

## TRANSMITTAL FORM

To: Bureau of Design and Environment  
Attn: Barb Traeger  
From: Illinois Natural History Survey  
Re: Wetland Determinations

### Route and Location

Sequence number: 12315  
Location: Swan Road over Little Beaucoup Creek  
Route: TR 222  
County: Perry

**Survey Conducted By:** Jason Zylka, Paul Marcum (vegetation, hydrology, GPS)  
Jesse Kurylo (soils and hydrology)  
Dennis Skultety (GIS)  
Illinois Natural History Survey  
1816 S. Oak Street  
Champaign, Illinois 61820  
(217) 265-7888 (Zylka)

**Date Conducted:** 10/7/2010

### Project Summary:

All potential wetlands within the project area were examined by evaluating features of vegetation, soils, topography, and hydrology. Three routine on-site wetland determinations were completed. One site satisfied the wetland criteria. The attached wetland report includes an explanation of methods and references used in the determination process. Results are summarized in the wetland site summaries and are described in more detail on the accompanying forms. Site location and size and a brief statement describing the vegetation quality are also included for each wetland in the summary. Maps of the wetland boundaries and wetland determination forms are included. As requested, an assessment of mitigation potential is also included with this report.

Signed:  \_\_\_\_\_

Dr. Allen E. Plocher  
INHS/IDOT Project Coordinator

Date: 12/20/2010 \_\_\_\_\_

## Wetland Report for TR 222 Mitigation in Perry County, Illinois

### Project Description:

This is a wetland survey conducted for the wetland mitigation project along Swan Road in Perry County. The following sources were examined while surveying the project area to determine wetland locations and boundaries: United States Geological Survey topographic map and National Wetland Inventory (NWI) map (Todds Mill 7.5 minute quadrangle); *Soil Survey of Perry County, Illinois* (Grantham and Indorante 1988); *Field Indicators of Hydric Soils in the United States* (United States Department of Agriculture 2006); aerial photographs; *National List of Plant Species That Occur In Wetlands: Illinois* (Reed 1988); the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Lab 1987); *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (U.S. Army Corps of Engineers 2008) and on-site vegetation, soils, topographic and hydrologic indicators.

All potential wetlands within the project corridor were examined. Three routine on-site wetland determinations were performed. One site satisfied the wetland criteria. The determination results are summarized below and are described in more detail on the accompanying forms in Appendix A. Species lists for sites within the mitigation area are included in Appendix B. The boundaries of any site in the corridor meeting the criteria of a wetland were recorded using a global positioning system (GPS). The GPS data was then used in conjunction with geographic information system (GIS) software to create maps of the locations of the wetlands. Copies of these maps are included with this report as Appendix C and the relevant GIS data has been uploaded to the IDOT extranet ([http://froscopycap.isgs.uiuc.edu/idot\\_extranet/default.asp](http://froscopycap.isgs.uiuc.edu/idot_extranet/default.asp)).

Additionally, an assessment of the mitigation efforts at this site has been performed. A brief analysis of the vegetation, soils, and hydrology for this site is included. For non-wetland areas of the mitigation site, an assessment of wetland potential has been performed based on field observations. With only one season of monitoring any assessment of wetland will be highly speculative. Further monitoring is recommended to definitively assess wetland or non-wetland status.

Included with the assessment of a site is its Floristic Quality Index (Taft *et al.* 1997). Although the Index is not a substitute for quantitative vegetation analysis in assessing plant communities, it provides a measure of the floristic integrity or level of disturbance of a site. Each native plant species is assigned a rating between 0 and 10 (the Coefficient of Conservatism) that is a subjective indicator of how likely a plant may be found on an undisturbed site in a natural plant community. A plant species that has a low Coefficient of Conservatism (C) is likely to tolerate disturbed conditions; a species with a high C is likely to require specific, undisturbed habitats. Taxa not identified to species level are not rated and are not included in the calculations.

The Floristic Quality Index (FQI) is calculated as follows:  $FQI = R/\sqrt{N}$ , where R represents the sum of the numerical ratings (C) for all species recorded for a site, and N

represents the number of native plant species on the site. The mean C value was also calculated for each site. This value is calculated as follows:  $mCv = R/N$ . The C value for each species is shown in the species list for the site. Species not native to Illinois (indicated by \* in the species list for each site) are not included in calculations. An Index score below 10 suggests a site of low natural quality; below five, a highly disturbed site. A FQI value of 20 or more ( $mCv > 3.0$ ) suggests that a site has evidence of native character and may be considered an environmental asset.

Sites with FQI values of 35 or more ( $mCv > 3.5$ ) are considered to be of natural area quality.

