

Appendix B:

Wetland Delineations:

- Port Authority**
- ADM Property**
- Winona Harbor**

MEMORANDUM

SUBJECT: *Wetland Delineation for CMVP-PM-E Pool 2 Channel Management Project, Winona Riverfront, Winona County, Minnesota*

1. Introduction.

The U.S. Army Corps of Engineers, St. Paul District – Regulatory Branch conducted the wetland delineation for CMVP PM-E in consideration of the site for dredge spoil disposal in the City of Winona, Winona County, Minnesota. The area of investigation (the Site) is shown on Figure 1 in Appendix A and is located in Section 22, T. 107N., R. 7W.

The purpose of this memorandum is to document the methods used, and conclusions made, regarding the extent of wetlands present within the Winona Riverfront site.

2. Methods and Materials.

On-site procedures were conducted in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual (Corps Manual)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). The Corps staff team conducted the on-site data collection on Wednesday, November 20, 2013.

The following resources were utilized for the wetland delineation:

- 6 May 1992, 8 September 2003, 18 April 2008 and 24 July 2011 true color aerial photographs, various sources provided at Google Earth;
- 30 June 1954 black & white historic aerial photograph, MnDNR Data Deli;
- Minnesota Climatology Working Group Website (http://climate.umn.edu/gridded_data/precip/wetland/wetland.asp) “Wetland Delineation Precipitation Data Retrieval”;
- National Wetlands Inventory (NWI) mapping;
- MN Department of Natural Resources (DNR) Public Waters Inventory;
- USDA Web Soil Survey digital soil mapping;
- A Trimble Geoexplorer XT GPS unit to record the locations of data points and wetland/upland boundaries during field investigation; and
- ArcMap GIS program to digitize and display the results of the investigation.

In addition to the field methodologies laid out in the Midwest Supplement, the following methods were used:

- a. Placing Observations of Hydrology in the Context of Antecedent Precipitation. *Hydrology Tools for Wetland Determination* (Woodward *et al.* 1997) and *Assessing and Using Meteorological Data to Evaluate Wetland Hydrology* (Sprecher and Warne 2000) recommend evaluation of precipitation for the 3 months prior to the date of the aerial imagery to assist in making determinations regarding signatures noted on aerial photography. In addition, antecedent precipitation was determined for the 3-months prior to site visit using gridded database information from the Minnesota Climatology Working Group website. Direct observations of hydrology indicators made during the site visit were then placed in the context of antecedent precipitation.

3. Soils and Landscape.

The site is directly within the floodplain of the Mississippi River, in an area designated as the Upper Mississippi National Wildlife and Fish Refuge. A significant part of the internal portion of the site is relatively undisturbed native floodplain forest, while the perimeter of the site has been affected by fill and excavation, including creation of a small dike on the north and east boundaries of the site, with a large (approx. 36") culvert connecting the site directly to the river. Development of the adjacent Winona Riverfront resulted in fill of the western and southern boundaries of the subject site.

The site is located along the toe of The Blufflands subsection of the Paleozoic Plateau section of the Eastern Broadleaf Forest Province of Minnesota, described in accordance with the Ecological Classification System. While The Blufflands subsection is defined by its lack of coverage by glaciers (i.e., the Driftless Area) during the last glaciation, the Winona Riverfront site formed following melting of the glaciers and development of the Mississippi River valley. Soil pits inspected during the field review confirmed the existence of undisturbed native floodplain soils.

Soils mapped on the project site are Comfrey silt loam, channeled (predominantly hydric) and Psamments, fill (nonhydric sandy fill material) and are shown in Appendix C. The soil survey for Winona County was completed prior to the development of the Winona Riverfront sites (see the 'larger area of Winona Riverfront' soil survey map in Appendix C), therefore, the extent of fill (psamments, fill) mapped along the western boundary of the site is not consistent with the current conditions.

4. NWI and DNR Mapping.

The site is mapped on the National Wetlands Inventory (NWI) as palustrine, deciduous forested/shrub wetland, seasonally flooded and diked/impounded (PFO1Ch), as indicated below.



The site itself is not designated on the DNR Public Waters Inventory (PWI) however it is adjacent to Public Water 2P, which is the Mississippi River.

5. Site Visit 20 November 2013.

Precipitation during the three months antecedent to the site visit on 20 November 2013 was essentially within the range of normal (see below). The months of August and September were significantly dryer than normal, October was wetter than normal, although most of the precipitation fell early in the month, and November had normal levels of precipitation. The site visit was conducted after the end of the growing season; temperatures through November had remained on the mild side, and the soils were not yet frozen, therefore, observations of critical wetland indicators were nonetheless accomplished.

