

# Wetland Mitigation Monitoring Report



Project Site:

Sugar Camp Creek Wetland Mitigation Bank  
Franklin County, Illinois

IDOT Sequence Number: 12354



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## Project Summary

A first-year monitoring survey was conducted at Phase I of the Sugar Camp Creek Wetland Mitigation Bank in Franklin County, Illinois. Introductory information, goals, objectives, performance criteria, methods, and results are presented in this report, followed by discussion and recommendations. Wetland determination results and a printout of the digital orthoquad (DOQ) showing wetland boundaries and sampling points are also included. Wetland determination forms can be found in Appendix A, species lists in Appendix B, figures in Appendix C, and photographs in Appendix D.

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*Cover Photo: Facing southwest from photo station 3 located at the northeast corner of the phase I project area.*

# Wetland Mitigation Monitoring Report

## Sugar Camp Creek Wetland Mitigation Bank

### Franklin County, Illinois

#### **Introduction**

First-year monitoring was conducted on September 12 and 13, 2012 at Phase I of the Sugar Camp Creek Wetland Mitigation Bank. This project is located on the east side of Sugar Camp Creek, approximately 0.7 miles south of IL 14 and 8.3 miles northeast of Benton, IL. Phase I of the mitigation bank comprises approximately 44.2 acres (Illinois Department of Transportation, 2009), but, excluding embankment, it was mapped as approximately 41.5 acres during the first-year survey. The legal description of its location is E½ SE¼ NE¼ and the E½ NE¼ SE¼ of Section 32, T5S, R4E, Franklin County, Illinois. The site lies within the Big Muddy River watershed (Hydrologic Unit Code 07140106). The site was constructed and planted in 2011 with several tree and one shrub species and a native wetland grass mixture. The National Wetlands Inventory did not map any wetlands within the site, other than the creek itself which is mapped as permanently flooded, unconsolidated bottom, lower perennial, riverine wetland (R2UBH). Soils at the site are mapped as predominantly Bonnie silt loam (Web Soil Survey), which is listed as a hydric soil.

This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, monitoring results, and discussion and recommendations based on the results. Methods and results are discussed by performance criterion for each goal.

#### **Goals, Objectives, and Performance Standards**

Goals, objectives, and performance standards for the Sugar Camp Creek Wetland Mitigation Bank follow those specified in the *Final Mitigation Banking Instrument* (Illinois Department of Transportation 2009) developed for this site. The project goals should be attained by the end of the 2-year and 5-year monitoring periods. Goals, objectives, and performance standards are listed below.

**Project goal 1:** To replace filled wetlands with restored or created ones. The amount of replacement wetlands should exceed the amount filled. The replacement wetlands should be jurisdictional.

**Objective:** Restore, create, or enhance 103.2 acres of wetland habitat into 58.2 acres of combined forested and scrub-shrub wetlands, 11 acres of emergent wetlands, and 34 acres of non-wetland areas consisting of lower perennial stream, riparian forest, and upland forest.

#### **Performance standard:**

- a. **Predominance of hydrophytic vegetation:** More than 50% of the dominant plant species must be hydrophytic at each sampling location.

- b. Presence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist at the site. Favorable conditions include inundation or saturation to within 12 inches of the surface.
- c. Presence of wetland hydrology: The planned wetlands must be inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 14 consecutive days of the growing season in at least 5 of 10 years on average.

**Project goal 2:** All planned resource areas (i.e. forested and emergent wetlands and riparian buffers) should emulate natural ones; that is, they should be dominated by native plants.

**Objectives:** Planting native tree species will create a forested wetland. Vegetation between rows of trees and shrubs will be mowed for at least two growing seasons to assist in growth and survivorship of trees. Wetlands will be seeded with an herbaceous cover composed of *Cinna arundinacea* (stout wood reed), *Elymus virginicus* (Virginia wild rye), *Secale cereale* (annual rye), *Phleum pratense* (timothy), and *Agrostis alba* (red top).

**Performance criteria:**

- a. Tree stocking: At least 217 live bare-root seedling/acre or 54 saplings/acre should be established and living by the end of the two and five year monitoring periods.
- b. Native species composition: At least 50% of the plants present should be non-weedy, native, perennial and annual species by the end of the two year monitoring period and at least 90% by the end of the five year monitoring period.
- c. Percent cover: At least 30% of the total vegetation cover should be made up of native, non-weedy species by the end of the two year monitoring period and at least 60% by the end of the five year monitoring period.
- d. Dominant herbaceous species: It is expected that weedy species will remain dominant after 2-years; however, data from the first two years shall show a trajectory toward reduction in the percentage of non-native or weedy species. None of the three most dominant plant species in any stratum may be non-native or weedy species by the end of the five year monitoring period.
- e. Floristic Quality Index (FQI): The FQI should be greater than ten by the end of two years and less than 20 by the end of the five year monitoring period. FQI in forested areas is expected to decrease after canopy closure and recover thereafter as shade-tolerant species colonize the herbaceous and shrub layers.

**Methods**

**Project goal 1**

- a. Predominance of hydrophytic vegetation

The method for determining dominant vegetation at a wetland site is described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (U.S. Army Corps of Engineers 2010) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). It is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is then

assigned its wetland indicator status rating (Lichvar and Kartesz 2009). Any plant rated facultative or wetter (FAC, FACW, or OBL) is considered a hydrophyte. A predominance of wetland vegetation in the plant community exists if more than 50% of the dominant species present are hydrophytic. Predominance of hydrophytic vegetation was determined at the sampling point level as part of the routine wetland determination procedure. Site-wide dominant species were estimated visually, and are noted in the site species list.

b. Presence of hydric soils

The soil was sampled in order to monitor hydric soil development. Soil profile morphology including horizon color, texture, and structure was described at various points throughout the site.

Additionally, the presence, type, size, and abundance of redoximorphic features were noted. Hydric soils may develop slowly, and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soil indicators at the end of the five-year monitoring period, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation persist at the site.

c. Presence of wetland hydrology

Illinois State Geological Survey (ISGS) personnel have installed a variety of hydrologic monitoring devices at the site and will be responsible for monitoring site hydrology.

**Project goal 2**

a. Tree stocking

In order to create floodplain forest, tree seedlings were to be planted at the compensation sites as specified in the *Final Mitigation Banking Instrument* (Illinois Department of Transportation 2009). The as-built plan could not be located for this project so it is assumed the procedures were followed as described in the *Instrument*. Trees and shrubs were planted using bare-root seedlings planted on 10 x 10 foot centers (436 seedlings/acre). At least five species were planted (selected from Table 1) and at least two of those were to be hard mast producing. Original plantings should have taken place in the fall of 2011. Vegetation between planted rows of trees and shrubs was to be mowed for at least the first two growing seasons although this did not appear to have occurred in the 2012 growing season.

Table 1. Tree and shrub species for planting in planned forested wetlands and riparian buffer.

Species	Common name	Wetland indicator status	Hard mast producing
<i>Acer rubrum</i>	Red maple	FAC	
<i>Betula nigra</i>	River birch	FACW	
<i>Carya cordiformis</i>	Bitter-nut hickory	FAC	yes
<i>Carya illinoensis</i>	Pecan	FACW	yes
<i>Cephalanthus occidentalis</i> *	Buttonbush*	OBL	
<i>Diospyros virginiana</i>	Persimmon	FAC	
<i>Juglans nigra</i>	Black walnut	FACU	yes
<i>Liquidambar styraciflua</i>	Sweet gum	FACW	yes
<i>Platanus occidentalis</i>	Sycamore	FACW	
<i>Quercus bicolor</i>	Swamp white oak	FACW	yes
<i>Quercus lyrata</i>	Overcup oak	OBK	yes
<i>Quercus palustris</i>	Pin oak	FACW	yes
<i>Quercus phellos</i>	Willow oak	FACW	yes
<i>Quercus shumardii</i>	Shumard oak	FACW	yes

\*Shrub plantings will occur along the fringes of proposed emergent wetland areas.

