

Wetland Mitigation Monitoring Report



Project Site:
Max Creek (FAS 932)
Johnson County, Illinois

IDOT Sequence Number: 8717



Prepared by:
Valerie Sivicek, Scott Wiesbrook, Dave Ketzner, Meg Engelhardt,
and Brad Zercher

Wetland Science Program
Illinois Natural History Survey
1816 South Oak Street
Champaign, Illinois, 61820

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PRAIRIE RESEARCH INSTITUTE
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Project Summary

A first-year monitoring survey was conducted at the Max Creek Wetland Mitigation Site in Johnson County, Illinois. Introductory information, goal, 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, a species list in Appendix B, figures in Appendix C, and photographs in Appendix D.

Signed:  Date: March 12, 2012
Brian W. Wilm
Wetland Science Program
Assistant Project Leader for Botany

Conducted By: Valerie Sivicek (Vegetation and Hydrology)
Scott Wiesbrook (Soils and Hydrology)
Dave Ketzner (Vegetation, Hydrology, and GPS)
Meg Engelhardt (Vegetation and Hydrology)
Brad Zercher (GIS)
University of Illinois
Prairie Research Institute
Illinois Natural History Survey
Wetland Science Program
1816 South Oak Street
Champaign, Illinois 61820
sivicek@uiuc.edu
(217) 265-7886 (Sivicek)

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Wetland Mitigation Monitoring Report

Max Creek (FAS 932)

Johnson County, Illinois

Introduction

First-year monitoring was conducted on September 11, 2012 at the Max Creek Wetland Mitigation Site. This project is located on IL Route 147 northeast of Vienna, Illinois, in Johnson County, north of the intersection with IL 146 and along Max Creek (Figure 1). The project site comprises approximately 3 acres. Its legal location is the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 19, T12S, R4E. The site lies within the Lower Ohio-Bay River drainage basin (Hydrologic Unit Code 05140203). Prior to wetland construction, which was to have begun in 2008, the site was cropped, and was still partially in crop production at the time of the first-year survey (Figure 2). The site was to have been planted with four tree species in three-gallon containers (Table 1), seedlings of five tree species, and a wetland grass and sedge mixture. The National Wetlands Inventory did not map any wetlands within the site. Soils at the site are mapped as hydric: predominantly Bonnie silt loam, with an adjacent area of Belknap silt loam along Max Creek (Web Soil Survey).

This report discusses the goal, 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.

Goal, Objectives, and Performance Criteria

Goal, objectives, and performance criteria for the Max Creek Wetland Mitigation Site follow those specified in the Wetland Compensation Plan [Illinois Department of Transportation (IDOT) 2008] developed for this site. Performance criteria are based on those specified in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *Illinois Wetland Restoration and Creation Guide* (Admiraal et al. 1997), and *Guidelines for Developing Mitigation Proposals* (USACE 1993). The project goal should be attained by the end of the 5-year monitoring period. Goal, objectives, and performance criteria are listed below.

Project goal: To provide 1.2 acres of in-kind wetland compensation for 0.31 acres of wetland impacts caused by the IL Route 147 project in Johnson and Pope Counties.

Objective: Restore both emergent and forested wetland on the site, for a total of 1.2 acres. Emergent wetland will comprise 0.3 acres of wet meadow/marsh, and forested wetland will comprise 0.9 acres of planted trees. In order to ensure wetland hydrology on the site, a berm will be constructed and a roadside ditch will be re-routed to flood the site.

Performance criteria:

1. Wetland acreage must be at least 1.2 acres.

2. Vegetation

- a. More than 50% of the dominant species must be hydrophytic.
- b. No single species should constitute more than 25% of the surviving species unless specifically approved by U.S. Army Corps of Engineers (USACE) prior to construction.
- c. Native vegetation, excluding exotic and undesirable species, unless specifically approved prior to construction, should cover at least 70% of the site.
- d. The site should meet the Cowardin classification for both palustrine emergent and palustrine forested wetland.
- e. At least 90% of the planted containerized trees should be established and living by the end of the five-year monitoring period.
- f. By the end of the monitoring period, none of the dominant plant species in any of the wetland community zones may be non-native, unless specifically approved prior to construction.

