Wetland Delineation Report for OSU Wetlands Oxbow Southeast Section

Cade Capper

October 5, 2021

Site description

The site is a predominantly emergent shrub/scrub wetland located about a mile north of Ohio State's campus (40.018120, -83.017687). It is located next to the Olentangy River, which provides the primary source of water during the rainy season. The site is mostly flat, with slight inclines towards the surrounding upland area. The area immediately surrounding the oxbow is riparian forest, while more broadly the surrounding area is developed urban.

Methods

The delineation team consisted of Cade Capper, Allison Patrick, Deirdre Wetmore, and Annie Wolodzko. The delineation was conducted on September 21st, 2021. We delineated the southeastern portion of the oxbow. To determine the wetland boundaries, we observed the soil, vegetation, and hydrology of the site, using indicators such as water lines and soil erosion to help us determine what portion is usually inundated. The study followed the methods of the Midwest Supplement.

First we surveyed the site for evidence of water inundation. We looked for markers such as water lines on the trees, erosion and drifting of the soil, and overall topography of the site to determine whether the site often experienced inundation.

To evaluate the soil, a core was taken at the center of our plot. We looked for indicators such as iron deposits from oxidation (indicated by orange veins in the soil) and hydrogen sulfide presence (indicated by a rotten egg smell) to tell whether it was a hydric soil. We also did rudimentary texture class and Munsell color analyses. We repeated this process for cores taken around where we predicted the boundary of the wetland would be to determine where the soil shifted to an upland, non-hydric soil. We marked the line where the soil shifted from hydric to non-hydric with flags as the boundary of the wetland. The center of our site and the location of our upland soil sample are shown in Figure 1.

Finally, we examined the vegetation and listed the species we found along with their wetland indicator status (obligate wetland, facultative wetland, facultative, facultative upland, and obligate upland). Based on the vegetation community in our site, we marked where wetland vegetation began and where upland vegetation ended to support our findings of where the wetland boundary was.

Findings

We observed several markers that indicated that our site was a wetland. When surveying for hydrology, we noted water marks on trees, presence of reduced iron, and oxidized rhizospheres on living roots. We also found a snail in the soil, a true aquatic fauna, indicating recent water inundation. The soil core from the center of our site was a silty clay with a color of 7.5YR 4/2 for the top 2.5 inches, and a silty clay loam with a color of 7.5YR 4/3 for a depth of 2.5-6 inches. We observed a redox dark surface in the soil, indicating that it is a hydric soil.

We found several obligate wetland vegetation species in our site. There were specimens of black willow (*Salix nigra*), a woody species indicative of a wetland. We also observed water pepper (*Persecaria hydropiper*) and American three-square (*Schoenoplectus americanus*) at the site, which are also obligate wetland plants. In addition, we found facultative wetland species at the site, including green ash (*Fraxinus pennsylvanica*) and silver maple (*Acer saccharinum*). These support our findings that it is a wetland vegetation community. Given these findings, along with those of the hydrology and soils, we determined that the site is indeed a wetland. We used these indicators to mark the boundary of the wetland (Figure 1).