Survivorship of planted trees was estimated through quantitative sampling. Ten sampling plots were randomly located throughout the planned forested wetlands. A GPS point was collected at the northeast corner of each plot (Figure 2). The rectangular plots measured 180 ft N-S by 100 ft W-E. Each plot covered 0.41 ac (totaling 4.13 ac sampled) to cover a total of at least ten percent of the proposed forested wetland area (approximately 29.3 ac in phase 1). Tree survival was calculated as the number of live trees per acre.

b. Native Species Composition

A complete list of plant species present was compiled for each site covering Phase I of the Bank. Each native plant species was assigned a “coefficient of conservatism” (C) (Taft et al. 1997), a subjective rating of species fidelity to undegraded natural communities, ranging from zero to ten. Conservative species - those more likely to be found in “pristine” natural areas - were assigned high numbers, whereas non-conservative species - those that occur in anthropogenically disturbed areas - were given lower numbers. Non-native species and those not identifiable to species level were not assigned a rating. Botanical nomenclature follows *Vascular Flora of Illinois* (Mohlenbrock 2002).

c. Percent cover

A visual estimation of the percent cover of native, non-weedy species was collected through a meander survey in each community. Non-weedy species in this report are those species with a coefficient of conservatism of 2 or greater. Future monitoring will include quantitative transect sampling to more accurately assess this criterion as described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (U.S. Army Corps of Engineers 2010) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989).

d. Dominant herbaceous species

A visual estimation of the dominant species in each community was collected by a meander survey. Dominant species were defined as those that individually covered at least 20% of the site based on visual estimation. Future monitoring will include quantitative transect sampling to more accurately assess this criterion as described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (U.S. Army Corps of Engineers 2010) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989).

e. Floristic Quality Index (FQI):

The Floristic Quality Index (FQI) is computed as  $FQI = (\text{mean } C) \times (\sqrt{N})$ , where mean C is the mean coefficient of conservatism for all native plant species at a site and N is the total number of native plant species at the site. In very general terms, higher FQI values for plant communities indicate more similarity to “pristine” natural areas, as compared to those communities with lower FQI values. Botanical nomenclature follows *Vascular Flora of Illinois* (Mohlenbrock 2002).

**Photos**

Permanent photo stations were set up to monitor site progress from year to year. A photo station location map can be found in Appendix C, Figure 4. Selected photos taken in September 2012 are located in Appendix D.

**Results**

**Project goal 1**

a. Predominance of hydrophytic vegetation

Dominant plant species at sampling points in both wetland Sites 1 and 2 met the dominant hydrophytic vegetation criterion (Appendix A).

b. Presence of hydric soils

Soils examined were found to be relatively undisturbed and hydric soil indicators are present in the majority of the sites. A soil description of a typical pedon located within each site can be found on the data forms in Appendix A.

c. Presence of Wetland Hydrology

Using the Midwest Region Supplement (USACE 2010) to the 1987 Manual (Environmental Laboratory), the ISGS estimated that 35.70 ac of the entire wetland bank and 32.62 ac of Phase I satisfied wetland hydrology criteria for 14 or more consecutive days during the growing season (Figure 3). More detailed hydrologic information can be found in the ISGS Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites (Miner et al. 2012).

**Project goal 2**

a. Tree Stocking

Fourteen percent (4.13 ac) of Site 2 (29.39 ac) was sampled in ten 0.41 ac plots on 12 and 13 September, 2012. Results of the planted tree count are shown in Table 2. An average of 167

trees/acre was found alive in 2012 across ten sampling plots. This does not meet the performance standard of 217 seedlings/acre. Buttonbush (*Cephalanthus occidentalis*) was planted along the emergent wetland areas borders and did not occur within the sampling plots. The buttonbush appears to be surviving.

Table 2. Number of trees counted in ten 0.41 ac plots randomly sampled within site 2, September 2012.

Species	Common name	Number of trees counted per 0.41 ac plot										Sum
		1	2	3	4	5	6	7	8	9	10	
<i>Acer rubrum</i>	Red maple	29	8	22	23	24	7	7	0	2	1	123
<i>Betula nigra</i>	River birch	1	1	0	6	0	2	10	0	0	2	22
<i>Carya cordiformis</i>	Bitternut hickory	4	0	1	1	1	0	0	0	0	0	7
<i>Carya illinoensis</i>	Pecan	3	3	1	13	7	11	2	6	0	2	48
<i>Diospiros virginiana</i>	Persimmon	7	2	3	7	11	3	8	0	3	1	45
<i>Liquidambar styraciflua</i>	Sweet gum	8	7	0	5	1	5	0	0	0	0	26
<i>Platanus occidentalis</i>	Sycamore	0	17	25	2	40	1	23	0	0	0	108
<i>Quercus alba</i>	White oak	3	33	1	5	1	0	10	0	0	0	53
<i>Quercus bicolor</i>	Swamp white oak	2	0	0	1	0	0	0	14	2	0	19
<i>Quercus lyrata</i>	Overcup oak	7	27	12	3	6	14	19	6	5	2	101
<i>Quercus palustris</i>	Pin oak	17	20	0	42	1	6	7	2	8	3	106
<i>Quercus phellos</i>	Willow oak	2	1	15	7	4	1	1	0	0	1	32
<b>Total trees counted</b>		<b>83</b>	<b>119</b>	<b>80</b>	<b>115</b>	<b>96</b>	<b>50</b>	<b>87</b>	<b>28</b>	<b>20</b>	<b>12</b>	<b>690</b>
<b>Trees per acre</b>		<b>201</b>	<b>288</b>	<b>194</b>	<b>278</b>	<b>232</b>	<b>121</b>	<b>211</b>	<b>68</b>	<b>48</b>	<b>29</b>	<b>167</b>

b. Native species composition

Wetland Sites 1 and 2 (emergent and tree-planted wetlands) both meet the native species composition criterion having greater than 50% native, non-weedy species but Site 3 (upland riparian buffer) does not. Table 3 shows the native species composition for each site.

Table 3. Number of non-weedy, native species; and percent non-weedy, native species by site and across the entire Phase 1 bank, September 2012.

Site	Total Species	Non-Weedy, Native Species	% Non-Weedy, Native*
1 Emergent Wetland	51	25	51.0
2 Tree-planted Wetland	88	46	52.3
3 Non-Wet Riparian Buffer	55	21	38.9
<b>All Species in Phase 1</b>	<b>151</b>	<b>80</b>	<b>54.1</b>

\*Individuals not identifiable to species level were not included in this calculation.

c. Percent Cover

The emergent wetland (Site 1) was heavily dominated by the native non-weedy species creeping primrose willow (*Ludwigia peploides*), which covered more than 30% of the site. Site 1 met the percent cover criterion. The tree-planted wetland and upland riparian buffer (Sites 2 and 3) were both heavily dominated by weedy and/or non-native species. Neither Site 2 nor 3 met the criterion

for at least 30% cover of native non-weedy species based on visual estimation. See Appendix B for dominant species and their native and/or weedy status (C value of 0 or 1) in each community.

d. Dominant Herbaceous Species

At least one dominant species is non-native or considered weedy in each community. It is unknown yet if there will be a trajectory towards a reduction in the percentage of non-native weedy species after the first year of monitoring. See Appendix B for dominant species and their native and/or weedy status in each community.

e. Floristic Quality Index (FQI):

The FQI value is greater than 10 and meets the performance criteria in all three communities (Table 4).

Table 4. Total species, mean C value and FQI for each site and the entire Phase 1 Bank, September 2012.

