure at the time of construction.

Site 16 is in the corridor preservation area and a Phase 2 is not needed for implementation of the Preferred Build Alternative. A Phase 2 investigation will be performed when and if improvements associated with corridor preservation are implemented.

**5. Describe proposed action to avoid hazardous materials contamination:**

Impacts to the highway project will be minimized by avoiding contaminated sites to the extent possible. Where avoidance is not possible, the remediation measures employed will depend on the extent, magnitude, and type of contamination impacting the roadway. WisDOT Northeast Region will work with all concerned parties to the satisfaction of the WDNR, WisDOT BTS, and FHWA.

**6. Describe the remediation and waste management practices to be included in the design for areas where contamination cannot be avoided (e.g., waste handling plan, remediation of contamination, design changes to minimize disturbances):**

If contamination cannot be avoided, investigation of contaminated sites and the management of any excavated contaminated material will be completed in accordance with the FDM and the NR 700 Series of Wisconsin Administrative Codes. The management of excavated contaminated materials on transportation projects typically involves reuse of the materials on the project, disposal of the materials in a landfill, or treatment of the materials at a biopile site. If the contaminated material is classified as a solid waste, activities related to the management of excavated contaminated material will also follow the NR 500 Series of Wisconsin Administrative Codes. If the contaminated material is classified as a hazardous waste, activities related to the management of excavated contaminated material will follow the NR 600 Series of Wisconsin Administrative Codes rather than the NR 500 Series. WisDOT will work with all concerned parties to the satisfaction of the WDNR, WisDOT BTS, and the FHWA before acquisition of any questionable site and before advertising the project for letting. A waste handling plan would be completed for these parcels during a more detailed design phase.

**7. List any parcels with known contamination, proposed for acquisition:**

Currently there is no known contamination on the portions of property that are proposed for acquisition. Contamination was suspected on Parcels 5, 12, 16, 21, and 22. WisDOT has and will consider potentially contaminated soils in the acquisition process and in the development of plans and specifications for the project. WisDOT will continue to work with concerned to the satisfaction of the Wisconsin DNR, WisDOT BTS, and FHWA before acquisition of a contaminated site and before advertising the project for letting.

**8. Bridge Projects Only: Has the structure been inspected for the presence of asbestos containing materials**

**(ACMs)?**

No - Explain - Inspections will occur during the design phase of the project.

Yes:

Were regulated ACMs identified

No

Yes:

State the standard language to be incorporated in the special provisions of the project:

The Stormwater Evaluation Factor Sheet has been updated to the format currently used by WisDOT. Some information has been augmented and updated, but there are no substantive changes from the 2010 FEIS.

## STORMWATER EVALUATION

### Factor Sheet D-5

#### 1. Indicate whether the affected area may cause a discharge or will discharge to the waters of the state (Trans 401.03).

Special consideration should be given to areas that are sensitive to water quality degradation. Provide specific recommendations on the level of protection needed.

- No water special natural resources are affected by the alternative.
- Yes - Water special natural resources exist in the project area.
- River/stream
  - Wetland
  - Lake
  - Endangered species habitat
  - Other – Describe
- 

#### 2. Indicate whether circumstances exist in the project vicinity that require additional or special consideration, such as an increase in peak flow, total suspended solids (TSS) or water volume.

- No additional or special circumstances are present.
- Yes - Additional or special circumstances exist. Indicate all that are present.
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Areas of groundwater discharge | <input type="checkbox"/> Areas of groundwater recharge           |
| <input type="checkbox"/> Stream relocations                        | <input type="checkbox"/> Overland flow/runoff                    |
| <input type="checkbox"/> Long or steep cut or fill slopes          | <input type="checkbox"/> High velocity flows                     |
| <input type="checkbox"/> Cold water stream                         | <input type="checkbox"/> Impaired waterway                       |
| <input type="checkbox"/> Large quantity flows                      | <input type="checkbox"/> Exceptional/outstanding resource waters |
| <input type="checkbox"/> Increased backwater                       |  |
- Other - Describe any unique, innovative, or atypical stormwater management measures to be used to manage additional or special circumstances.

There are natural springs found in WDNR-identified Natural Area Nos. 4 and 5 (wetlands). Alternatives 2 and 3 impact these areas and are shown on Figures 4.6 C-1.1 to C-1.5.