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
 county **Winona** township number **107N**
 township name **Winona (west)** range number **7W**
 nearest community **Winona** section number: **23**

Aerial photograph or site visit date:
Wednesday, November 20, 2013

Score using 1971-2000 normal period

(values are in inches)	first prior month: October 2013	second prior month: September 2013	third prior month: August 2013
estimated precipitation total for this location:	5.25	1.21	1.40
there is a 30% chance this location will have less than: *	1.27	2.15	2.97
there is a 30% chance this location will have more than: *	2.69	4.45	5.24
type of month: dry normal wet	wet	dry	dry
monthly score	3 * 3 = 9	2 * 1 = 2	1 * 1 = 1
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	12 (Normal)		

Score using 1981-2010 normal period

(values are in inches)	first prior month: October 2013	second prior month: September 2013	third prior month: August 2013
estimated precipitation total for this location:	5.25	1.21	1.40
there is a 30% chance this location will have less than: *	1.34	2.42	3.11
there is a 30% chance this location will have more than: *	2.83	4.60	5.67
type of month: dry normal wet	wet	dry	dry
monthly score	3 * 3 = 9	2 * 1 = 2	1 * 1 = 1
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	12 (Normal)		

Data collection sample points were established (see Figure 1, Appendix A) and observations were documented on data sheets, which are part of the Corps administrative record and are included in Appendix B. The delineation was based on field documentation of the change in topography between the wetland and upland areas, where nonhydryc sandy fill material became evident and indicators of wetland soils and hydrology were no longer observed.

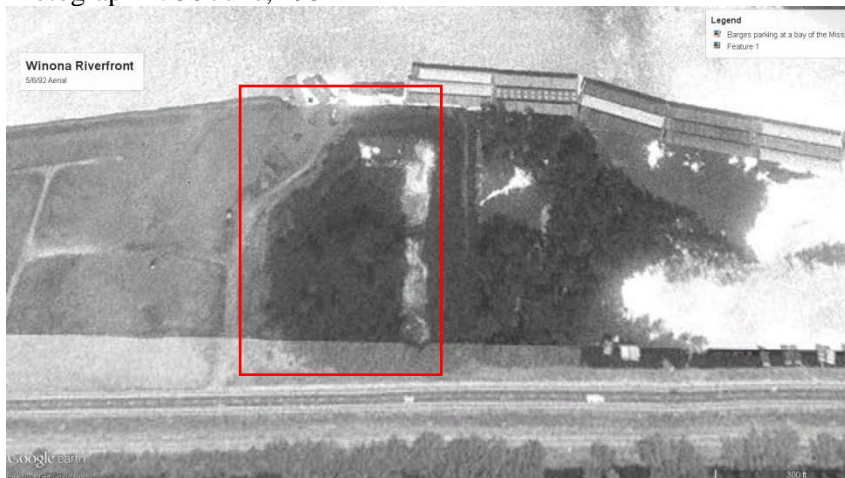
6. Results and Discussion.

One wetland area, Wetland 1, was identified and delineated within the subject site (Figure 1) and is a bottomland forest located within the Mississippi River floodplain. Dominant vegetation includes silver maple (*Acer saccharinum*, FACW) and wood-nettle (*Laportea canadensis*, FACW), with green ash (*Fraxinus pennsylvanica*, FACW), cottonwood (*Populus deltoides*, FAC) and box elder (*Acer negundo*, FACW) as sub-dominants. A very low percentage (less than 10%) non-native invasive species (Glossy buckthorn, *Frangula alnus*, FACW) was present. The soil profiles observed at Data Points 1, 2 and 5 (DP1, DP2 and DP5 on Figure 1) are generally consistent with official series description of the native soil, Comfrey silt loam, identified on the Winona County soil survey.

The floodplain forest community cited herein is based on the description and key in Eggers and Reed (1997, 2011). The site's boundaries adjacent to the river have been nearly unchanged since the construction of Lock and Dam 6 and creation of Pool 6, as observed in the following photographs.



Photograph 1: 30 June, 1954



Photograph 2: 6 May, 1992



Photograph 3: 24 July 2011

Despite the observed impacts around the perimeter from fill and excavation, the interior of the site maintains a high quality forest community with a very low percentage of invasive species. The site's location in The Blufflands subsection is important due to the DNR's identification of the highest number (156) of species in greatest conservation need (SGCN) in the state. Many fish, mollusk, amphibian and bird species make use of these types of native bottomland during their life cycles.

A MnRAM analysis conducted on the wetland resulted in an Exceptional rating for wildlife, due to the bonus score it receives for its location within the Upper Mississippi River Wildlife and Fish Refuge. Even without this human value judgment of the importance of the site, the functional analysis identified this floodplain forest to be providing a high level of flood/stormwater attenuation, maintenance of the hydrologic regime and water quality maintenance. It provides a moderate level of function for downstream water quality and shoreline protection.

7. Conclusion.

Based on the procedures described above, the evidence demonstrates the extent of wetland area within the subject Winona Riverfront site, as shown on Figure 1.