Site	Total Species	Mean C Value	FQI
1 Emergent Wetland	51	2.5	15.9
2 Tree-planted Wetland	88	2.6	21.9
3 Non-Wet Riparian Buffer	55	2.0	13.0
<b>All Species in Phase 1</b>	<b>151</b>	<b>2.7</b>	<b>29.4</b>

**Discussion**

After the first monitoring season, Project Goal 1 (creation of jurisdictional wetland) has partially been met. Wetland habitat appears to be present throughout Site 1 and the majority of Site 2. Small portions of Site 2 did not meet the wetland hydrology criterion in 2012. Continued hydrologic monitoring by the ISGS will determine whether or not wetland hydrology is maintained throughout the Sugar Camp Creek Bank.

Project Goal 2 (meeting minimum standards for planted species survival and floristic composition) has partially been met. Planted tree survivorship, as measured in 2012, appears to be lacking on the whole. The small seedlings were difficult to find in the tall surrounding vegetation and many seedlings appeared to have already died back and re-sprouted. Mowing between rows of planted trees as recommended in the *Final Banking Instrument* (IDOT 2009) may help increase future survivorship.

Minimum standards for native species composition were met at the Sugar Camp Creek Bank as a whole in 2012 as well as within both wetland sites. Minimum FQI standards were also met for the entire bank and within each site. However, dominance and percent cover of weedy and non-native species did not meet performance standards. The native weedy species late boneset (*Eupatorium altissimum*) was heavily dominant in Sites 2 and 3. Weedy annual and perennial grasses were also dominant in those sites including redtop (*Agrostis gigantea*), timothy (*Phleum pretense*), Italian rye

grass (*Lolium multiflorum*), and orchard grass (*Dactylis glomerata*). These species are likely to decrease if sites become wetter and planted trees begin to mature and effectively shade out this understory vegetation. Natural community development may enable favorable dominant species to become prevalent over time.

In summary, the primary concerns are establishing (or maintaining) wetland hydrology in the areas lacking in Site 2, and developing and maintaining acceptable dominant, native, hydrophytic plant communities throughout the Sugar Camp Creek Wetland Mitigation Bank. As of 2012, 39.08 ac of wetland has been created. This includes 9.69 ac of emergent wetland (Site 1), 29.39 ac wet forland planted with tree and shrub seedlings (Site 2). Additionally, 2.41 ac of upland riparian buffer was created (Site 3). Approximate acreage was determined using ArcGIS 10.0 software (ESRI 2010) (see Figure 1 in Appendix D).

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**APPENDIX A**

**Wetland Determination Forms**

## WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Sugar Camp Creek Wetland Mitigation Bank City/County: Franklin Sampling Date 9/12/2012  
 Applicant/Owner: IDOT District 9 State: IL Sampling Point 1A  
 Investigator(s): Engelhardt, Wiesbrook, Ketzner, and Sivicek Section, Township, Range: Sec 32, T5S, R4E  
 Landform (hillslope, terrace, etc.): Floodplain depression Local relief (concave, convex, none): Concave  
 Slope (%): <1 Lat: 38.04315 Long: -88.78067 Datum: NAD 83  
 Soil Map Unit Name: Bonnie SIL, 0-2% slopes, frequently flooded NWI classification: U  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  
 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? <u>Yes</u> Hydric Soil Present? <u>Yes</u> Wetland Hydrology Present? <u>Yes</u>	<b>Is the Sampled Area within a Wetland?</b> <u>Yes</u>
Remarks: <u>Community type is wet forbland.</u>	

### VEGETATION -Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: <u>30 ft radius</u> )					
1. _____				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That are OBL, FACW, or FAC: _____ (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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15 ft radius</u> )					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators</b> <input checked="" type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2-Dominance Test is >50% <input type="checkbox"/> 3-Prevalence Index is < or =3.0 <sup>1</sup> <input type="checkbox"/> 4-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.	
<b>Herb Stratum</b> (Plot size: <u>5 ft radius</u> )					
1. <i>Ipomoea lacunosa</i>	65	Yes	FACW		
2. <i>Panicum dichotomiflorum</i>	23	No	FACW		
3. <i>Echinochloa muricata</i>	20	No	OBL		
4. <i>Persicaria pensylvanica</i>	5	No	FACW		
5. <i>Amaranthus tuberculatus</i>	4	No	OBL		
6. <i>Eclipta prostrata</i>	3	No	FACW		
7. <i>Eupatorium serotinum</i>	2	No	FAC		
8. <i>Phyla lanceolata</i>	2	No	OBL		
9. <i>Cyperus erythrorhizos</i>	1	No	OBL		
10. _____					
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> <u>Yes</u>	
<b>Woody Vine Stratum</b> (Plot size: <u>30 ft radius</u> )					
1. _____					
2. _____					
_____ = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					

**SOIL**

Sampling Point: 1A

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>		
0-13+	10YR 5/1	88	10YR 4/6	10	C	M	SIL	
0-13+			10YR 6/1	2	D	PL		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup> Location: PL=Pore Lining, M=Matrix

<p><b>Hydric Soil Indicators:</b></p> <input type="checkbox"/> Histosol (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 checked="" 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)	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p><b>Restrictive Layer (if observed):</b>          Type: _____          Depth (inches): _____</p>	<p><b>Hydric Soil Present?</b> <u>Yes</u></p>
--	---

Remarks:

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b>  <u>Primary Indicators (minimum of one is required: check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input 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)	<p><u>Secondary Indicators (minimum of two is required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" 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)
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<p><b>Field Observations:</b>          Surface Water Present? <u>Yes</u> Depth (inches): <u>7</u>          Water Table Present? <u>Yes</u> Depth (inches): <u>0</u>          Saturation Present? <u>Yes</u> Depth (inches): <u>0</u>          (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> <u>Yes</u></p>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  
 Small portions of Site 1 do not meet hydrology of 14 days or more as described in report results. See details in the ISGS Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites (Miner et al. 2012).

Remarks:

## WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Sugar Camp Creek Wetland Mitigation Bank City/County: Franklin Sampling Date 9/12/2012  
 Applicant/Owner: IDOT District 9 State: IL Sampling Point 1B  
 Investigator(s): Engelhardt, Wiesbrook, Ketzner, and Sivicek Section, Township, Range: Sec 32, T5S, R4E  
 Landform (hillslope, terrace, etc.): Floodplain depression Local relief (concave, convex, none): Concave  
 Slope (%): <2 Lat: 38.04190 Long: -88.78135 Datum: NAD 83  
 Soil Map Unit Name: Bonnie SIL, 0-2% slopes, frequently flooded NWI classification: U  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  
 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? <u>Yes</u> Hydric Soil Present? <u>Yes</u> Wetland Hydrology Present? <u>Yes</u>	<b>Is the Sampled Area within a Wetland?</b> <u>Yes</u>
Remarks: <u>Community type is wet forbland.</u>	

### VEGETATION -Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: <u>30 ft radius</u> )					
1. _____				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That are OBL, FACW, or FAC: _____ (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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15 ft radius</u> )					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators</b> <input checked="" type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2-Dominance Test is >50% <input type="checkbox"/> 3-Prevalence Index is < or =3.0 <sup>1</sup> <input type="checkbox"/> 4-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.  <b>Hydrophytic Vegetation Present?</b> <u>Yes</u>	
<b>Herb Stratum</b> (Plot size: <u>5 ft radius</u> )					
1. <u>Ludwigia peploides var. glabrescens</u>	95	Yes	OBL		
2. <u>Ipomoea lacunosa</u>	15	No	FACW		
3. <u>Echinochloa muricata</u>	2	No	OBL		
4. <u>Setaria glauca</u>	2	No	FAC		
5. <u>Amaranthus tuberculatus</u>	1	No	OBL		
6. <u>Diodia virginiana</u>	1	No	FACW		
7. _____					
8. _____					
9. _____					
10. _____					
116 = Total Cover				<b>Hydrophytic Vegetation Present?</b> <u>Yes</u>	
<b>Woody Vine Stratum</b> (Plot size: <u>30 ft radius</u> )					
1. _____				<b>Hydrophytic Vegetation Present?</b> <u>Yes</u>	
2. _____					
_____ = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					