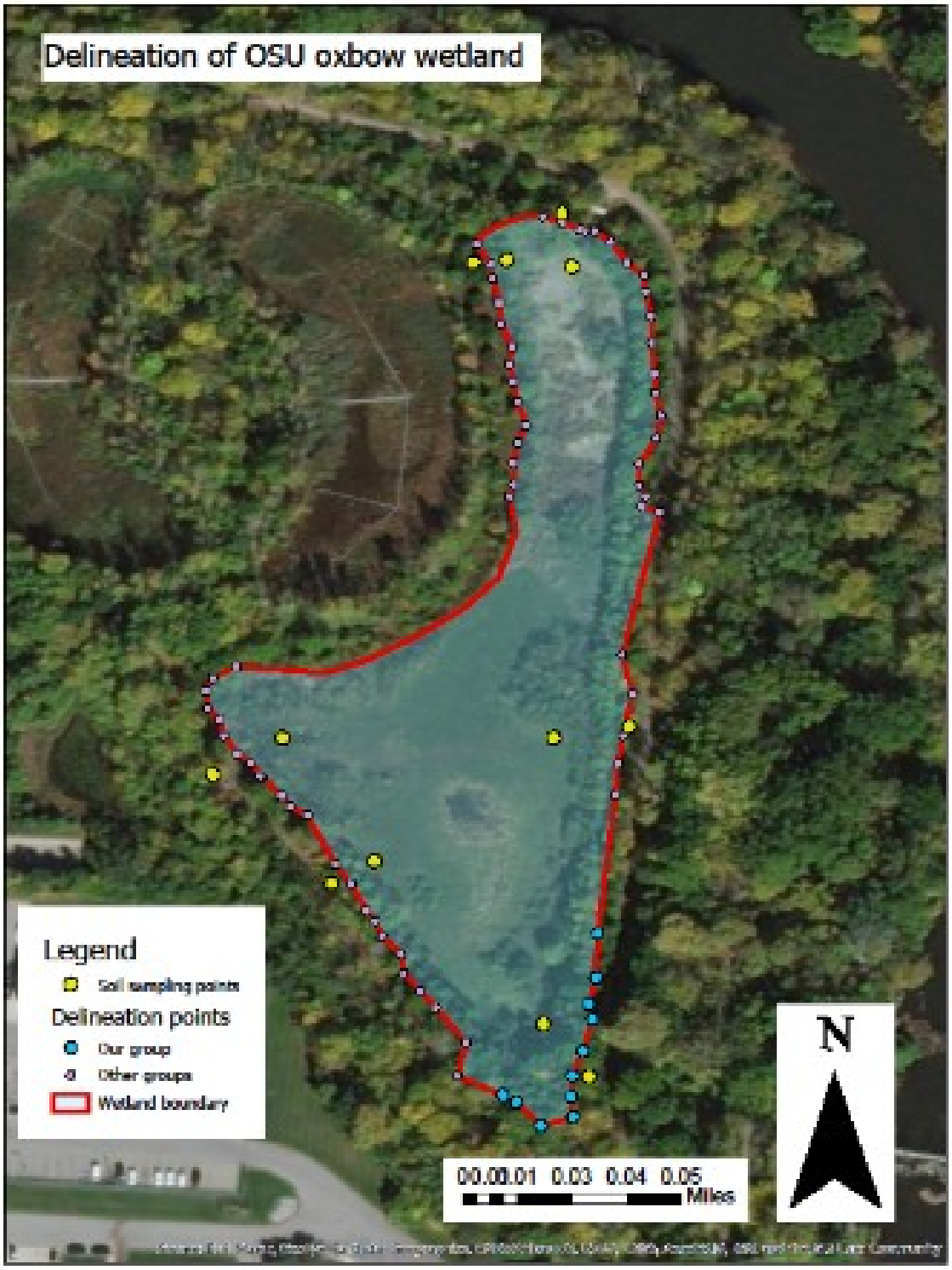


Figure 1. Map showing the boundary of the wetland and the locations of soil samples.

Conclusions

Based on the finding of obligate wetland plants, hydric soils, and wetland hydrology, we conclude that the oxbow is indeed a wetland. The estimated size based on our delineated boundaries is 5 acres. The site is most likely to be flooded in the spring when it is rainy and the Olentangy River is at its highest since the river is the primary source of water for the site. Based on the geomorphology and the water marks on the trees, we expect the flooding to be not very deep, reaching a maximum depth of about six inches in the center, where the lowest point is. The overall quality of the wetland seemed to be fairly good. There were a number of native plants that all appeared healthy, despite the presence of some invasive species (described below).