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David Studenski, Lead Project Manager




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- Woodward, D. ed. 1997. *Hydrology Tools for Wetland Determination*. Chapter 19, Engineering Field Handbook. USDA, Natural Resources Conservation Service. Fort Worth, TX. 34 pp.

Appendix A

Figure 1

Legend

-  Project Site Boundary
-  Data Points
-  Wetland_Boundary

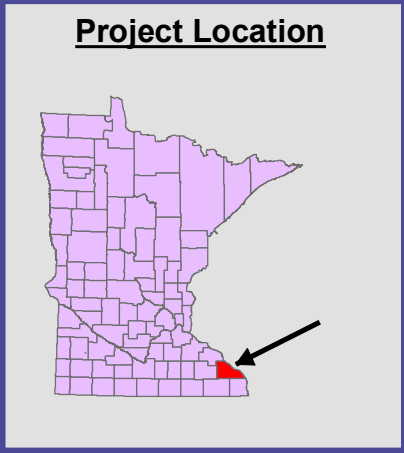
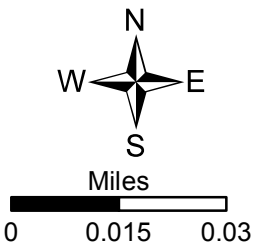


Figure 1
Pool 2 Management Project
Winona Riverfront



US Army Corps of Engineers
 St. Paul District
 Regulatory Branch



SEC. 22, T. 107N., R. 7W.,
 WINONA COUNTY, MINNESOTA

IMAGE: USDA NAIP, SUMMER 2003
 PROJECTION: NAD83 UTM ZONE 15N

Appendix B

November 20, 2013 Site Visit Documentation

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site Winona Riverfront City/County: Winona/Winona Sampling Date: 11-20-2013
 Applicant/Owner: CEMVP-PM-E State: MN Sampling Point: 1
 Investigator(s): Walther, Hanson, Derinzy, Studenski Section, Township, Range: 22, T. 107N., R. 7W.
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave
 Slope (%): 0-1 Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name Near boundary of Comfrey silt loam/psamments, fill NWI Classification: PFO1Ch

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
 Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes
 Are vegetation _____, soil _____, or hydrology X naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present? <u>Y</u>	Is the sampled area within a wetland? <u>Y</u>
Hydric soil present? <u>Y</u>	
Indicators of wetland hydrology present? <u>Y</u>	
If yes, optional wetland site ID: _____	

Remarks: (Explain alternative procedures here or in a separate report.)
 Hydrology naturally problematic because the site is a natural floodplain that has been diked and impounded, connected to Miss. River via 36" culvert.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' r</u>)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across all Strata: <u>1</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)
1 <u>Acer saccharinum</u>	50	Y	FACW	
2 <u>Fraxinus pennsylvanica</u>	15	N	FACW	
3 <u>Acer negundo</u>	10	N	FAC	
4 <u>Populus deltoides</u>	8	N	FAC	
5 _____				
	83 = Total Cover			
Sapling/Shrub stratum (Plot size: <u>N/A</u>)				Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>65</u> x 2 = <u>130</u> FAC species <u>18</u> x 3 = <u>54</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>83</u> (A) <u>184</u> (B) Prevalence Index = B/A = <u>2.22</u>
1 _____				
2 _____				
3 _____				
4 _____				
5 _____				
	0 = Total Cover			
Herb stratum (Plot size: <u>5' r</u>)				Hydrophytic Vegetation Indicators: _____ Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u>X</u> Prevalence index is ≤3.0* _____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) _____ Problematic hydrophytic vegetation* (explain)
1 <u>None observed</u>				
2 _____				
3 _____				
4 _____				
5 _____				
6 _____				
7 _____				
8 _____				
9 _____				
10 _____				
	0 = Total Cover			
Woody vine stratum (Plot size: _____)				*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic Hydrophytic vegetation present? <u>Y</u>
1 _____				
2 _____				
	0 = Total Cover			

Remarks: (Include photo numbers here or on a separate sheet)
 Late season delineation, observed vegetation had already senesced.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-5	10YR 2/1	90	10YR 4/2	10	D	M	SL	mixed fill
5-24+	10YR 3/1	80	10YR 4/4	20	C	M	SL	mixed fill

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histisol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> 2 cm Muck (A10)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)</p>	<p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input checked="" type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p>Indicators for Problematic Hydric Soils:</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR K, L)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (explain in remarks)</p>
<p>*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic</p>		

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric soil present? <u>Y</u></p>
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Remarks:

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p>			<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input checked="" type="checkbox"/> Gauge or Well Data (D9)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>			<p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input checked="" type="checkbox"/> Geomorphic Position (D2)</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test (D5)</p>		
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<p>Field Observations:</p> <p>Surface water present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water table present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>(includes capillary fringe)</p>	<p>Indicators of wetland hydrology present? <u>Y</u></p>
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Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site Winona Riverfront City/County: Winona/Winona Sampling Date: 11-20-2013
 Applicant/Owner: CEMVP-PM-E State: MN Sampling Point: 2
 Investigator(s): Walther, Hanson, Derinzy, Studenski Section, Township, Range: 22, T. 107N., R. 7W.
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave
 Slope (%): 0-1 Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name Comfrey silt loam, channeled NWI Classification: PFO1Ch

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
 Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes
 Are vegetation _____, soil _____, or hydrology X naturally problematic? present? Yes

SUMMARY OF FINDINGS (If needed, explain any answers in remarks.)