3. Hydrology

- a. Hydrology at the site should be adequate for classification as a jurisdictional wetland.
- b. The compensation area must be either permanently or periodically inundated at average depths less than 6.6 feet, or it must have soils that are saturated to the surface for at least 12.5% of the growing season.
- c. The site should be self-sustaining.

Methods**1. Acreage**

Portions of the site that meet the federal definition of a wetland (USACE 2010) will be mapped. Wetland boundaries will be recorded using a Trimble Global Positioning System (either model Pathfinder Pro XR or Pathfinder Pro XRS), with a presumed accuracy of +/- 0.5 m under optimal field conditions. Approximate area will be determined for the wetland portion of the site using ArcGIS 10.0 software (ESRI 2010).

2. 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 (USACE 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.

Percent cover of native vs. non-native species was also estimated. Planted containerized trees (Table 1) were identified and counted.

Table 1. Planted containerized trees.

Species	Common name	Quantity
<i>Carya illinoensis</i>	Pecan	15
<i>Platanus occidentalis</i>	Sycamore	16
<i>Quercus bicolor</i>	Swamp white oak	16
<i>Quercus palustris</i>	Pin oak	16

A complete list of plant species present was compiled, and is presented in Appendix B. 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. 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).

3. Hydrology

The Illinois State Geological Survey will monitor the site throughout the monitoring period for wetland hydrology. Hydrology field indicators will also be noted as part of the routine wetland determination procedure.

Results

1. Wetland acreage

Based on presence of hydric soil and dominant hydrophytic vegetation, 1.44 acres was mapped as wetland (Figure 2). Up to 1.9 acres satisfied hydrology criteria (see below). Wetland determination sampling point data is presented in Appendix A.

2. Vegetation

- The overall most dominant species in the wetland site, *Echinochloa muricata* and *Ludwigia palustris* v. *americana*, are both hydrophytic.
- No single species was observed to constitute more than 25% of the surviving species.
- Native vegetation was observed to cover at least 70% of the site. *Festuca arundinacea*, a non-native grass species, was common in and around the wetland, but it appeared to constitute less than 30% cover in the wetland area.
- The site classifies as a wet meadow. Trees are not yet established within the wetland.

- e. Sixty-three total containerized trees were to have been planted at the site. Ninety individuals of the species that were to have been planted were identified (Table 2). In some cases it was difficult to identify which trees had been planted as containerized trees, which had been planted as seedlings, and which were volunteers. The number of sycamores counted (47) far exceeded the number of containerized individuals specified (Table 1). However, only 10 pin oaks were counted, and 12 pecans.

Table 2. Planted containerized tree survival.

Species	Common name	Number counted	Percent survival
<i>Carya illinoensis</i>	Pecan	12	80%
<i>Platanus occidentalis</i>	Sycamore	47	100%+
<i>Quercus bicolor</i>	Swamp white oak	21	100%+
<i>Quercus palustris</i>	Pin oak	10	63%
Total		54	86%

- f. Both the wetland community dominants, mentioned above, are native.

3. Wetland hydrology

According to the 2012 ISGS annual monitoring report (Miner et al 2012), 0.84 ac of the Max Creek Wetland Mitigation Site satisfied wetland hydrology criterion (Environmental Laboratory 1987) during more than 5 percent of the 2012 growing season (Figure 2), but none of the site satisfied the wetland hydrology criterion for more than 12.5 percent of the growing season. 1.90 ac satisfied the wetland hydrology criterion (USACE 2010) for 14 or more consecutive days. Total precipitation for the 2012 monitoring period was 89 percent of normal, and 36 percent of normal for the period March through May (Miner et al 2012).

Discussion

At the time of the first-year survey, the project goal for the Max Creek mitigation site had partially been met. The wetland was mapped as 1.44 acres, and 1.9 acres satisfied the 14 or more consecutive days hydrology criterion, despite a drought during the 2012 growing season. Part of the site (0.74 acres) was in crop production at the time of the survey.