**SOIL**

Sampling Point: 1B

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>		
0-4	10YR 5/2	95	10YR 4/6	5	C	M, PL	SIL	
4-12+	10YR 4/4	95	7.5YR 2/2	5	C	M	SIL	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup> Location: PL=Pore Lining, M=Matrix

<p><b>Hydric Soil Indicators:</b></p> <input type="checkbox"/> Histosol (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 checked="" 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)	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p><b>Restrictive Layer (if observed):</b>          Type: _____          Depth (inches): _____</p>	<p><b>Hydric Soil Present?</b> <u>Yes</u></p>
--	---

Remarks:

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b>  <u>Primary Indicators (minimum of one is required: check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input 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 checked="" 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)	<p><u>Secondary Indicators (minimum of two is required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" 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)
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<p><b>Field Observations:</b>          Surface Water Present? <u>No</u> Depth (inches): _____          Water Table Present? <u>No</u> Depth (inches): _____          Saturation Present? <u>No</u> Depth (inches): _____          (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> <u>Yes</u></p>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  
 Small portions of Site 1 do not meet hydrology of 14 days or more as described in report results. See details in the ISGS Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites (Miner et al. 2012).

Remarks:

## WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Sugar Camp Creek Wetland Mitigation Bank City/County: Franklin Sampling Date 9/12/2012  
 Applicant/Owner: IDOT District 9 State: IL Sampling Point 2A  
 Investigator(s): Engelhardt, Wiesbrook, Ketzner, and Sivicek Section, Township, Range: Sec 32, T5S, R4E  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None  
 Slope (%): 0 Lat: 38.04499 Long: -88.77937 Datum: NAD 83  
 Soil Map Unit Name: Bonnie SIL, 0-2% slopes, frequently flooded NWI classification: U  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  
 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? <u>Yes</u> Hydric Soil Present? <u>Yes</u> Wetland Hydrology Present? <u>Yes</u>	<b>Is the Sampled Area within a Wetland?</b> <u>Yes</u>
Remarks: Community type is wet forbland.	

### VEGETATION -Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: 30 ft radius )					
1. _____				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: 15 ft radius)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators</b> <input type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2-Dominance Test is >50% <input type="checkbox"/> 3-Prevalence Index is < or =3.0 <sup>1</sup> <input type="checkbox"/> 4-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.  <b>Hydrophytic Vegetation Present?</b> <u>Yes</u>	
<b>Herb Stratum</b> (Plot size: 5 ft radius )					
1. <i>Agrostis gigantea</i>	35	Yes	FACW		
2. <i>Eupatorium serotinum</i>	35	Yes	FAC		
3. <i>Aster lanceolatus</i>	20	Yes	FAC		
4. <i>Panicum dichotomiflorum</i>	20	Yes	FACW		
5. <i>Phleum pratense</i>	15	No	FACU		
6. <i>Aster racemosus</i>	7	No	FACW		
7. <i>Lolium multiflorum</i>	3	No	UPL		
8. <i>Ipomoea lacunosa</i>	2	No	FACW		
9. <i>Juncus tenuis</i>	2	No	FAC		
10. <i>Echinochloa muricata</i>	1	No	OBL		
_____ = Total Cover					
<b>Woody Vine Stratum</b> (Plot size: 30 ft radius)					
1. _____					
2. _____					
_____ = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					

**SOIL**

Sampling Point: 2A

**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>		
0-8	10YR 4/1	85	10YR 4/6	15	C	M	SIL	
8-13+	2.5Y 6/1	90	10YR 4/6	10	C	M	SIL	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix

<p><b>Hydric Soil Indicators:</b></p> <input type="checkbox"/> Histosol (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 checked="" 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)	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
---	---	---

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

<p><b>Restrictive Layer (if observed):</b>                  Type: _____                  Depth (inches): _____</p>	<p><b>Hydric Soil Present?</b> <u>Yes</u></p>
--	---

Remarks:

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b>  <u>Primary Indicators (minimum of one is required: check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" 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)	<p><u>Secondary Indicators (minimum of two is required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" 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)
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<p><b>Field Observations:</b>                  Surface Water Present? <u>No</u> Depth (inches): _____                  Water Table Present? <u>No</u> Depth (inches): _____                  Saturation Present? <u>No</u> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> <u>Yes</u></p>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  
 Detailed hydrologic information can be found in the ISGS Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites (Miner et al. 2012).

Remarks:

**APPENDIX B**

**Wetland Plant Species Lists**

Site 1- Emergent wetland (Species list includes planted species)

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<b><i>Ludwigia peploides var. glabrescens</i></b>	<b>creeping primrose willow</b>	<b>H</b>	<b>OBL</b>	<b>5</b>
<b><i>Persicaria pensylvanica</i></b>	<b>pinkweed</b>	<b>H</b>	<b>FACW</b>	<b>1</b>
<b><i>Xanthium strumarium</i></b>	<b>cocklebur</b>	<b>H</b>	<b>FAC</b>	<b>0</b>
<i>Acer saccharinum</i>	silver maple	H	FACW	1
<i>Alisma subcordatum</i>	common water plantain	H	OBL	2
<i>Amaranthus tuberculatus</i>	tall waterhemp	H	OBL	1
<i>Ammannia coccinea</i>	long-leaved ammannia	H	OBL	5
<i>Aster lanceolatus</i>	panicked aster	H	FAC	3
<i>Betula nigra</i>	river birch	H	FACW	4
<i>Bidens comosa</i>	swamp tickseed	H	OBL	2
<i>Bidens frondosa</i>	common beggar's ticks	H	FACW	1
<i>Boltonia asteroides</i>	false aster	H	OBL	5
<i>Campsis radicans</i>	trumpet creeper	H	FACU	2
<i>Carex lupulina</i>	common hop sedge	H	OBL	5
<i>Chamaesyce humistrata</i>	spreading spurge	H	FACW	1
<i>Chamaesyce maculata</i>	spotted creeping spurge	H	FACU	0
<i>Cyperus erythrorhizos</i>	red-rooted nut sedge	H	OBL	1
<i>Cyperus esculentus</i>	field nut sedge	H	FACW	0
<i>Cyperus pseudovegetus</i>	false green flat sedge	H	FACW	5
<i>Cyperus strigosus</i>	long-scaled nut sedge	H	FACW	0
<i>Dichanthelium acuminatum</i>	panic grass	H	FAC	0
<i>Diodia virginiana</i>	large buttonweed	H	FACW	4
<i>Echinochloa muricata</i>	spiny barnyard grass	H	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	H	FACW	2
<i>Eleocharis erythropoda</i>	red-rooted spike rush	H	OBL	3
<i>Eleocharis ovata var. obtusa</i>	blunt spike rush	H	OBL	2
<i>Eupatorium serotinum</i>	late boneset	H	FAC	1
<i>Hibiscus lasiocarpus</i>	hairy rose mallow	H	OBL	5
<i>Ipomoea hederacea*</i>	ivy-leaved morning glory	H	FAC	-
<i>Ipomoea lacunosa</i>	small morning glory	H	FACW	1
<i>Juncus nodatus</i>	stout rush	H	OBL	6
<i>Leersia oryzoides</i>	rice cut grass	H	OBL	3
<i>Ludwigia palustris var. americana</i>	marsh purslane	H	OBL	4
<i>Ludwigia sp.</i>	loosestrife	H	OBL	-
<i>Lycopus americanus</i>	common water horehound	H	OBL	3
<i>Panicum dichotomiflorum</i>	fall panicum	H	FACW	0
<i>Panicum rigidulum</i>	munro grass	H	FACW	6
<i>Paspalum sp.</i>	bead grass	H		-
<i>Penthorum sedoides</i>	ditch stonecrop	H	OBL	2
<i>Persicaria hydropiper*</i>	water pepper	H	OBL	-
<i>Phalaris arundinacea*</i>	reed canary grass	H	FACW	-
<i>Phyla lanceolata</i>	fog fruit	H	OBL	1
<i>Pluchea camphorata</i>	camphor weed	H	FACW	7
<i>Rumex altissimus</i>	pale dock	H	FACW	2
<i>Rumex crispus*</i>	curly dock	H	FAC	-
<i>Salix nigra</i>	black willow	H	OBL	3