Hydrophytic vegetation present? <u>Y</u>	Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID: _____
Hydric soil present? <u>Y</u>	
Indicators of wetland hydrology present? <u>Y</u>	

Remarks: (Explain alternative procedures here or in a separate report.)
 Hydrology naturally problematic because the site is a natural floodplain that has been diked and impounded, connected to Miss. River via 36" culvert.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' r</u>)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across all Strata: <u>3</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)
1 <u>Acer saccharinum</u>	50	Y	FACW	
2 <u>Fraxinus pennsylvanica</u>	15	N	FACW	
3 <u>Acer negundo</u>	10	N	FAC	
4 <u>Populus deltoides</u>	8	N	FAC	
5 _____				
	83 = Total Cover			
Sapling/Shrub stratum (Plot size: <u>N/A</u>)				Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>80</u> x 2 = <u>160</u> FAC species <u>18</u> x 3 = <u>54</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>98</u> (A) <u>214</u> (B) Prevalence Index = B/A = <u>2.18</u>
1 _____				
2 _____				
3 _____				
4 _____				
5 _____				
	0 = Total Cover			
Herb stratum (Plot size: <u>5' r</u>)				
1 <u>Frangula alnus</u>	10	Y	FACW	
2 <u>Laportea canadensis</u>	5	Y	FACW	
3 _____				
4 _____				
5 _____				
6 _____				
7 _____				
8 _____				
9 _____				
10 _____				
	15 = Total Cover			
Woody vine stratum (Plot size: <u>N/A</u>)				
1 _____				
2 _____				
	0 = Total Cover			

Hydrophytic Vegetation Indicators:
 _____ Rapid test for hydrophytic vegetation
 Dominance test is >50%
 Prevalence index is ≤3.0*
 _____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
 _____ Problematic hydrophytic vegetation* (explain)
 *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)
 Late season delineation, observed vegetation had already senesced.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-2	10YR 2/1	100					SiCL	
2-18+	10YR 3/1	85	7.5YR 4/6	15	C	PL/M	SiCL	Blocky structure

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators: <input type="checkbox"/> Histisol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils: <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (explain in remarks)
*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic			

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric soil present? Y

Remarks:
 Undisturbed, native Comfrey silt loam.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Gauge or Well Data (D9) <input type="checkbox"/> Other (Explain in Remarks)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
---	--	--	---

Field Observations:

Surface water present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches): _____
Water table present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches): _____
Saturation present? (includes capillary fringe)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches): _____

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Site is connected to river flows via 36" culvert through low berm, and river gauge data indicates water levels are frequently above the site's elevation.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site Winona Riverfront City/County: Winona/Winona Sampling Date: 11-20-2013
 Applicant/Owner: CEMVP-PM-E State: MN Sampling Point: 3 and 4
 Investigator(s): Walther, Hanson, Derinzy, Studenski Section, Township, Range: 22, T. 107N., R. 7W.
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): convex
 Slope (%): 2+ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name Psamments, fill NWI Classification: PFO1Ch

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
 Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes
 Are vegetation _____, soil _____, or hydrology X naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present? <u>Y</u>	Is the sampled area within a wetland? <u>N</u>
Hydric soil present? <u>N</u>	
Indicators of wetland hydrology present? <u>N</u>	
If yes, optional wetland site ID: _____	

Remarks: (Explain alternative procedures here or in a separate report.)
 Hydrology naturally problematic because the site is a natural floodplain that has been diked and impounded, connected to Miss. River via 36" culvert.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' r</u>)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across all Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)
1 <u>Acer saccharinum</u>	50	Y	FACW	
2 <u>Fraxinus pennsylvanica</u>	15	N	FACW	
3 <u>Acer negundo</u>	10	N	FAC	
4 <u>Populus deltoides</u>	8	N	FAC	
5 _____				
	83 = Total Cover			
Sapling/Shrub stratum (Plot size: <u>N/A</u>)				Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>75</u> x 2 = <u>150</u> FAC species <u>18</u> x 3 = <u>54</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>93</u> (A) <u>204</u> (B) Prevalence Index = B/A = <u>2.19</u>
1 _____				
2 _____				
3 _____				
4 _____				
5 _____				
	0 = Total Cover			
Herb stratum (Plot size: <u>5' r</u>)				
1 <u>Laportea canadensis</u>	10	Y	FACW	
2 _____				
3 _____				
4 _____				
5 _____				
6 _____				
7 _____				
8 _____				
9 _____				
10 _____				
	10 = Total Cover			
Woody vine stratum (Plot size: _____)				
1 _____				
2 _____				
	0 = Total Cover			