An herbaceous wetland community is established. Many of the containerized trees were observed to have been planted outside the wetland, but volunteer trees might be sufficient to obtain the target acreage of forested wetland. Containerized tree survival was slightly less than the 90% survival required, but the number of trees counted might increase in the second year due to increased visibility of the growing trees. Non-native plants are present at the site, particularly at the edges of the wetland, where *Festuca arundinacea* is common. However, it is not a site dominant and native vegetation covers at least 70% of the site.

Based on the results of the first-year monitoring survey, the Max Creek Wetland Mitigation Site has good potential for meeting all of its performance criteria by the end of the five-year monitoring period.

Literature Cited

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APPENDIX A

Wetland Determination Forms

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Max Creek City/County: Johnson Sampling Date 9/11/2012
 Applicant/Owner: IDOT District 9 State: IL Sampling Point 1A
 Investigator(s): Sivicek, Wiesbrook, Ketzner, and Engelhardt Section, Township, Range: Sec 19, T12 S, R4 E
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None
 Slope (%): <2 Lat: 37.45886 Long: -88.80533 Datum: NAD 83
 Soil Map Unit Name: Bonnie silt loam, 0-2% slopes, occasionally 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? 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? <u>Yes</u> Hydric Soil Present? <u>Yes</u> Wetland Hydrology Present? <u>Yes</u>	Is the Sampled Area within a Wetland? <u>Yes</u>
Remarks: Community type is wet meadow. This part of the state was undergoing a severe drought at the time of the survey.	

VEGETATION -Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft radius</u>)				Dominance Test worksheet: 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)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				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 = _____
Sapling/Shrub Stratum (Plot size: <u>15 ft radius</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft radius</u>)				Hydrophytic Vegetation Indicators <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 ¹ <input type="checkbox"/> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Echinochloa muricata</u>	55	Yes	OBL	
2. <u>Ludwigia palustris var. americana</u>	30	Yes	OBL	
3. <u>Eleocharis ovata var. obtusa</u>	20	No	OBL	
4. <u>Eupatorium serotinum</u>	7	No	FAC	
5. <u>Acer negundo</u>	2	No	FAC	
6. <u>Erechtites hieracifolia</u>	2	No	FAC	
7. <u>Diospyros virginiana</u>	1	No	FAC	
8. <u>Eclipta prostrata</u>	1	No	FACW	
9. <u>Rorippa palustris</u>	1	No	OBL	
10. <u>Verbena hastata</u>	1	No	FACW	
_____ = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft radius</u>)				Hydrophytic Vegetation Present? <u>Yes</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 ¹	Loc ²		
0-13+	10YR 5/2	80	7.5YR 4/6	20	C	M	SIL	

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

<p>Hydric Soil Indicators:</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>Indicators for Problematic Hydric Soils³:</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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³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

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

Remarks:

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required: check all that apply)</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 checked="" 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)	<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>Secondary Indicators (minimum of two is required)</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>Field Observations:</p> 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>Wetland Hydrology Present? <u>Yes</u></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
 According to ISGS monitoring well data, this sampling point met the 5% and 14-day wetland hydrology criteria.

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Max Creek City/County: Johnson Sampling Date 9/11/2012
 Applicant/Owner: IDOT District 9 State: IL Sampling Point 1B
 Investigator(s): Sivicek, Wiesbrook, Ketzner, and Engelhardt Section, Township, Range: Sec 19, T12 S, R4 E
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None
 Slope (%): 0 Lat: 37.45912 Long: -88.80606 Datum: NAD 83
 Soil Map Unit Name: NRCS mapped as Bonnie SIL; revised to Belknap SIL 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>No</u> Hydric Soil Present? <u>No</u> Wetland Hydrology Present? <u>No</u>	Is the Sampled Area within a Wetland? <u>No</u>
Remarks: Community type is non-native grassland. This part of the state was undergoing a severe drought at the time of the survey.	