Continued on next page

**Site 1 – Emergent wetland continued**

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<i>Scirpus atrovirens</i>	dark green rush	H	OBL	4
<i>Setaria glauca</i> *	pigeon grass	H	FAC	-
<i>Sida spinosa</i> *	prickly sida	H	FACU	-
<i>Solanum carolinense</i>	horse nettle	H	FACU	0
<i>Typha angustifolia</i> *	narrow-leaved cattail	H	OBL	-
*Non-native species      Dominant species and strata indicated by bold			Mean C =	2.5
H = Herb, T = Tree, S = Sapling/Shrub, W = Woody Vine			FQI =	15.9

**Site 2- Tree-planted wetland (Species list includes planted species)**

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<b><i>Agrostis gigantea</i></b>	<b>red top</b>	<b>H</b>	<b>FACW</b>	<b>0</b>
<b><i>Eupatorium serotinum</i></b>	<b>late boneset</b>	<b>H</b>	<b>FAC</b>	<b>1</b>
<b><i>Lolium multiflorum</i>*</b>	<b>Italian rye grass</b>	<b>H</b>	<b>UPL</b>	<b>-</b>
<b><i>Phleum pratense</i>*</b>	<b>timothy</b>	<b>H</b>	<b>FACU</b>	<b>-</b>
<i>Acalypha rhomboidea</i>	three-seeded mercury	H	FACU	0
<i>Acer rubrum</i>	red maple	H	FAC	5
<i>Achillea millefolium</i> *	common milfoil	H	FACU	-
<i>Agalinis tenuifolia</i>	slender false foxglove	H	FACW	5
<i>Allium vineale</i> *	field garlic	H	FACU	-
<i>Amaranthus tuberculatus</i>	tall waterhemp	H	OBL	1
<i>Apocynum cannabinum</i>	dogbane	H	FAC	2
<i>Asclepias incarnata</i>	swamp milkweed	H	OBL	4
<i>Asclepias syriaca</i>	common milkweed	H	FACU	0
<i>Aster lanceolatus</i>	panicked aster	H	FAC	3
<i>Aster lateriflorus</i>	side-flowering aster	H	FACW	2
<i>Aster pilosus</i>	hairy aster	H	FACU	0
<i>Betula nigra</i>	river birch	H	FACW	4
<i>Bidens frondosa</i>	common beggar's ticks	H	FACW	1
<i>Bromus commutatus</i> *	hairy brome	H	UPL	-
<i>Campsis radicans</i>	trumpet creeper	H	FACU	2
<i>Carex tribuloides</i>	awl-fruited oval sedge	H	OBL	3
<i>Carya cordiformis</i>	bitternut hickory	H	FACU	4
<i>Carya illinoensis</i>	pecan	H	FACW	6
<i>Cephalanthus occidentalis</i>	buttonbush	H	OBL	4
<i>Chamaesyce nutans</i>	nodding spurge	H	FACU	0
<i>Cirsium discolor</i>	pasture thistle	H	FACU	3
<i>Conoclinium coelestinum</i>	mistflower	H	FACW	3
<i>Cornus drummondii</i>	rough-leaved dogwood	H	FAC	2
<i>Cyperus echinatus</i>	hedgehog club rush	H	FAC	2
<i>Cyperus esculentus</i>	field nut sedge	H	FACW	0
<i>Digitaria sanguinalis</i> *	hairy crab grass	H	FACU	-
<i>Diodia virginiana</i>	large buttonweed	H	FACW	4
<i>Echinochloa muricata</i>	spiny barnyard grass	H	OBL	0

Continued on the next page

Site 2- Tree-planted wetland continued

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<i>Eclipta prostrata</i>	yerba de tajo	H	FACW	2
<i>Elymus virginicus</i>	Virginia wild rye	H	FACW	4
<i>Erigeron annuus</i>	annual fleabane	H	FACU	1
<i>Eupatorium perfoliatum</i>	common boneset	H	OBL	4
<i>Euthamia graminifolia</i>	grass-leaved goldenrod	H	FACW	3
<i>Fraxinus lanceolata</i>	green ash	HS	FACW	2
<i>Hibiscus lasiocarpus</i>	hairy rose mallow	H	OBL	5
<i>Ipomoea hederacea*</i>	ivy-leaved morning glory	H	FAC	-
<i>Ipomoea lacunosa</i>	small morning glory	H	FACW	1
<i>Ipomoea pandurata</i>	wild sweet potato	H	FACU	2
<i>Juncus brachycarpus</i>	short-fruited rush	H	FACW	5
<i>Kummerowia striata*</i>	Japanese lespedeza	H	FACU	-
<i>Liquidambar styraciflua</i>	sweet gum	H	FACW	6
<i>Lobelia inflata</i>	Indian tobacco	H	FACU	4
<i>Lonicera japonica*</i>	Japanese honeysuckle	H	FACU	-
<i>Ludwigia alternifolia</i>	seedbox	H	OBL	5
<i>Lycopus americanus</i>	common water horehound	H	OBL	3
<i>Mimulus alatus</i>	winged monkey flower	H	OBL	6
<i>Muhlenbergia frondosa</i>	common satin grass	H	FACW	3
<i>Oenothera biennis</i>	common evening primrose	H	FACU	1
<i>Oxalis stricta</i>	common wood sorrel	H	FACU	0
<i>Panicum capillare</i>	old witch grass	H	FAC	0
<i>Panicum dichotomiflorum</i>	fall panicum	H	FACW	0
<i>Paspalum laeve</i>	smooth lens grass	H	FACW	2
<i>Perilla frutescens*</i>	beefsteak plant	H	UPL	-
<i>Persicaria pensylvanica</i>	pinkweed	H	FACW	1
<i>Persicaria punctata</i>	smartweed	H	OBL	3
<i>Physalis heterophylla</i>	clammy ground cherry	H	UPL	2
<i>Platanus occidentalis</i>	sycamore	HS	FACW	3
<i>Potentilla norvegica</i>	rough cinquefoil	H	FAC	0
<i>Prunella vulgaris var. elongata</i>	self-heal	H	FAC	1
<i>Pyrrhopappus carolinianus</i>	false dandelion	H	UPL	1
<i>Quercus alba</i>	white oak	H	FACU	5
<i>Quercus bicolor</i>	swamp white oak	H	FACW	7
<i>Quercus lyrata</i>	overcup oak	H	OBL	7
<i>Quercus palustris</i>	pin oak	H	FACW	4
<i>Quercus phellos</i>	willow oak	H	FACW	7
<i>Rosa multiflora*</i>	Japanese rose	H	FACU	-
<i>Rudbeckia hirta</i>	black-eyed Susan	H	FACU	2
<i>Rumex altissimus</i>	pale dock	H	FACW	2
<i>Rumex crispus*</i>	curly dock	H	FAC	-
<i>Setaria glauca*</i>	pigeon grass	H	FAC	-
<i>Sida spinosa*</i>	prickly sida	H	FACU	-
<i>Solidago canadensis</i>	Canada goldenrod	H	FACU	1
<i>Sorghum bicolor*</i>	sorghum	H	UPL	-
<i>Sorghum halepense*</i>	Johnson grass	H	FACU	-