#### 3. Describe the overall stormwater management strategy to minimize adverse and enhance beneficial effects.

Typical stormwater management techniques to minimize adverse effects and enhance beneficial effects are outlined in TRANS 401.106. The strategy typically includes preparation of a written plan that outlines the BMPs to be implemented. Typical BMPs might include the following:

- Limit disturbance of natural drainage features and vegetation.
- Prior to land disturbance, prepare and implement an approved erosion and sediment control plan.
- Protect areas that provide important water quality benefits and/or that are susceptible to erosion and sediment loss.
- Reduce direct discharge of stormwater into streams and wetlands by directing it through filter strips or vegetated swales.
- Reduce runoff velocities by using weirs or other barriers to dissipate high velocities.

The Preferred Alternative requires a review of stormwater facilities and the implementation of stormwater treatments. Because of this, the existing condition that does not have stormwater treatment should be improved.

Indicate how the stormwater management plan will be compatible with fulfilling Trans 401 requirements.

A plan will be determined during design of the Preferred Build Alternative and will follow Wisconsin Administrative Code TRANS 401 and the WisDOT/WDNR Cooperative Agreement.

**5. Identify the stormwater management measures to be utilized.**

To be determined during design of the Preferred Build Alternative and measures will comply with Wisconsin Administrative Code TRANS 401 postconstruction standards.

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Swale treatment (parallel to flow)<br>Trans 401.106(10) | <input type="checkbox"/> In-line storm sewer treatment, such as catch basins,<br>non-mechanical treatment systems. |
| <input type="checkbox"/> Vegetated filter strips<br>(perpendicular to flow)                 | <input type="checkbox"/> Detention/retention basins – Trans 401.106(6)(3)  |
| <input type="checkbox"/> Constructed storm water wetlands                                   | <input type="checkbox"/> Distancing outfalls from waterway edge  |
| <input type="checkbox"/> Buffer areas – Trans 401.106(6)                                    | <input type="checkbox"/> Infiltration – Trans 401.106(5)   |
|   | <input type="checkbox"/> Other -Describe - _____   |

**6. Indicate whether any Drainage District may be affected by the project.**

- No - None identified  
 Yes  
 Has initial coordination with a drainage board been completed  
 No - Explain \_\_\_\_\_  
 Yes - Discuss results \_\_\_\_\_

**7. Indicate whether the project is within WisDOT's Phase I or Phase II stormwater management areas.**

Note: See Procedure 20-30-1, Figure 1, Attachment A4, the Cooperative Agreement between WisDOT and WisDNR. Contact Regional Stormwater/erosion Control Engineer if assistance in needed to complete the following:

- No - The project is outside of WisDOT's stormwater management area.  
 Yes -The project affects one of the following and is regulated by a WPDES stormwater discharge permit, issued by the WisDNR:  
 A WisDOT storm sewer system, located within a municipality with a population greater than 100,000.  
 A WisDOT storm sewer system located within the area of a notified owner of a municipal separate storm sewer system.  
 An urbanized area, as defined by the U.S. Census Bureau, NR216.02(3). - Fond du Lac urbanized area, and city of Plymouth urban cluster.  
 A municipal separate storm sewer system serving a population less than 10,000.

**8. Has the effect on downstream properties been considered?**

- No  
 Yes - Coordination is in process.

**9. Are there any property acquisitions required for storm water management purposes?**

- No  
 Yes - Complete the following:  
 Safety measures, such as fencing are not needed for potential conflicts with existing and expected surrounding land use.  
 Safety measures are needed for potential conflicts with existing and expected surrounding land use. Describe:

It is anticipated that all stormwater management measures will be implemented within the proposed right of way.

The Erosion Control Evaluation Factor Sheet was not provided in the 2010 FEIS. This factor sheet contains much of the information that was provided in the Environmental Evaluation Matrix.

## EROSION CONTROL EVALUATION

Factor Sheet D-6

- 1. Give a brief description of existing and proposed slopes in the project area, both perpendicular and longitudinal to the project. Include both existing and proposed slope length, percent slope and soil types.**

East of the County UU the existing roadway profile slopes are mostly rolling and range from 0 to 4 percent. West of County UU, as WIS 23 travels up the Niagara Escarpment, roadway slope profiles are up to a mile long and increase to 4 to 6.8 percent. Proposed slopes associated with the Preferred Alternative are generally similar to existing slopes.

Perpendicular to the roadway existing slopes beyond the shoulders generally are between 4:1 (1 foot of rise to every 4 feet of horizontal) and 3:1. The proposed slopes beyond the shoulder will be 6:1 within the 34-foot clearzone, and 4:1 to 3:1 beyond that.

- 2. Indicate all natural resources to be affected by the proposal that are sensitive to erosion, sedimentation, or waters of the state quality degradation and provide specific recommendations on the level of protection needed.**

- No - there are no sensitive resources affected by the proposal.  
 Yes - Sensitive resources exist in or adjacent to the area affected by the project.