VEGETATION -Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____				Percent of Dominant Species That are OBL, FACW, or FAC: <u>33%</u> (A/B)
4. _____				
5. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: 15 ft radius)				Prevalence Index worksheet:
1. _____				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species _____ x 4 = _____
_____ = Total Cover				UPL species _____ x 5 = _____
				Column Totals _____ (A) _____ (B)
				Prevalence Index =B/A = _____
Herb Stratum (Plot size: 5 ft radius)				Hydrophytic Vegetation Indicators
1. <i>Festuca arundinacea</i>	25	Yes	FACU	<input type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation
2. <i>Agrostis gigantea</i>	20	Yes	FACW	<input type="checkbox"/> 2-Dominance Test is >50%
3. <i>Conyza canadensis</i>	15	Yes	FACU	<input type="checkbox"/> 3-Prevalence Index is < or =3.0 ¹
4. <i>Elymus virginicus</i>	10	No	FACW	<input type="checkbox"/> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. <i>Diospyros virginiana</i>	5	No	FAC	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. <i>Eupatorium serotinum</i>	5	No	FAC	
7. <i>Solidago canadensis</i>	5	No	FACU	
8. <i>Bidens frondosa</i>	3	No	FACW	
9. <i>Rumex crispus</i>	3	No	FAC	
10. <i>Ambrosia artemisiifolia</i>	2	No	FACU	
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: 30 ft radius)				Hydrophytic Vegetation Present? <u>No</u>
1. _____				
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 ¹	Loc ²		
0-13+	10YR 4/3	85	7.5YR 4/6	10	C	M	SIL	
0-13+			10YR 5/1	5	D	M		

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

<p>Hydric Soil Indicators:</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 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>Indicators for Problematic Hydric Soils³:</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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³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed): Type: _____ Depth (inches): _____</p>	<p>Hydric Soil Present? <u>No</u></p>
--	--

Remarks:

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required: check all that apply)</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 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 type="checkbox"/> Gauge or Well Data (D9) <input type="checkbox"/> Other (Explain in Remarks)	<p>Secondary Indicators (minimum of two is required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5)
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<p>Field Observations:</p> 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>Wetland Hydrology Present? <u>No</u></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
 According to ISGS monitoring well data, this sampling point failed to meet any wetland hydrology criteria.

Remarks:

APPENDIX B

Wetland Plant Species List

Site 1 – Wet Meadow

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<i>Echinochloa muricata</i>	spiny barnyard grass	H	OBL	0
<i>Ludwigia palustris var. americana</i>	marsh purslane	H	OBL	4
<i>Acalypha rhomboidea</i>	three-seeded mercury	H	FACU	0
<i>Acer negundo</i>	box elder	H	FAC	1
<i>Acer saccharinum</i>	silver maple	H	FACW	1
<i>Agalinis tenuifolia</i>	slender false foxglove	H	FACW	5
<i>Agrostis gigantea (p)</i>	red top	H	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	H	FACU	0
<i>Ambrosia bidentata</i>	lanceleaf ragweed	H	UPL	0
<i>Ambrosia trifida</i>	giant ragweed	H	FAC	0
<i>Ammannia coccinea</i>	long-leaved ammannia	H	OBL	5
<i>Andropogon virginicus</i>	broom sedge	H	FACU	1
<i>Bidens aristosa</i>	swamp marigold	H	FACW	1
<i>Bidens frondosa</i>	common beggar's ticks	H	FACW	1
<i>Carex brachyglolla</i>	small yellow fox sedge	H	FACW	3
<i>Carex frankii</i>	bristly cattail sedge	H	OBL	4
<i>Carex vulpinoidea</i>	brown fox sedge	H	FACW	3
<i>Carya illinoensis (p)</i>	pecan	S	FACW	-
<i>Chamaesyce humistrata</i>	spreading spurge	H	FACW	1
<i>Chamaesyce nutans</i>	nodding spurge	H	FACU	0
<i>Cicuta maculata</i>	water hemlock	H	OBL	4
<i>Cirsium discolor</i>	pasture thistle	H	FACU	3
<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 dichotomum</i>	forked panic grass	H	FAC	6
<i>Digitaria ischaemum*</i>	smooth crab grass	H	FACU	-
<i>Diospyros virginiana (p)</i>	persimmon	H	FAC	-
<i>Eclipta prostrata</i>	yerba de tajo	H	FACW	2
<i>Eleocharis ovata var. obtusa</i>	blunt spike rush	H	OBL	2
<i>Elymus virginicus (p)</i>	Virginia wild rye	H	FACW	4
<i>Erechtites hieracifolia</i>	fireweed	H	FAC	2
<i>Eupatorium serotinum</i>	late boneset	H	FAC	1
<i>Festuca arundinacea*</i>	tall fescue	H	FACU	-
<i>Fraxinus lanceolata</i>	green ash	H	FACW	2
<i>Helenium autumnale</i>	sneezeweed	H	FACW	3
<i>Hypericum mutilum</i>	dwarf St. John's-wort	H	FACW	5
<i>Ipomoea lacunosa</i>	small morning glory	H	FACW	1
<i>Iva annua</i>	marsh elder	H	FAC	0
<i>Juncus diffusissimus</i>	slimpod rush	H	FACW	7
<i>Juncus interior</i>	inland rush	H	FAC	3
<i>Kummerowia striata*</i>	Japanese lespedeza	H	FACU	-
<i>Leucospora multifida</i>	Obe-wan-Conobea	H	FACW	3
<i>Lobelia siphilitica</i>	great blue lobelia	H	OBL	4
<i>Lycopus americanus</i>	common water horehound	H	OBL	3
<i>Mimulus alatus</i>	winged monkey flower	H	OBL	6
<i>Panicum rigidulum</i>	munro grass	H	FACW	6