Continued on the next page

**Site 2- Tree-planted wetland continued**

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<i>Taraxacum officinale</i> *	common dandelion	H	FACU	-
<i>Teucrium canadense</i>	germander	H	FACW	3
<i>Toxicodendron radicans</i>	poison ivy	H	FAC	1
<i>Tridens flavus</i>	common purpletop	H	UPL	1
<i>Tridens strictus</i>	spiked purpletop	H	FACU	4
<i>Trifolium pratense</i> *	red clover	H	FACU	-
<i>Verbena urticifolia</i>	white vervain	H	FAC	3
<i>Vernonia missurica</i>	Missouri ironweed	H	FAC	5
<i>Xanthium strumarium</i>	cocklebur	H	FAC	0
*Non-native species      Dominant species and strata indicated by bold			Mean C =	2.6
H = Herb, T = Tree, S = Sapling/Shrub, W = Woody Vine			FQI =	21.9

**Site 3 – Upland riparian buffer (Species list includes planted species)**

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<b><i>Dactylis glomerata</i>*</b>	<b>orchard grass</b>	<b>H</b>	<b>FACU</b>	<b>-</b>
<b><i>Eupatorium serotinum</i></b>	<b>late boneset</b>	<b>H</b>	<b>FAC</b>	<b>1</b>
<i>Acer negundo</i>	box elder	H	FAC	1
<i>Acer saccharinum</i>	silver maple	H	FACW	1
<i>Ambrosia artemisiifolia</i>	common ragweed	H	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	H	FAC	0
<i>Andropogon virginicus</i>	broom sedge	H	FACU	1
<i>Aster racemosus</i>	small white aster	H	FACW	3
<i>Barbarea vulgaris</i> *	winter cress	H	FAC	-
<i>Boltonia asteroides</i>	false aster	H	OBL	5
<i>Calystegia sepium</i>	American bindweed	H	FAC	1
<i>Carex grayi</i>	common bur sedge	H	FACW	6
<i>Chamaesyce nutans</i>	nodding spurge	H	FACU	0
<i>Conoclinium coelestinum</i>	mistflower	H	FACW	3
<i>Conyza canadensis</i>	horseweed	H	FACU	0
<i>Cyperus esculentus</i>	field nut sedge	H	FACW	0
<i>Dichanthelium clandestinum</i>	deer-tongue grass	H	FACW	4
<i>Diospyros virginiana</i>	persimmon	H	FAC	2
<i>Eclipta prostrata</i>	yerba de tajo	H	FACW	2
<i>Festuca arundinacea</i> *	tall fescue	H	FACU	-
<i>Heliopsis helianthoides</i>	false sunflower	H	FACU	4
<i>Ipomoea hederacea</i> *	ivy-leaved morning glory	H	FAC	-
<i>Ipomoea lacunosa</i>	small morning glory	H	FACW	1
<i>Iva annua</i>	marsh elder	H	FAC	0
<i>Lobelia cardinalis</i>	cardinal flower	H	OBL	6
<i>Lolium multiflorum</i> *	Italian rye grass	H	UPL	-
<i>Lycopus americanus</i>	common water horehound	H	OBL	3
<i>Oenothera sp.</i>	evening primrose	H		-
<i>Oxalis stricta</i>	common wood sorrel	H	FACU	0
<i>Parthenocissus quinquefolia</i>	Virginia creeper	H	FACU	2

Continued on next page

Site 3 – Upland riparian buffer continued

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<i>Perilla frutescens</i> *	beefsteak plant	H	UPL	-
<i>Persicaria bicornis</i>	long-styled knotweed	H	FACW	2
<i>Phalaris arundinacea</i> *	reed canary grass	H	FACW	-
<i>Phleum pratense</i> *	timothy	H	FACU	-
<i>Phyla lanceolata</i>	fog fruit	H	OBL	1
<i>Physalis subglabrata</i>	smooth ground cherry	H	UPL	0
<i>Plantago rugelii</i>	red-stalked plantain	H	FAC	0
<i>Platanus occidentalis</i>	sycamore	H	FACW	3
<i>Quercus phellos</i>	willow oak	H	FACW	7
<i>Reynoutria japonica</i> *	Japanese knotweed	H	UPL	-
<i>Rudbeckia hirta</i>	black-eyed Susan	H	FACU	2
<i>Rumex crispus</i> *	curly dock	H	FAC	-
<i>Sambucus canadensis</i>	common elder	H	FACW	2
<i>Schizachyrium scoparium</i>	little bluestem	H	FACU	5
<i>Senna marilandica</i>	Maryland senna	H	FACW	4
<i>Setaria faberi</i> *	giant foxtail	H	FACU	-
<i>Sida spinosa</i> *	prickly sida	H	FACU	-
<i>Solanum carolinense</i>	horse nettle	H	FACU	0
<i>Solidago canadensis</i>	Canada goldenrod	H	FACU	1
<i>Teucrium canadense</i>	germander	H	FACW	3
<i>Tridens flavus</i>	common purpletop	H	UPL	1
<i>Trifolium repens</i> *	white clover	H	FACU	-
<i>Ulmus rubra</i>	slippery elm	H	FAC	3
<i>Verbena hastata</i>	blue vervain	H	FACW	3
<i>Xanthium strumarium</i>	cocklebur	H	FAC	0

\*Non-native species      Dominant species and strata indicated by bold  
H = Herb, T = Tree, S = Sapling/Shrub, W = Woody Vine