Hydrophytic Vegetation Indicators:
 _____ Rapid test for hydrophytic vegetation
 Dominance test is >50%
 Prevalence index is ≤3.0*
 _____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
 _____ Problematic hydrophytic vegetation* (explain)
 *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)
 Late season delineation, observed vegetation had already senesced.

SOIL

Sampling Point: 3 and 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-12+	10YR 6/3						Sand	Sandy fill

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils:
<input type="checkbox"/> Histisol (A1)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Other (explain in remarks)
<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u> N </u>
---	--

Remarks:
 Plot 3 had 24" of sandy fill; Plot 4 had 12" of sandy fill. Fill ended at approximately Plot 5.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Gauge or Well Data (D9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Water-Stained Leaves (B9)	
	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Stunted or Stressed Plants (D1)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface water present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Indicators of wetland hydrology present? <u> N </u>
--	--

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site Winona Riverfront City/County: Winona/Winona Sampling Date: 11-20-2013
 Applicant/Owner: CEMVP-PM-E State: MN Sampling Point: 5
 Investigator(s): Walther, Hanson, Derinzy, Studenski Section, Township, Range: 22, T. 107N., R. 7W.
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none
 Slope (%): 0-1 Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name Comfrey silt loam, channeled NWI Classification: PFO1Ch

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
 Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes
 Are vegetation _____, soil _____, or hydrology X naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present? <u>Y</u>	Is the sampled area within a wetland? <u>Y</u>
Hydric soil present? <u>Y</u>	
Indicators of wetland hydrology present? <u>Y</u>	
If yes, optional wetland site ID: _____	

Remarks: (Explain alternative procedures here or in a separate report.)
 Hydrology naturally problematic because the site is a natural floodplain that has been diked and impounded, connected to Miss. River via 36" culvert.

Tree Stratum (Plot size: <u>30' r</u>)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet	
1 <u>Acer saccharinum</u>	50	Y	FACW	Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A)	
2 <u>Fraxinus pennsylvanica</u>	15	N	FACW	Total Number of Dominant Species Across all Strata: <u>3</u> (B)	
3 <u>Acer negundo</u>	10	N	FAC	Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)	
4 <u>Populus deltoides</u>	8	N	FAC		
5 _____					
	83 = Total Cover				
Sapling/Shrub stratum (Plot size: <u>N/A</u>)				Prevalence Index Worksheet	
1 _____				Total % Cover of:	
2 _____				OBL species <u>0</u> x 1 = <u>0</u>	
3 _____				FACW species <u>73</u> x 2 = <u>146</u>	
4 _____				FAC species <u>18</u> x 3 = <u>54</u>	
5 _____				FACU species <u>0</u> x 4 = <u>0</u>	
	0 = Total Cover			UPL species <u>0</u> x 5 = <u>0</u>	
Herb stratum (Plot size: <u>5' r</u>)				Column totals <u>91</u> (A) <u>200</u> (B)	
1 <u>Frangula alnus</u>	5	Y	FACW	Prevalence Index = B/A = <u>2.20</u>	
2 <u>Laportea canadensis</u>	3	Y	FACW		
3 _____					
4 _____					
5 _____					
6 _____					
7 _____					
8 _____					
9 _____					
10 _____					
	8 = Total Cover				
Woody vine stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:	
1 _____				<input type="checkbox"/> Rapid test for hydrophytic vegetation	
2 _____				<input checked="" type="checkbox"/> Dominance test is >50%	
	0 = Total Cover			<input checked="" type="checkbox"/> Prevalence index is ≤3.0*	
				Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)	
				Problematic hydrophytic vegetation* (explain)	
				*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
				Hydrophytic vegetation present? <u>Y</u>	

Remarks: (Include photo numbers here or on a separate sheet)
 Late season delineation, observed vegetation had already senesced.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-2	10YR 2/1	100					SiCL	
2-12+	10YR 3/1	40	7.5YR 4/6	20	C	PL/M	SiCL	Sand lenses, stratified layers
	10YR 2/1	40						

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils:
<input type="checkbox"/> Histisol (A1)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input checked="" type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Other (explain in remarks)
<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric soil present? Y

Remarks:
 Plot is immediately downslope of farthest extent of sandy fill material.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Gauge or Well Data (D9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Water-Stained Leaves (B9)	
	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Stunted or Stressed Plants (D1)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Indicators of wetland hydrology present? <u>Y</u>
Water table present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Site is connected to river flows via 36" culvert, and river gauge data indicates water elevation frequently is above the site's elevation.

