

TRANSMITTAL FORM

To: Illinois Department of Transportation - Bureau of Design and Environment
Attn: Thomas Brooks
From: Illinois Natural History Survey
Re: Wetland Mitigation Monitoring

Project Information and Location

La Grange Mitigation Bank - Areas 1, 2, 3, 5, 6 and 8
Brown County
IDOT District: 6
Sequence Number: 9579

Work Conducted By: Allen Plocher, Dave Ketzner, Brad Zercher and
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Wetland Science Program
1816 South Oak Street
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Date Conducted: 19, 20 October 2011

Project Summary:

We conducted the sixth year of monitoring for Areas 1, 2 and 3 and the third year of monitoring for Areas 5, 6 and 8 of the La Grange Mitigation Bank. The attached report includes information detailing monitoring methods and results. The status of the created wetlands are discussed and management recommendations are suggested; wetland determination forms are included in Appendix A. Wetland boundaries were recorded using a Trimble Global Positioning System. The spatial data have been digitally uploaded to the Illinois Site Assessment Tracking System (http://frostycap.isgs.uiuc.edu/idot_extranet). Wetland locations were overlaid on a digital orthophoto quadrangle (DOQ) using ArcGIS and are depicted on a figure contained within.

Signed: 

Dr. Allen E. Plocher
INHS/IDOT project Coordinator

Date: 28 February 2012

Wetland Mitigation Monitoring for the La Grange Mitigation Bank - Areas 1, 2, 3, 5, 6 and 8 - 2011

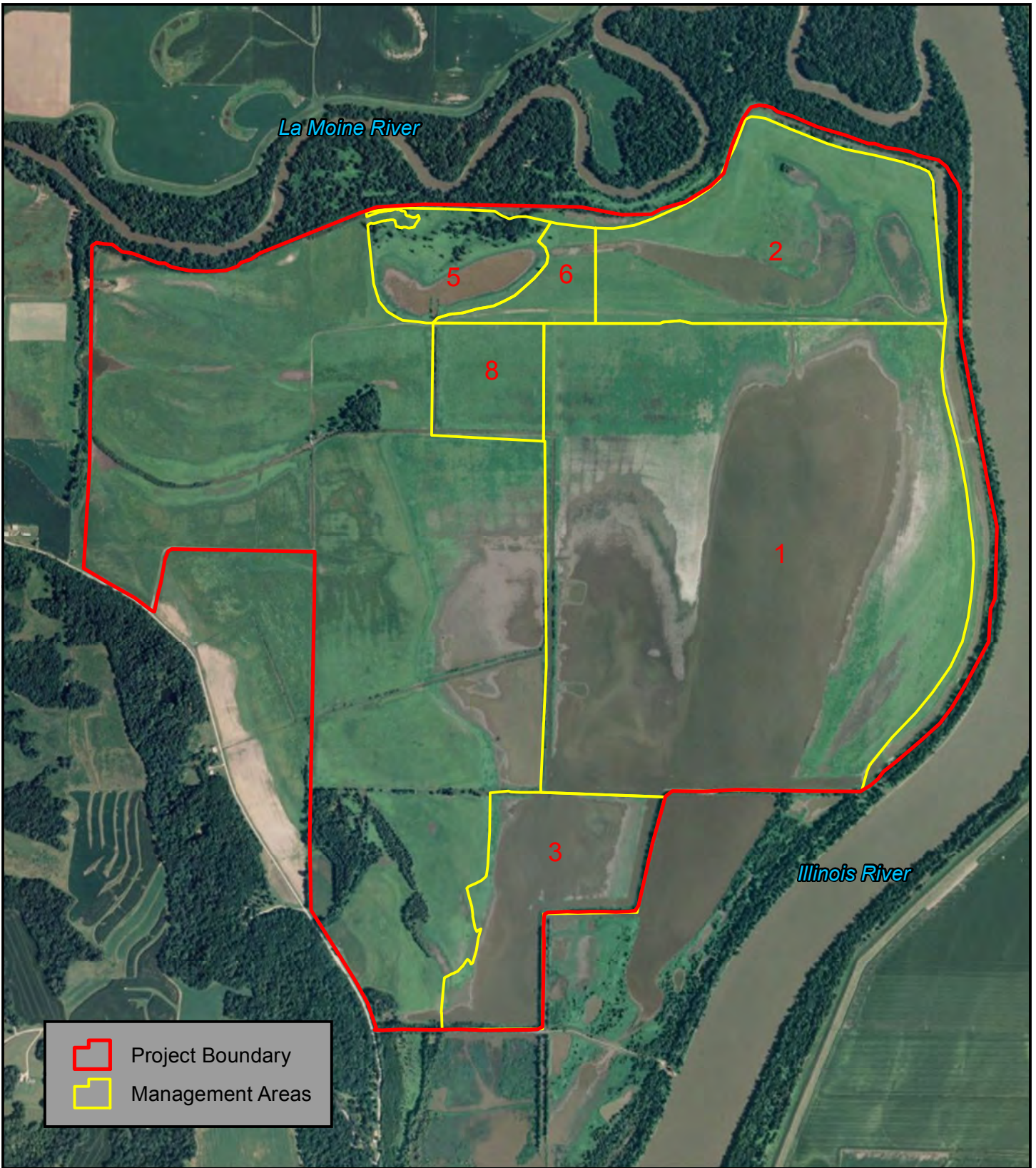
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Introduction