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Site 1: This forbland is located east of Swan Road and north of Little Beaucoup Creek. Dominant hydrophytic vegetation and wetland hydrology are present however, hydric soils are absent; thus, this site does not meet the three criteria of a wetland. The NWI coded this site as an upland. The FQI is 16.7 and the mean-rated quality is 2.5. These values are indicative of fair natural quality. This forbland comprises approximately 0.20 ha (0.49 acre) in total.

Site 2: This forested wetland is located on the west side of Swan Road and north of Little Beaucoup Creek and consists partially of the former road bed of Swan Road. Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present; thus, this site meets the three criteria of a wetland. The NWI coded this site as an upland. The FQI is 14.8 and the mean-rated quality is 2.7. These values are indicative of fair natural quality. This forested wetland comprises approximately 0.04 ha (0.1 acre) in total.

Site 3: This grassland is located west of Swan Road and south of Site 2. Dominant hydrophytic vegetation is present, however wetland hydrology and hydric soils are not present; thus, this site does not meet the three criteria of a wetland. The NWI coded this site as an upland. The FQI is 3.7 and the mean-rated quality is 1.5. These values are indicative of highly disturbed natural quality. This grassland comprises approximately 0.02 ha (0.06 acre) in total.

### **Mitigation Status**

The purpose of this project was to mitigate an impact of 0.13 acres during the replacement of the bridge over Little Beaucoup Creek and the reconstruction of the approach on a new alignment. Due to the high floristic quality of the impacted wetlands, the mitigation was to be performed at a ratio of 5.5:1, resulting in a required mitigation acreage of 0.715 acres. The total planned mitigation area was 0.725 acres. The total observed attempted mitigation area at this site was 0.65 acre. Of the 0.65 acres of attempted mitigation, only 0.1 acres are currently wetland. Portions of the mitigation site meet one or two wetland criteria, however, only Site 2 meets all three criteria. Over time, it is possible that additional acreage will develop wetland characteristics. Additional mitigation credit may be possible from the preservation or enhancement of a wetland just outside of the mitigation area. The approximate location of this wetland is indicated on

the map in Appendix C. An assessment of the three wetland criteria at the mitigation site is included below:

**Vegetation:** Hydrophytic vegetation is dominant in all areas of the mitigation site. Site 1 has developed a strong hydrophytic vegetation component through natural regeneration. In sites 2 and 3, *Agrostis alba* is a dominant; this is possibly due to the overseeding described in the conceptual compensation plan for this site. Further observation is necessary to determine if these sites will retain their current dominant vegetation.

**Soils:** The entire mitigation site is mapped as Bonnie silt loam, a hydric soil often found on floodplains in the southern part of the state. The soils in Site 1 were non-hydric across the whole site and appear to be the somewhat poorly drained Belknap silt loam. As Site 1 slopes down to the north, there appears to be a shift towards becoming a hydric soil, but it still does not meet any hydric soil indicators. Similarly, soils on Site 3 are non-hydric. Here the soils were slightly elevated above Site 2 and some of the adjacent floodplain forest. Sites 1 and 3 have not become hydric and could likely not ever become hydric under the current conditions. This could be indicative of the mitigation site having frequent but short duration flooding. In our professional opinion based on this one field visit, the soils along the road in Site 1 have a limited chance to become hydric, while the soils down slope to the north have some potential if that part of the site were to flood for longer periods of time. The soils on Site 3, under their current hydrological regime, also have a limited chance at becoming hydric.

**Hydrology:** Sites 1 and 2 have wetland hydrology based on the presence of secondary indicators. These secondary indicators can be unreliable and unpredictable on a year to year basis. For example, the presence of crayfish burrows on the site is dependent on a variety of non-hydrologic factors and detection of the burrows can be difficult in tall vegetation. Hydrology monitoring wells would provide a more reliable assessment of this site's hydrology. Site 3 does not currently have wetland hydrology and further observation is necessary to determine if the development of wetland hydrology is likely.

### **Watershed Data**

Little Beaucoup Creek is directly to the south of the project area. This project is located in the Big Muddy basin and has a USGS hydrologic unit code of 7140106.

## References

- Environmental Laboratory. 1987. Corps of Engineers wetland delineation manual. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. Technical Report Y-87-1.
- Federal Interagency Committee for Wetland Delineation. 1989. Federal manual for identifying and delineating jurisdictional wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative technical publication.
- Grantham, D.R. and S.J. Indorante. 1988. Soil survey of Perry County, Illinois. United States Department of Agriculture-Soil Conservation Service in cooperation with Illinois Agricultural Experiment Station. Illinois Agricultural Experiment Station Soil Report No. 125. 172 pp. + maps.
- Mohlenbrock, R.H. 1986. Guide to the vascular flora of Illinois. Southern Illinois University Press, Carbondale, Illinois.
- Reed, P. B., Jr. 1988. National list of plant species that occur in wetlands: Illinois. U.S. Fish and Wildlife Service, National Wetlands Inventory. NERC-88/18.13.
- Swink, F., and G. Wilhelm. 1994. Plants of the Chicago region. Indiana Academy of Science, Indianapolis.
- Taft, J. B., G.S. Wilhelm, D. M. Ladd, and L.A. Masters. 1997. Floristic quality assessment for vegetation in Illinois - a method for assessing vegetation integrity. *Erigenia* 15:3-95.
- U.S. Army Corps of Engineers. 2008. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-27. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- United States Department of Agriculture, Natural Resources Conservation Service. 2006. Field Indicators of Hydric Soils in the United States, Version 6.0. G.W. Hurt and L.M. Vasilas (eds.). USDA, NRCS cooperation with the National Technical Committee for Hydric Soils.