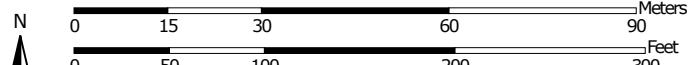
Appendix C

Web Soil Survey

Soil Map—Winona County, Minnesota
(Winona Riverfront Site)



Map Scale: 1:1,210 if printed on A portrait (8.5" x 11") sheet.

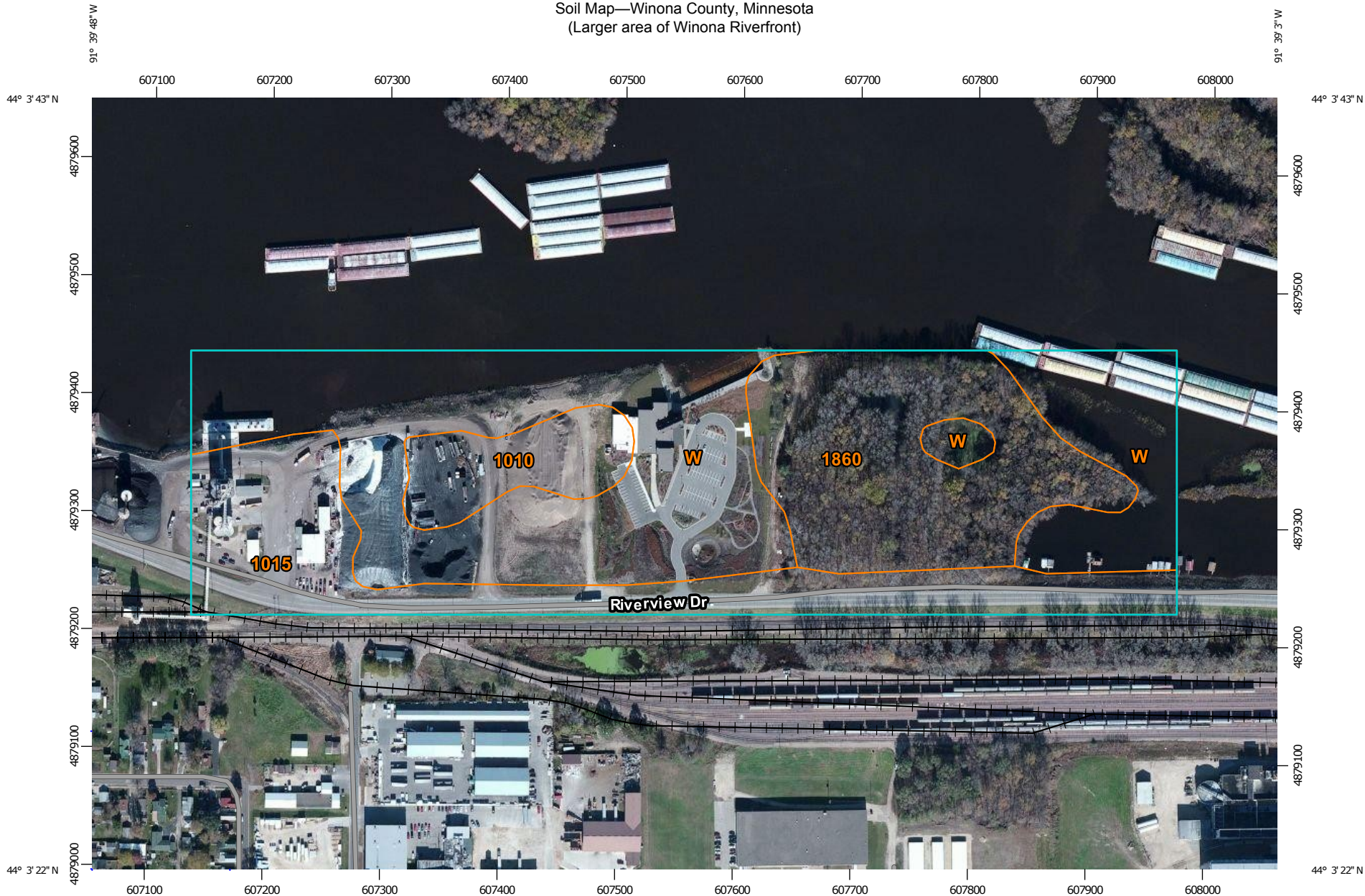


Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

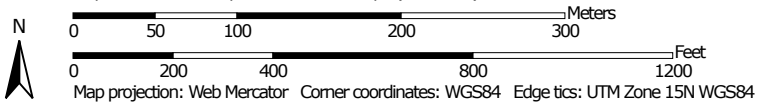
Map Unit Legend

Winona County, Minnesota (MN169)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1015	Psammments, fill	0.6	8.5%
1860	Comfrey silt loam, channeled	6.1	86.7%
W	Water	0.3	4.8%
Totals for Area of Interest		7.1	100.0%

Soil Map—Winona County, Minnesota
(Larger area of Winona Riverfront)



Map Scale: 1:4,610 if printed on A landscape (11" x 8.5") sheet.