The vegetation community is a wetland shrub/scrub with an herbaceous understory that is dense in the center of the site but sparse around the edges where there are more tall, woody species present. There were several non-native and invasive species noted at the site, including flowering rush (*Butomus umbellatus*) and common reed (*Phragmites spp.*). While they covered a sizeable portion of the site, they did not appear to prevent growth of native plants such as those listed above.

While we did not observe any wildlife during our delineation, in past visits to the wetlands we have observed many animals visiting the wetlands. Notable species included great blue herons (*Ardea herodias*), white tailed deer (*Odocoileus virginianus*), and a viceroy butterfly (*Limenitis Archippus*).

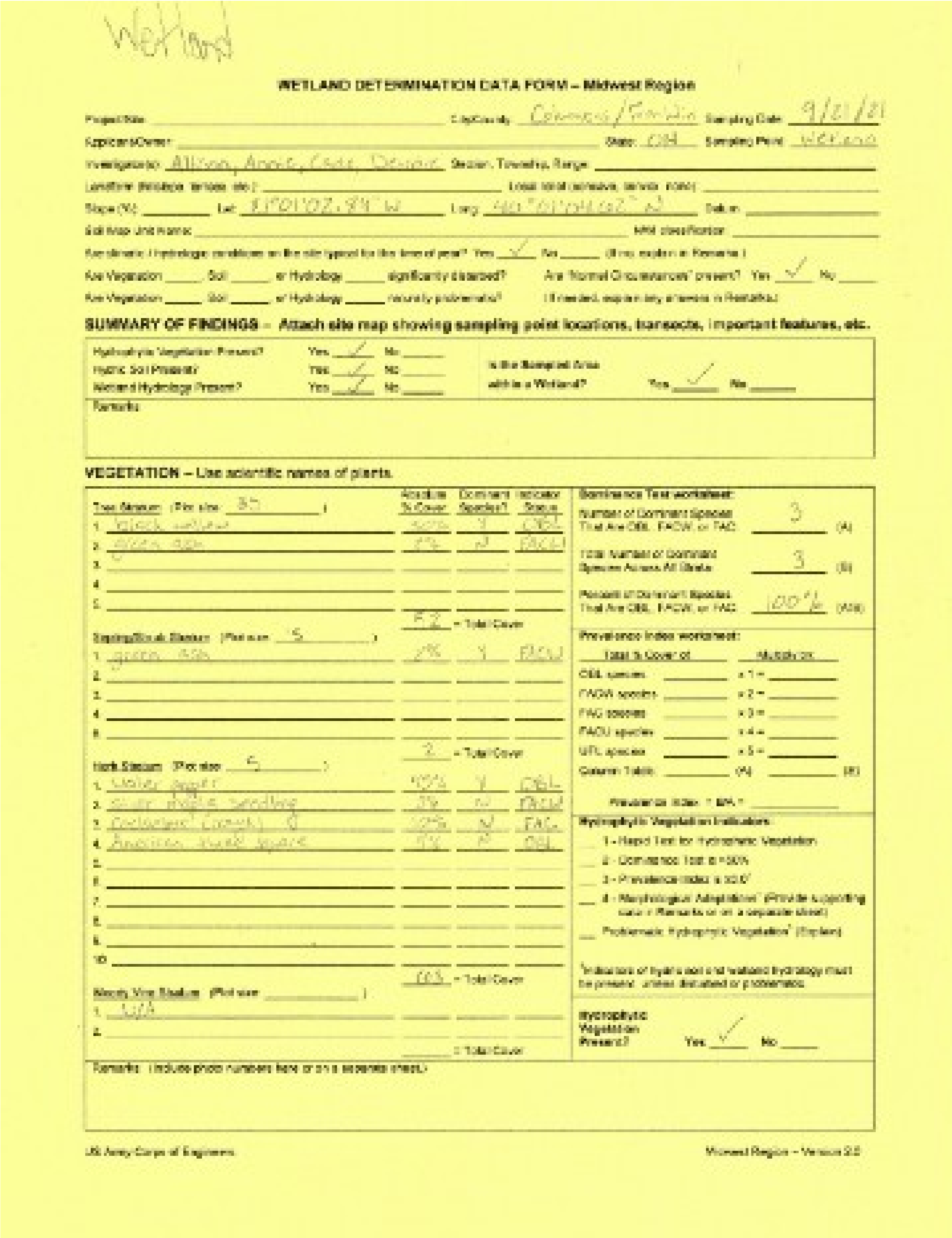
Literature cited

Environmental Laboratory. January 1987. Corps of Engineers Wetlands Delineation Manual. Retreived from https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf

U.S. Army Corps of Engineers. August 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0). Retrieved from https://www.mvp.usace.army.mil/Portals/57/docs/regulatory/Website%20Organization/Midwest%20Regional%20Supplement%20(Version%202).pdf

USDA plants database. (n.d.). Retrieved October 6, 2021, from https://plants.usda.gov/home.

Appendix 1: Sample plot data forms


Wetland

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: ______ City/County: Columbus/Franklin Sampling Date: 9/21/21
Applicant/Owner: ______ State: OH Sampling Point: Wetland
Investigator(s): Allison, Annie, Cade, Devonie Section, Township, Range: ______
Landform (hillslope, terrace, etc.): ______ Local relief (concave, convex, none): ______
Slope (%): ______ Lat: 83°01'02.84" W Long: 40°01'04.02" N Datum: ______
Soil Map Unit Name: ______ NWI classification: ______
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)
Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ______
Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No ______
Hydric Soil Present? Yes ✓ No ______
Wetland Hydrology Present? Yes ✓ No ______
Is the Sampled Area within a Wetland? Yes ✓ No ______
Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 35)	Absolute % Cover	Dominant Species?	Indicator Status
1. black willow	50%	Y	OBL
2. green ash	2%	N	FACW
3.			
4.			
5.			
	52 = Total Cover		

Sapling/Shrub Stratum (Plot size: 5)	Absolute % Cover	Dominant Species?	Indicator Status
1. green ash	2%	Y	FACW
2.			
3.			
4.			
5.			
	2 = Total Cover		

Herb Stratum (Plot size: 5)	Absolute % Cover	Dominant Species?	Indicator Status
1. water pepper	40%	Y	OBL
2. silver maple seedling	3%	N	FACW
3. cocklebur (rough)	10%	N	FAC
4. American water plantain	5%	N	OBL
5.–10.			
	103 = Total Cover		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
	= Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:
Total % Cover of: / Multiply by:
OBL species ______ x 1 = ______
FACW species ______ x 2 = ______
FAC species ______ x 3 = ______
FACU species ______ x 4 = ______
UPL species ______ x 5 = ______
Column Totals: ______ (A) ______ (B)
Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ______

Remarks: (Include photo numbers here or on a separate sheet.)

US Army Corps of Engineers — Midwest Region – Version 2.0

SOIL

Sampling Point: ______

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2.5 [illegible]	[illegible]	[illegible]	None	0	C	M	[illegible]	
2.65-16	[illegible]	[illegible]	[illegible]	[illegible]	C	M	[illegible]	silty clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 5 cm Mucky Peat or Peat (S3)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ Coast Prairie Redox (A16)
- __ Dark Surface (S7)
- __ Iron-Manganese Masses (F12)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ✓ No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- X Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9)
- ✓ Aquatic Fauna (B13)
- __ True Aquatic Plants (B14)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Gauge or Well Data (D9)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ________

Water Table Present? Yes ____ No ✓ Depth (inches): ________

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ________

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site photos

Figure 2. Black willow (Salix nigra)

Figure 3. Flowering rush (Butomus umbellata)

Figure 4. Water pepper (Persecaria hydropiper)

Figure 5. Silver maple (Acer saccharinum)

Figure 6. A snail of unknown species found at the site

Figure 7. Soil core dug at the center of the site demonstrating a hydric soil

Figure 8. Overview of a portion of the site with flags marking wetland boundary