## Appendix A

### Wetland delineation forms

**WETLAND DETERMINATION DATA FORM – Midwest Region**

Project/Site: Beaucoup Creek Mitigation Site City/County: Perry Sampling Date: 10/7/2010  
 Applicant/Owner: IDOT District 9 State: IL Sampling Point: 1  
 Investigator(s): Zylka, Kurylo, and Marcum Section, Township, Range: Section 13, Township 4S, Range 2W  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave  
 Slope (%): 0-2% Lat: 38.17821 Long: -89.27778 Datum: WGS84  
 Soil Map Unit Name: NRCS mapped as Bonnie silt loam, revised to Belknap silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydic Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: <b>Forbland</b>					

**VEGETATION – Use scientific names of plants.**

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. <u>Acer saccharinum</u>	_____	Yes	FACW	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Aster simplex</u>	_____	Yes	FACW	
2. <u>Carex vulpinoidea</u>	_____	Yes	OBL	
3. <u>Scirpus atrovirens</u>	_____	Yes	OBL	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)  
 Total Number of Dominant Species Across All Strata: 4 (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:**  
 Dominance Test is >50%  
 Prevalence Index is ≤3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No

**SOIL**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-11	10YR 4/3	95	10YR 4/6	5	C	M	SiL	
11-13	10YR 4/2	10	10YR 4/6	10	C	M	SiL	
13-24	10YR 5/3	80	7.5YR 3/6	10	C	M	SiL	10% concretions

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>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<sup>3</sup>:**

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

This sample was taken along the roadside of the site. No area sampled within the site was hydric, including the lowest area.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- 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? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Midwest Region**

Project/Site: Beaucoup Creek Mitigation Site City/County: Perry Sampling Date: 10/7/2010  
 Applicant/Owner: IDOT District 9 State: IL Sampling Point: 2  
 Investigator(s): Zylka, Kurylo, and Marcum Section, Township, Range: Section 13, Township 4S, Range 2W  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave  
 Slope (%): 0-2% Lat: 38.17781 Long: -89.27774 Datum: WGS84  
 Soil Map Unit Name: Bonnie silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: <b>Forested wetland</b>	

**VEGETATION – Use scientific names of plants.**

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Acer saccharinum</u>		Yes	FACW	<b>Dominance Test worksheet:</b> 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%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> 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 = _____
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Agrostis alba</u>		Yes	FACW	
2. <u>Aster simplex</u>		Yes	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
_____ = Total Cover				

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

**SOIL**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 4/2	90	10YR 4/6	10	C	M	SiL	
5-12	10YR 4/2	90	7.5YR 3/6	10	C	M	SiL	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>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<sup>3</sup>:**

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

The soil cores within this site had compacted layers.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- 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? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Midwest Region**

Project/Site: Beaucoup Creek Mitigation Site City/County: Perry Sampling Date: 10/7/2010  
 Applicant/Owner: IDOT District 9 State: IL Sampling Point: 3  
 Investigator(s): Zylka, Kurylo, and Marcum Section, Township, Range: Section 13, Township 4S, Range 2W  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex  
 Slope (%): 0-2% Lat: 38.17795 Long: -89.27804 Datum: WGS84  
 Soil Map Unit Name: NRCS mapped as Bonnie silt loam, revised to undetermined. NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: <b>Native grassland</b>	

**VEGETATION – Use scientific names of plants.**

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Acer saccharinum</u>	_____	Yes	FACW	
2. <u>Agrostis alba</u>	_____	Yes	FACW	
3. <u>Aster simplex</u>	_____	Yes	FACW	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
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:**  
 Dominance Test is >50%  
 Prevalence Index is ≤3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>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.)