Map Unit Legend

Winona County, Minnesota (MN169)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1010	Riverwash	3.2	6.8%
1015	Psamments, fill	10.5	22.5%
1860	Comfrey silt loam, channeled	10.7	23.0%
W	Water	22.2	47.7%
Totals for Area of Interest		46.6	100.0%

MEMORANDUM

SUBJECT: *Wetland Delineation of “Island 72” for RPED-N
Winona, Winona County, Minnesota*

1. Introduction.

The U.S. Army Corps of Engineers, St. Paul District (MVP) – Regulatory Branch conducted the wetland delineation for MVP Regional Planning and Environmental Division-North (RPED-N) in consideration of the Island 72 site for dredge material placement in the City of Winona, Winona County, Minnesota. The area of investigation (the Site) is shown on Figure 1 in Appendix A and is located in Section 22, T. 107N., R. 7W.

The purpose of this memorandum is to document the methods used and conclusions made regarding the extent of wetlands present within the Island 72 site.

2. Methods and Materials.

On-site procedures were conducted in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual (Corps Manual)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). The Corps staff team conducted the on-site data collection on Thursday, November 8, 2018.

The following resources were utilized for the wetland delineation:

- 30 June 1954 black & white historic aerial photograph, MnDNR Data Deli;
- 6 May 1992, 17 April 2008 and 24 July 2011 true color aerial photographs, and other sources provided at Google Earth;
- Minnesota Climatology Working Group Website (http://climate.umn.edu/gridded_data/precip/wetland/wetland.asp) “Wetland Delineation Precipitation Data Retrieval”;
- National Wetlands Inventory (NWI) mapping;
- MN Department of Natural Resources (DNR) Public Waters Inventory;
- USDA Web Soil Survey digital soil mapping;
- An iPad with ESRI Collector for ArcGIS to record the locations of data points and wetland/upland boundaries during field investigation; and
- ArcMap GIS program to digitize and display the results of the investigation.

In addition to the field methodologies laid out in the Midwest Supplement, the following methods were used:

- a. Placing Observations of Hydrology in the Context of Antecedent Precipitation. *Hydrology Tools for Wetland Determination* (Woodward *et al.* 1997) and *Assessing and Using Meteorological Data to Evaluate Wetland Hydrology* (Sprecher and Warne 2000) recommend evaluation of precipitation for the 3 months prior to the date of the aerial imagery to assist in making determinations regarding signatures noted on aerial photography. In addition, antecedent precipitation was determined for the 3-months prior to site visit using gridded database

information from the Minnesota Climatology Working Group website. Direct observations of hydrology indicators made during the site visit were then placed in the context of antecedent precipitation.

3. Landscape.

The site is located within the main channel of the Mississippi River, in an area designated as the Upper Mississippi National Wildlife and Fish Refuge, immediately north of the City of Winona. While much of the island has been manipulated for a marina, bridge and park construction, the portion of the island subject to this current investigation has been nearly unchanged since the construction of Lock and Dam 6 and creation of Pool 6, as observed in the following sample of aerial photographs since 1954. The April 2008 aerial photograph is a leaf-off aerial that provides an excellent view of the wetland area, with the signature visible through the canopy cover that is darker than the surrounding uplands.