Continued on next page ...

Scientific Name	Common Name	Strata	Wetland Indicator Status	Coefficient of Conservatism
<i>Penthorum sedoides</i>	ditch stonecrop	H	OBL	2
<i>Persicaria cespitosa</i> *	creeping smartweed	H	UPL	-
<i>Persicaria pensylvanica</i>	pinkweed	H	FACW	1
<i>Persicaria punctata</i>	smartweed	H	OBL	3
<i>Plantago lanceolata</i> *	English plantain	H	FACU	-
<i>Platanus occidentalis</i> (p)	sycamore	H	FACW	3
<i>Populus deltoides</i>	eastern cottonwood	H	FAC	2
<i>Quercus bicolor</i> (p)	swamp white oak	S	FACW	-
<i>Quercus palustris</i> (p)	pin oak	S	FACW	-
<i>Rumex crispus</i> *	curly dock	H	FAC	-
<i>Salix nigra</i>	black willow	H	OBL	3
<i>Scirpus atrovirens</i>	dark green rush	H	OBL	4
<i>Setaria glauca</i> *	pigeon grass	H	FAC	-
<i>Setaria viridis</i> *	green foxtail	H	UPL	-
<i>Sida spinosa</i> *	prickly sida	H	FACU	-
<i>Solidago canadensis</i>	Canada goldenrod	H	FACU	1
<i>Trifolium hybridum</i> *	alsike clover	H	FACU	-
<i>Typha</i> sp.	cattail	H	OBL	-
<i>Verbena hastata</i>	blue vervain	H	FACW	3
<i>Xanthium strumarium</i>	cocklebur	H	FAC	0

*Non-native species Bolded species are dominant in the denoted stratum

H = Herb, T = Tree, S = Sapling/Shrub, W = Woody Vine

Planted species (p) are not included in mean C or FQI calculations.