**SOIL**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR 4/2	90	10YR 4/6	10	C	M	SiL	
2-12	10YR 3/3	80	10YR 4/6	10	C	M	SiL	
			10YR 4/2	10	D	M		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>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<sup>3</sup>:**

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

The soils within the site surrounding this sampling point appear to have been disturbed.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- 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? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

## Appendix B

Complete species list for mitigation sites

**SPECIES LIST**  
**Site 1**

Scientific name	Common name	Stratum	Wetland indicator status	CC†
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer saccharinum</i>	silver maple	herb/shrub	FACW	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Allium vineale</i>	field garlic	herb	FACU	*
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Ammannia coccinea</i>	long-leaved ammannia	herb	OBL	5
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex frankii</i>	sedge	herb	OBL	4
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cyperus strigosus</i>	straw-colored flatsedge	herb	FACW	0
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Festuca pratensis</i>	meadow fescue	herb	FACU-	*
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Hypericum mutilum</i>	dwarf St. John's wort	herb	FACW	5
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4
<i>Juncus secundus</i>	rush	herb	FAC-	6
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lindernia dubia</i>	false pimpernel	herb	OBL	5
<i>Lobelia siphilitica</i>	blue cardinal-flower	herb	FACW+	4
<i>Ludwigia alternifolia</i>	seedbox	herb	OBL	5
<i>Ludwigia polycarpa</i>	false loosestrife	herb	OBL	5
<i>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Panicum clandestinum</i>	deer-tongue grass	herb	FACW	4
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phyla lanceolata</i>	fog-fruit	herb	OBL	1
<i>Plantago rugelii</i>	red-stalked plantain	herb	FAC	0
<i>Platanus occidentalis</i>	sycamore	herb	FACW	3
<i>Polygonum scandens</i>	climbing buckwheat	herb	FAC	2
<i>Populus deltoides</i>	eastern cottonwood	shrub/herb	FAC+	2
<i>Potentilla norvegica</i>	rough cinquefoil	herb	FAC	0
<i>Rotala ramosior</i>	tooth-cup	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3

Species list continues on next page

**SPECIES LIST**  
**Site 1 (continued)**

Scientific name	Common name	Stratum	Wetland indicator status	CC†
<i>Trifolium hybridum</i>	alsike clover	herb	FAC-	*
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

†Coefficient of Conservatism (Taft *et al.* 1997) mCv = R/N = 111/44 = 2.52  
 \*Non-native species FQI = R/(√N) = 111/(√44) = 16.73

**SPECIES LIST**  
**Site 2**

Scientific name	Common name	Stratum	Wetland indicator status	CC†
<i>Acer saccharinum</i>	silver maple	herb/tree	FACW	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Aster lateriflorus</i>	side-flowered aster	herb	FACW-	2
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Campsis radicans</i>	trumpet creeper	shrub	FAC	2
<i>Carex frankii</i>	sedge	herb	OBL	4
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cryptotaenia canadensis</i>	honestwort	herb	FAC	1
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Erigeron philadelphicus</i>	marsh fleabane	herb	FACW	3
<i>Festuca pratensis</i>	meadow fescue	herb	FACU-	*
<i>Gleditsia triacanthos</i>	honey locust	tree	FAC	2
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Laportea canadensis</i>	wood nettle	herb	FACW	2
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lobelia siphilitica</i>	blue cardinal-flower	herb	FACW+	4
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Phleum pratense</i>	timothy	herb	FACU	*
<i>Pilea pumila</i>	Canada clearweed	herb	FACW	3
<i>Plantago rugelii</i>	red-stalked plantain	herb	FAC	0
<i>Quercus bicolor</i>	swamp white oak	tree	FACW+	7
<i>Quercus palustris</i>	pin oak	tree	FACW	4
<i>Rudbeckia laciniata</i>	cutleaf coneflower	herb	FACW+	3
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Toxicodendron radicans</i>	poison ivy	shrub	FAC+	1
<i>Trifolium pratense</i>	red clover	herb	FACU+	*
<i>Ulmus americana</i>	American elm	tree	FACW-	5
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

†Coefficient of Conservatism (Taft *et al.* 1997)

\*Non-native species

$mCv = R/N = 81/30 = 2.70$

$FQI = R/(\sqrt{N}) = 81/(\sqrt{30}) = 14.79$

This site requires IEPA Case Specific Water Quality Certification due to the presence of *Quercus spp.*.

**SPECIES LIST**  
**Site 3**

Scientific name	Common name	Stratum	Wetland indicator status	CC†
<i>Acer saccharinum</i>	silver maple	herb	FACW	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Carex</i> sp.	sedge	herb	-----	--
<i>Festuca pratensis</i>	meadow fescue	herb	FACU-	*
<i>Fraxinus pennsylvanica</i>	green ash	shrub	FACW	2
<i>Rudbeckia laciniata</i>	cutleaf coneflower	herb	FACW+	3

†Coefficient of Conservatism (Taft *et al.* 1997)

\*Non-native species

mCv = R/N = 9/6 = 1.5

FQI = R/(√N) = 9/(√6) = 3.67

## Appendix C

### Maps



0 100 Feet

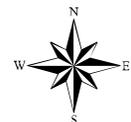


1:1,200

0 25 Meters



1 inch = 100 feet



12/2010