Photograph 1: 30 June, 1954



Photograph 2: 6 May, 1992



Photograph 3: April 17, 2008



Photograph 4: 24 July 2011



4. Soils.

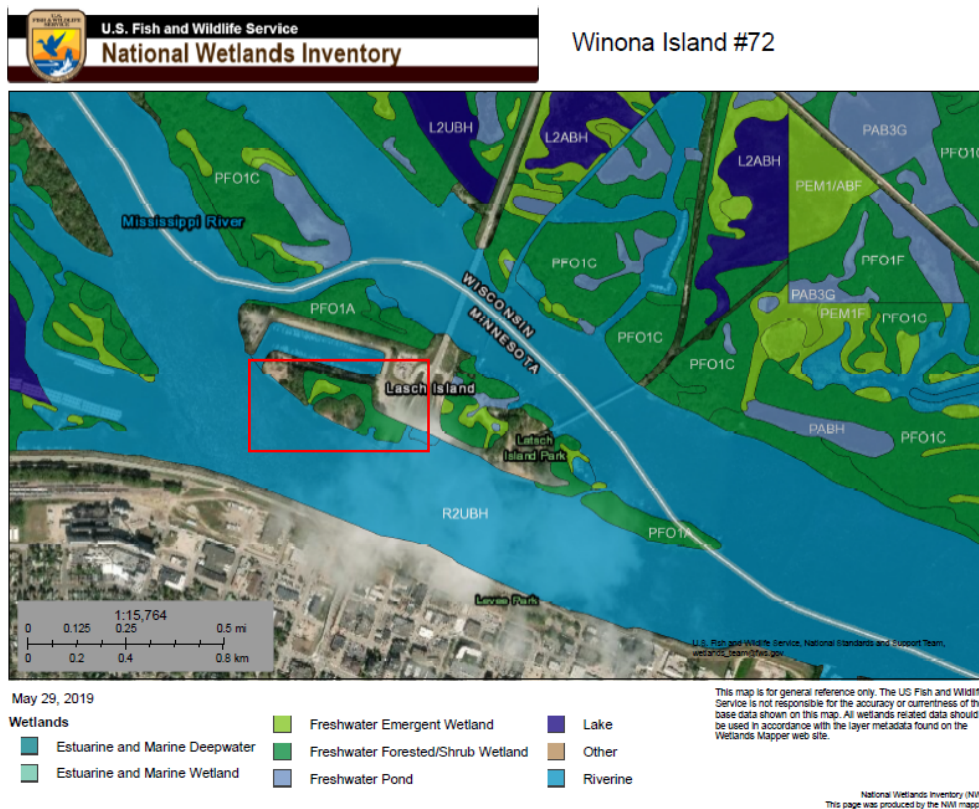
According to the Winona County Web Soil Survey, soils mapped on the project site are Shilo silt loam, ponded (predominantly hydric), Riverwash (not rated) and Psammets, fill (nonhydric sandy fill material), as shown below. The westernmost “Riverwash” polygon has been filled with dredge material in recent years, and would likely be labeled as “Psammets, fill” in any updated soil survey mapping. The polygon of “Riverwash” to the south of the delineated wetland basin is an upland knoll on a part of the island that has been unchanged since at least the 1950s.

Map Unit Legend			
Winona County, Minnesota (MN169)			
Winona County, Minnesota (MN169)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
606	Shiloh silt loam, ponded	7.2	60.3%
1010	Riverwash	3.5	29.1%
1015	Psamments, fill	0.7	5.8%
W	Water	0.6	4.8%
Totals for Area of Interest		12.0	100.0%



5. NWI and DNR Mapping.

The site is mapped on the National Wetlands Inventory (NWI) as a freshwater emergent wetland within a freshwater forested/shrub wetland, as shown below.



The site itself is not designated on the DNR Public Waters Inventory (PWI), however it is an island within Public Water 2P, the Mississippi River.

6. Site Visit 8 November 2018.

Data collection sample points were established (see Figure 1) and observations were documented on data sheets, which are part of the Corps administrative record and are available upon request. The delineation was based on field documentation of the change in topography between the wetland and upland areas, where nonhydryic sandy material became evident and indicators of wetland soils and hydrology were no longer observed.

Precipitation during the three months antecedent to the site visit on 8 November 2018 was wetter than normal (see below). September and October were wetter than normal, following a slightly dryer than normal August. Water levels in the Mississippi River had recently subsided adjacent to the site, leaving behind evidence of both recent and typical high water levels. The site visit was conducted after the end of the growing season; temperatures through November had remained on the mild side, and the soils were not yet frozen, therefore, observations of critical wetland indicators were made.

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota
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Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
 county: **Winona** township number: **107N**
 township name: **Winona (west)** range number: **7W**
 nearest community: **Goodview** section number: **8**

Aerial photograph or site visit date:
 Thursday, November 8, 2018

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: October 2018	second prior month: September 2018	third prior month: August 2018
estimated precipitation total for this location:	4.28	7.91	3.08
there is a 30% chance this location will have less than:	1.14	2.41	3.29
there is a 30% chance this location will have more than:	3.20	4.45	5.17
type of month: dry normal wet	wet	wet	dry
monthly score	3 * 3 = 9	2 * 3 = 6	1 * 1 = 1
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	16 (Wet)		

6. Results and Discussion.

One wetland area, Wetland 1, was identified and delineated on Island 72 (Figure 1) and is a shallow marsh within a bottomland forest located within the Mississippi River floodplain. Dominant vegetation includes silver maple (*Acer saccharinum*, FACW), eastern cottonwood (*Populus deltoides*, FAC) and wood-nettle (*Laportea canadensis*, FACW), with green ash (*Fraxinus pennsylvanica*, FACW) and box elder (*Acer negundo*, FACW) as sub-dominants.

The shallow marsh and floodplain forest community cited herein is based on the description and key in Eggers and Reed (2015).

7. Conclusion.

Based on the procedures described above, the evidence demonstrates the extent of wetland area at the Island 72 site, as shown on Figure 1.

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Appendix A

Figure 1