Mean C = 2.0  
FQI = 13.0

## **APPENDIX C**

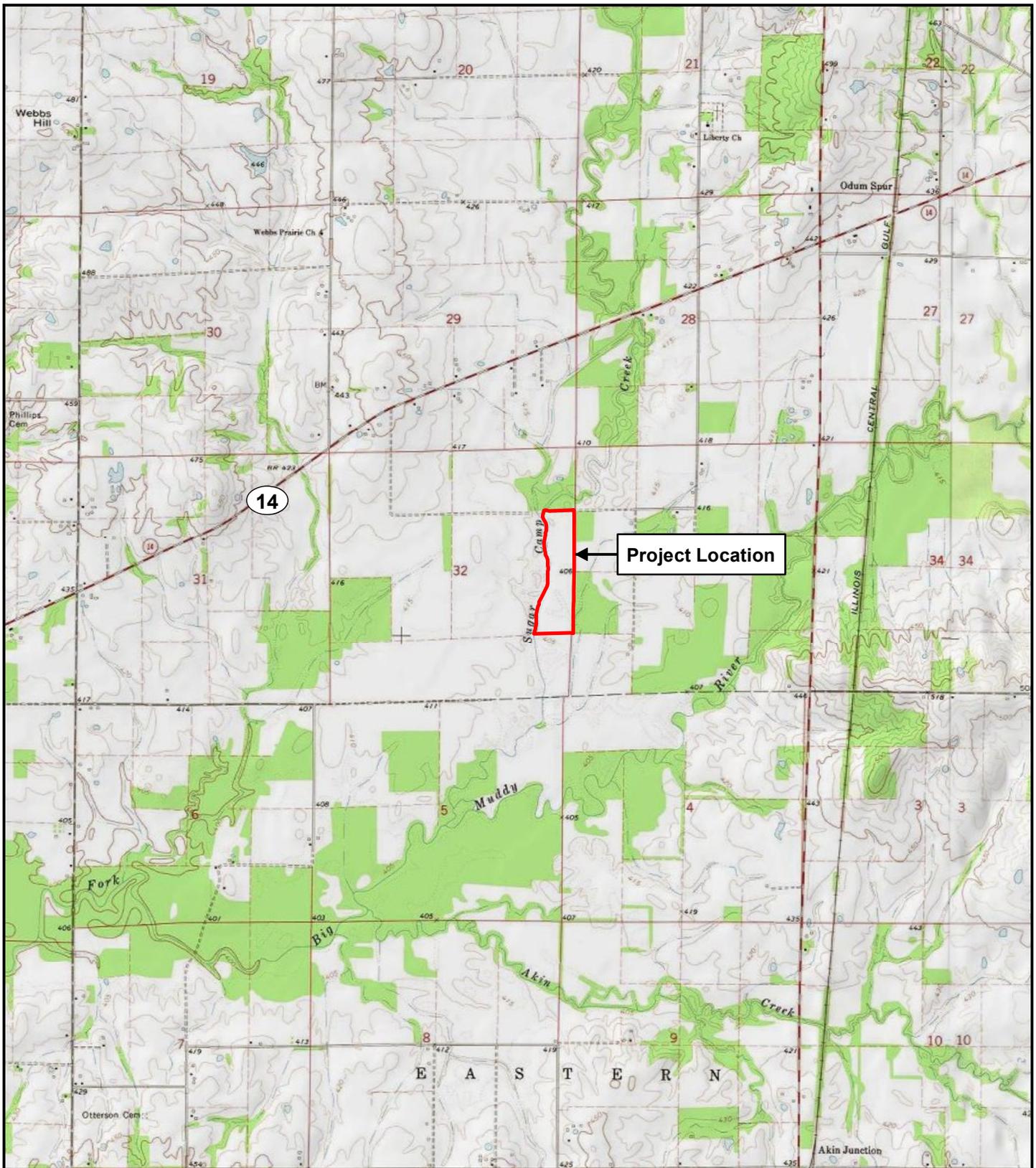
### **Figures**

**Figure 1 – Project Location Map**

**Figure 2 – Wetland Delineation Map**

**Figure 3 – ISGS 2012 Wetland Hydrology Map**

**Figure 4 – Photo Station Location Map**



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PRAIRIE RESEARCH INSTITUTE

**Wetland Science Program**  
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Champaign, Illinois 61820

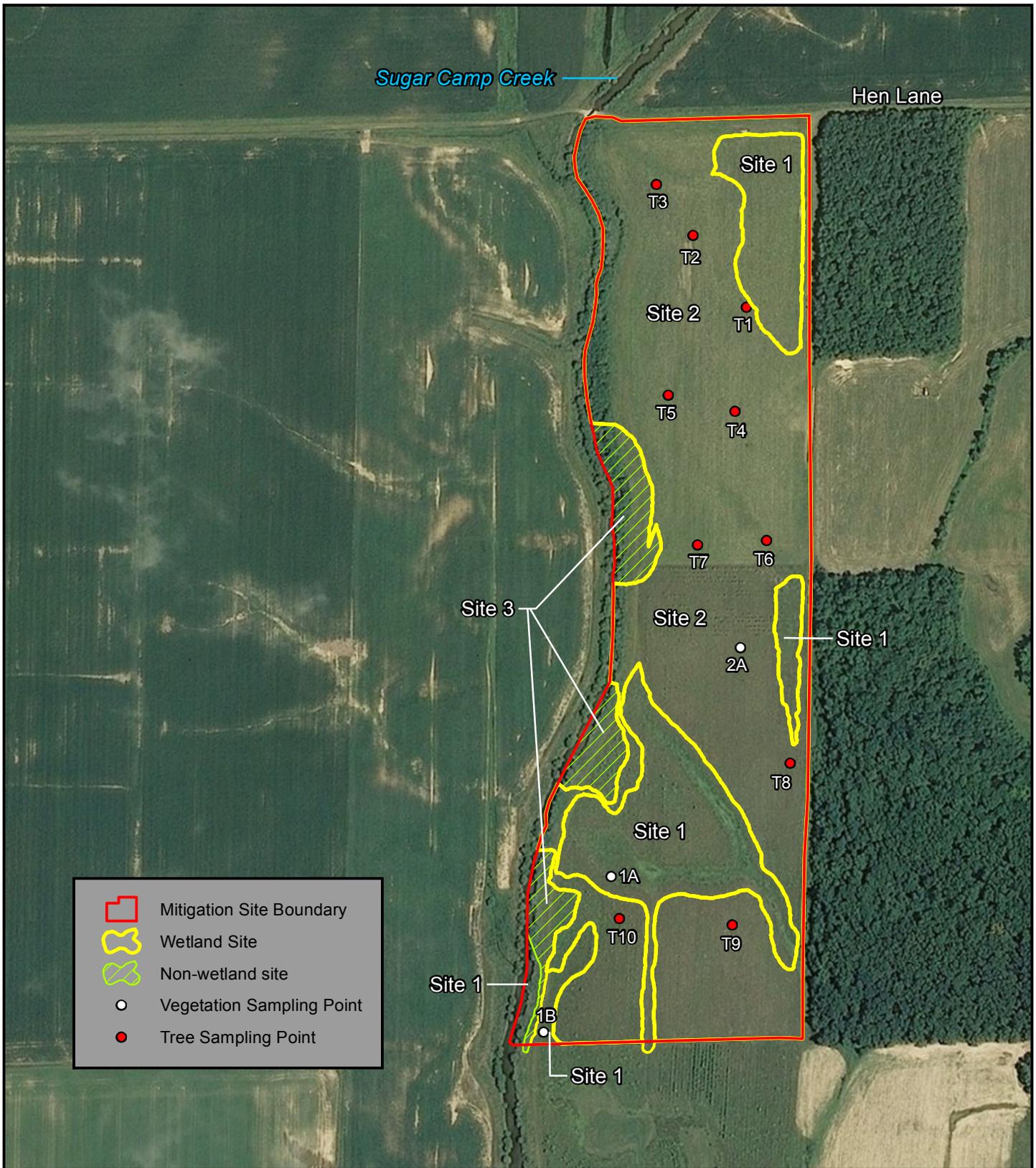
**Figure 1**  
**Project Location Map**  
**Sugar Camp Creek Mitigation Bank**  
**Franklin County**