- River/stream  
 Lake  
 Wetland  
 Endangered species habitat  
 Other - Describe \_\_\_\_\_

- 3. Are there circumstances requiring additional or special consideration?**

- No - Additional or special circumstances are not present.  
 Yes - Additional or special circumstances exist. Indicate all that are present.  
 Areas of groundwater discharge  
 Overland flow/runoff  
 Long or steep cut or fill slopes - as WIS 23 travels up the Niagara Escarpment  
 Areas of groundwater recharge (fractured bedrock, wetlands, streams)  
 Other - Describe any unique or atypical erosion control measures to be used to manage additional or special circumstances \_\_\_\_\_

- 4. Describe overall erosion control strategy to minimize adverse effects and/or enhance beneficial effects.**

To protect the drainage areas, streams, and rivers and to control construction site runoff, all Build Alternative construction documents would include detailed sedimentation and erosion control measures. The use of silt fences, turbidity barriers, sedimentation ponds, cofferdams, and the timely mulching and seeding or sodding of roadway slopes and other exposed areas will reduce runoff and siltation for all the build alternatives. An erosion control implementation plan would be prepared by the contractor and approved by WisDOT before the construction begins.

During construction, erosion and sedimentation into adjacent surface waters would be minimized through the application of WisDOT's Standard Specifications for Highway and Structure Construction. Timely mulching and seeding or sodding of roadway slopes and other exposed areas would provide long-term erosion control. During construction, techniques such as silt fences, turbidity barriers, bale dikes, temporary interceptor ditches, ditch checks, ditch liners, and sediment ponds would be used where possible to minimize erosion. The use of a silt screen below the water level during construction operations in drainage areas might also be used to reduce off-site siltation. Unstable materials would be disposed of in upland areas, not in wetlands or waterways.

Precautions will be taken at the Sheboygan River and Mullet River Creek crossings to preclude erosion and stream siltation. Crossing work will be coordinated with the WDNR to protect fish habitat and water quality. Impacts to water quality will be minimized through the implementation of erosion control measures according to the ECIP included in the construction contract, the Standard Specifications, and project special provisions. In addition, construction near surface waterways will be avoided during periods of high snowmelt or rains. Erosion control devices will be installed before erosion-prone construction activities begin, the devices will be maintained and repaired, as needed, throughout the life of the contract, and areas will be promptly restored to grass or permanent cover.

**5. Erosion control measures reached consensus with the appropriate authorities as indicated below:**

- WisDNR
- County Land Conservation Department
- American Indian Tribe
- US Army Corps of Engineers

All erosion control measures (i.e., the Erosion Control Plan) will be coordinated through the WisDOT-WisDNR liaison process and TRANS 401. In addition, TRANS 401 requires the contractor to prepare an Erosion Control Implementation Plan (ECIP), which identifies timing and staging of the project's erosion control measures. The ECIP shall be submitted to the WisDNR and to WisDOT 14 days prior to the preconstruction conference (Trans401.08(1)) and must be approved by WisDOT before implementation.

**6. Identify the temporary and permanent erosion control measures to be utilized on the project. Consult the FDM, Chapter 10, and the Products Acceptability List (PAL).**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Minimize the amount of land exposed at one time | <input type="checkbox"/> Detention basin              |
| <input checked="" type="checkbox"/> Temporary seeding                               | <input checked="" type="checkbox"/> Vegetative swales |
| <input checked="" type="checkbox"/> Silt fence                                      | <input type="checkbox"/> Pave haul roads              |
| <input checked="" type="checkbox"/> Ditch checks                                    | <input type="checkbox"/> Dust abatement               |
| <input type="checkbox"/> Erosion or turf reinforcement mat                          | <input checked="" type="checkbox"/> Rip rap           |
| <input type="checkbox"/> Ditch or slope sodding                                     | <input type="checkbox"/> Buffer strips                |
| <input type="checkbox"/> Soil stabilizer  | <input type="checkbox"/> Dewatering – Describe method |
| <input checked="" type="checkbox"/> Inlet protection                                | <input type="checkbox"/> Silt screen                  |
| <input type="checkbox"/> Turbidity barriers   | <input type="checkbox"/> Temporary diversion channel  |
| <input type="checkbox"/> Temporary settling basin                                   | <input type="checkbox"/> Permanent seeding            |
| <input type="checkbox"/> Mulching   |   |
| <input type="checkbox"/> Other - Describe _____                                     |   |