Mean C = 2.3

FQI = 16.9

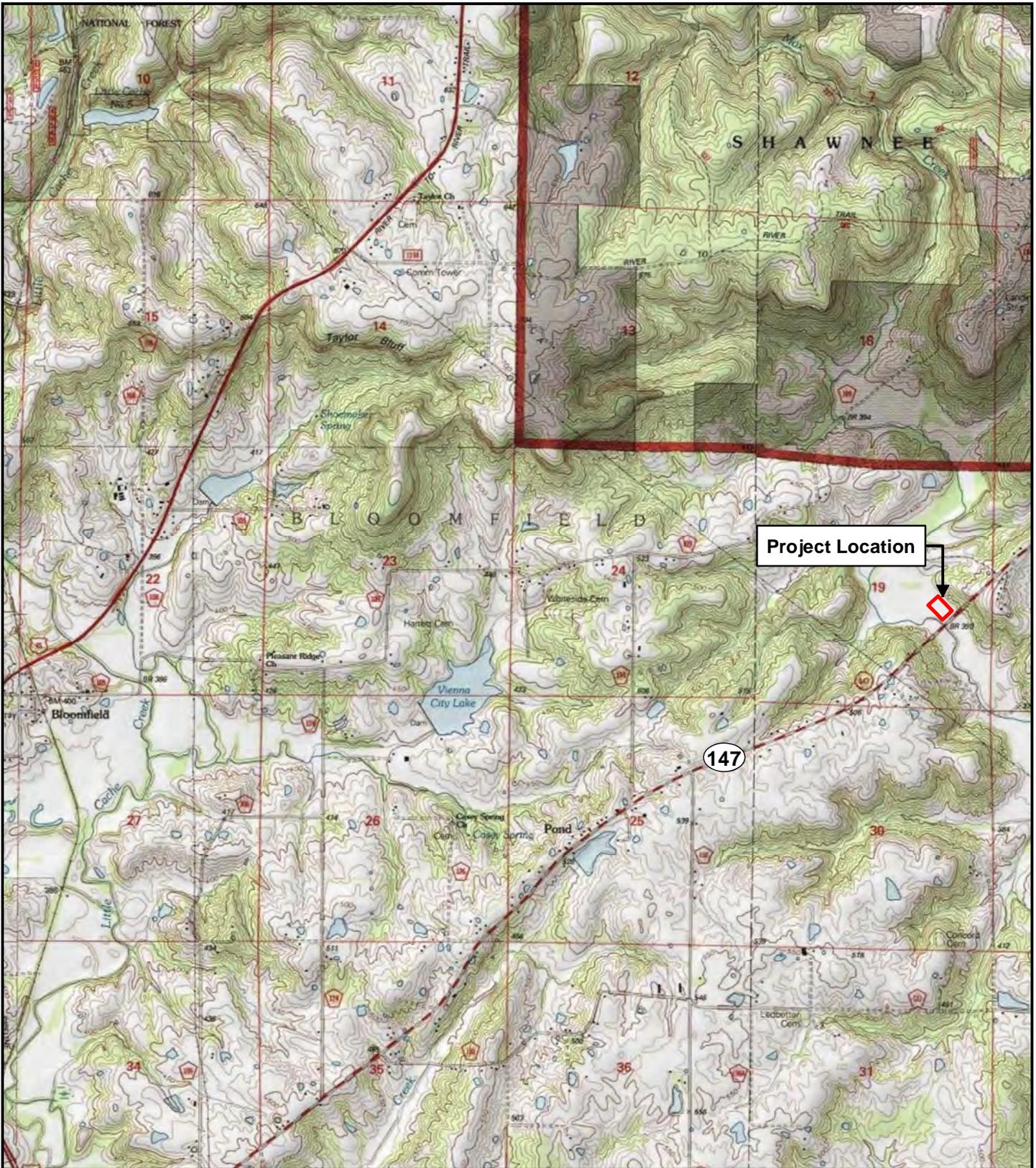
APPENDIX C

Figures

Figure 1 – Project Location Map

Figure 2 – Mitigation Monitoring Map

Figure 3 – ISGS 2012 Wetland Hydrology Map



University of Illinois at Urbana-Champaign



**ILLINOIS NATURAL
HISTORY SURVEY**
PRAIRIE RESEARCH INSTITUTE

Wetland Science Program
1816 South Oak Street
Champaign, Illinois 61820

Figure 1
Project Location Map
Max Creek Mitigation Site
Johnson County

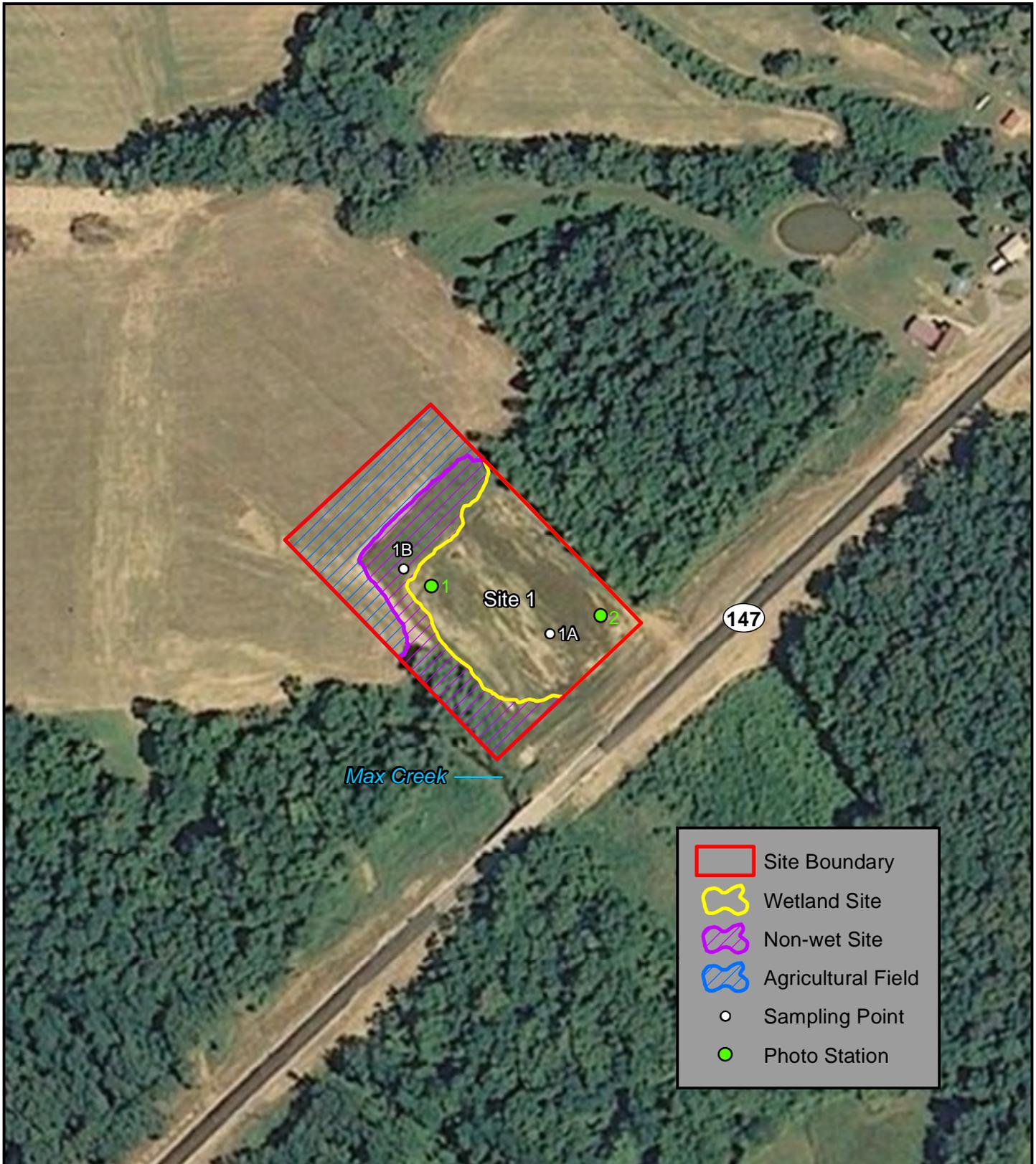
Seq. No: 8717

0 Meters 1,000 0 Feet 3,000



March 2013





	Site Boundary
	Wetland Site
	Non-wet Site
	Agricultural Field
	Sampling Point
	Photo Station

University of Illinois at Urbana-Champaign



Wetland Science Program
1816 South Oak Street
Champaign, Illinois 61820

Figure 2
Mitigation Monitoring Map
Max Creek Mitigation Site
Johnson County

Seq. No: 8717

0 Meters 50

0 Feet 200

March 2013



**Max Creek Wetland Mitigation Site
(IL 147, FAS 932)**
Estimated Areal Extent of 2012 Wetland Hydrology
September 1, 2011 through August 31, 2012

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



Figure 3. ISGS 2012 Wetland Hydrology Map (Miner et al. 2012)

APPENDIX D

Photographs of Wetland Mitigation Site



Photo 1. Facing east from photo station 1 (located at ISGS monitoring well 11S).



Photo 2. Facing southeast from photo station 1.



Photo 3. Facing northeast from photo station 1.



Photo 4. Facing northwest from photo station 1.



Photo 5. Facing northwest from photo station 2 (located at ISGS monitoring well 9S).



Photo 6. Facing southwest from photo station 2.