Seq. No: 12354



December 2012





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Champaign, Illinois 61820

**Figure 2**  
**Mitigation Monitoring Map**  
**Sugar Camp Creek Mitigation Bank**  
**Franklin County**

Seq. No: 12354

0 Meters 100

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December 2012

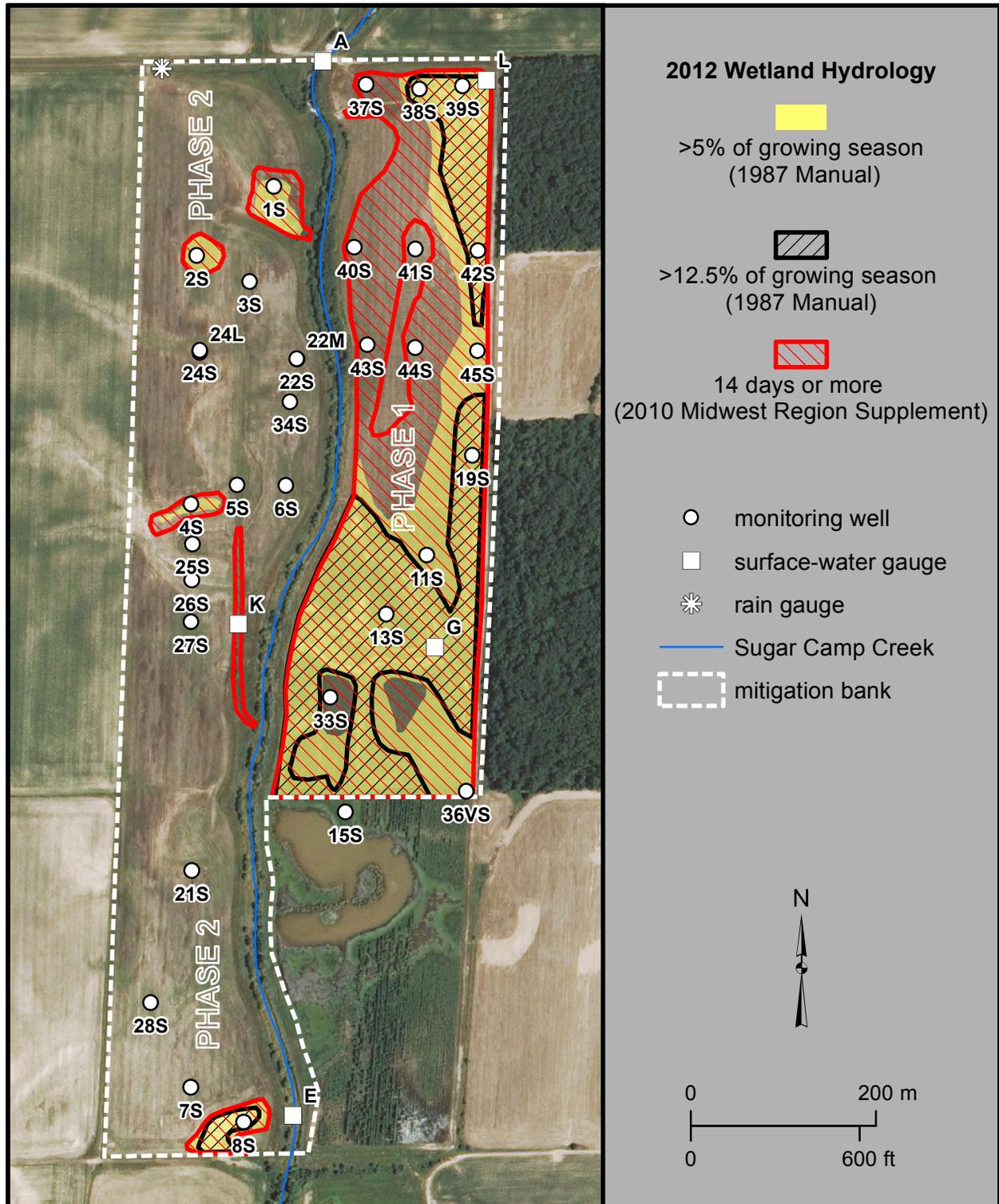


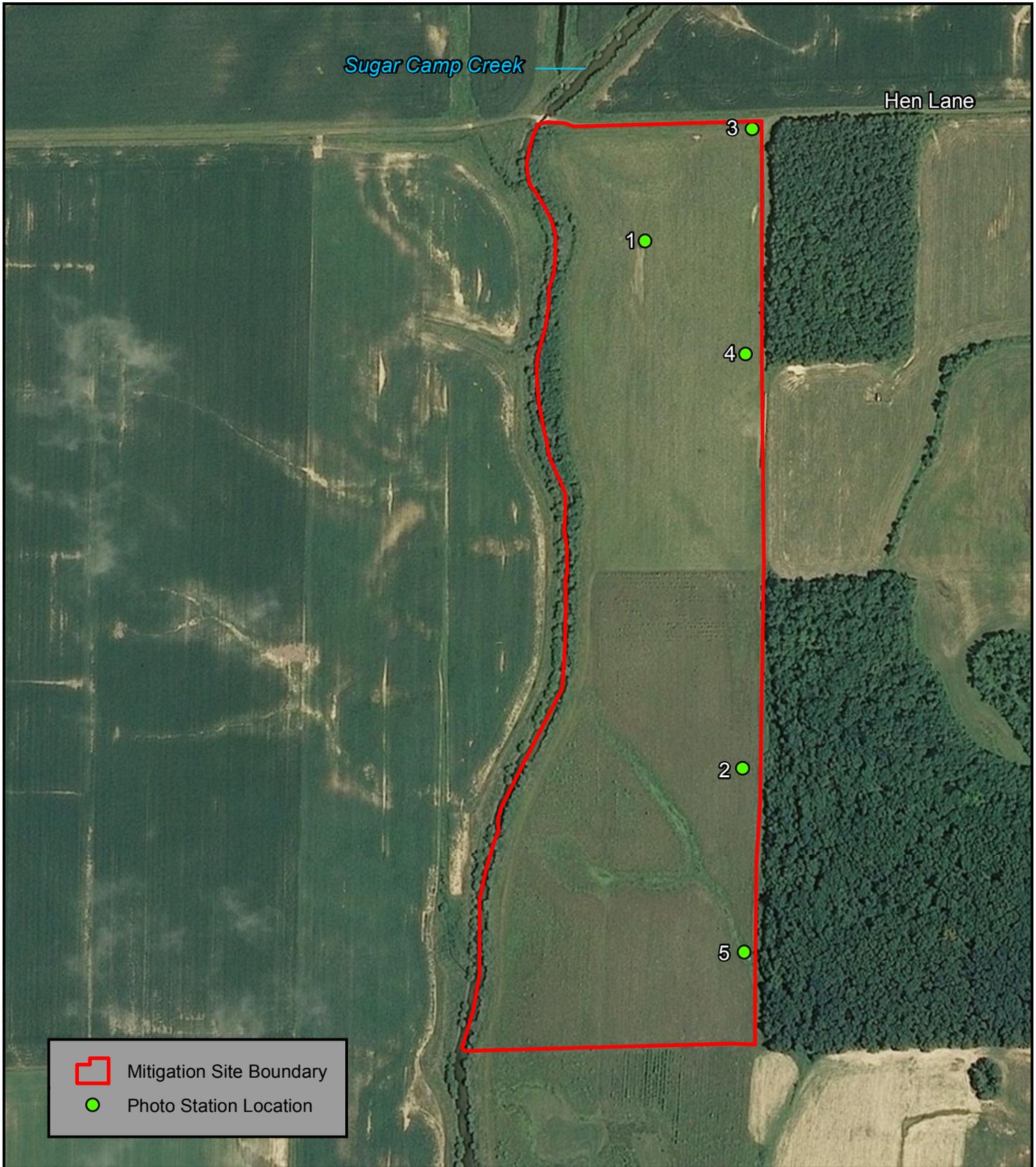
# Figure 3. ISGS Estimated Extent of 2012 Wetland Hydrology (FAP 312)

## Sugar Camp Creek Wetland Mitigation Bank

September 1, 2011 through August 31, 2012

Map based on 2012 Farm Service Agency digital orthophotography, Franklin County, Illinois (USDA-FSA 2012)





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**Figure 4**  
**Photo Station Location Map**  
**Sugar Camp Creek Mitigation Bank**  
**Franklin County**

Seq. No: 12354

0 Meters 100

0 Feet 400

December 2012



**APPENDIX D**

**Photographs of Wetland Mitigation Site**



Photo 1. Facing north from photo station 1 (located at tree plot 2).



Photo 2. Facing west from photo station 1.



Photo 3. Facing east from photo station 2 (located at tree plot 8).



Photo 4. Facing south from photo station 2.



Photo 5. Facing south from photo station 3 (located at northeast corner of project).



Photo 6. Facing west from photo station 3.



Photo 7. Facing south from photo station 4 (located at ISGS well 42S).



Photo 8. Facing west from photo station 5 (located along east project boundary overlooking Site 1 "Y").