In 2004, the Illinois Department of Transportation (IDOT) established the La Grange wetland mitigation bank in Brown Co., IL (legal location: T. 1 S., R. 1 W., Sect. 16, 17, 20, 21) (Watson et al. 2004). This site, at the confluence of the Illinois and La Moine Rivers, occupies 665 ha (1643 acres), primarily comprising low agricultural fields with some previously existing upland forest, forested wetland, marsh, wet meadow and backwater lakes. Topographically, the site consists of a lower floodplain area, which is inundated for a sufficient duration to support wetland hydrology in more than 7 out of 10 years, a less frequently inundated upper floodplain and a small area of river bluff. To facilitate agriculture, the hydrology of the site had been modified; however, since establishment of the bank, pumps have been removed and portions of the tile and ditch systems have been deactivated or plugged. For organizational and management purposes, the site has been arbitrarily divided into 16 Areas; Areas 1, 2, 3, 5, 6 and 8 are shown in Figure 1.

The general site plan calls for emergent wetland establishment through natural regeneration on the lower floodplain and forested wetland planting on the upper floodplain. The lower floodplain has recently been allowed to revert to natural vegetation. While qualitative vegetation assessment had been carried out on the lower floodplain for two years (Busemeyer and Plocher 2004, 2005), the Illinois Natural History Survey (INHS) was tasked to conduct wetland and quantitative vegetation monitoring on Areas 1, 2 and 3 in 2006; Areas 5, 6 and 8 were added in 2009.

In 2011, field monitoring was conducted on 19 and 20 October; this report details the results of this monitoring. Project goals, objectives and performance criteria are included, as are monitoring methods, monitoring results, summary information and recommendations. A wetland banking prospectus (IDOT 2002) and wetland banking instrument (Watson et al. 2004) were prepared by the Illinois State Geological Survey (ISGS) and INHS.



 Project Boundary
 Management Areas



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

Site Boundary and Management Areas
LaGrange Mitigation Bank
Brown County

Seq. No: 9579

0 Meters 400



1 : 18,000

0 Feet 1,500



1 inch : 1,500 feet

02/2012

Figure 1



Project Goals, Objectives and Performance Criteria

Proposed goals and objectives are based on information contained in the original IDOT project request (Sunderland 2006) and the wetland banking instrument (Watson et al. 2004). Performance criteria are based on those specified in the United States Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and Guidelines for Developing Mitigation Proposals (USACOE 1993). Each goal should be attained by the end of the monitoring period. Project goals, objectives and performance criteria are listed below.

Project goal 1: The created wetland site should be determined to be jurisdictional by current federal standards.

Objective: The goal is to create or restore emergent, scrub shrub, and forested wetland throughout the monitoring areas.

Performance Criteria: The entire created wetland should satisfy the three criteria of the federal wetland definition: hydrophytic vegetation, hydric soils and wetland hydrology.

- A. Predominance of hydrophytic vegetation - More than 50% of the dominant plant species must be hydrophytic.
- B. Presence of hydric soils - Hydric soil characteristics must be present, or conditions favorable to the formation of hydric soil must persist at the site.
- C. Presence of wetland hydrology - the created wetland must be inundated at an average depth of less than 2 m (6.6 ft) or have soils saturated to the surface for at least 12.5 % of the growing season.

Project goal 2: The created wetland should meet minimum standards as to floristic composition.

Objective: The created wetland should compensate in-kind for loss of scrub-shrub, emergent, and forested wetlands. The wetland compensation should be composed of vegetation characteristic of scrub-shrub, emergent, and forested wetlands.

Performance Criteria: At least 90% of the plant species present should be non-weedy, native, annual and perennial species. At least 75% of plant cover should be native. None of the three most dominant species in any stratum should be nonnative, or weedy species.

Methods

INHS began quantitative monitoring of Areas 1, 2 and 3 in 2006 and Areas 5, 6 and 8 in 2009; monitoring will continue until IDOT requests that monitoring cease. The ISGS has been tasked to monitor hydrology. Monitoring reports on the status of the wetland creation will be submitted annually. The likelihood of meeting the proposed goals and performance criteria will be addressed. If evidence is discovered indicating that the goals/performance criteria will not be met by the end of the monitoring period, written management recommendations will be submitted to IDOT in an effort to correct the problems.

For the purposes of data presentation and discussion, Areas 1, 2 and 3 will be addressed as a whole; an herbaceous vegetation community covers all three areas. For Areas 5, 6 and 8, two communities will be addressed, an herbaceous vegetation community (found in Areas 5, 6 and 8) and a floodplain forest community (found solely in Area 5).

Project goal 1: The created wetland site should be determined to be jurisdictional by current federal standards.

Wetland areas will be mapped in the field, and boundaries overlain on DOQs using ArcGIS.

A. Hydrophytic Vegetation – The method for determining hydrophytic vegetation is described in Environmental Laboratory (1987) and Federal Interagency Committee for Wetland Delineation (1989). This method is based on aerial coverage estimates for individual plant species. Dominant hydrophytic vegetation will be determined each year based on visual estimates of cover in the site as a whole. Each of the dominant plant species is assigned a wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter (i.e. FAC, FAC+, FACW-, FACW, FACW+, or OBL) is considered hydrophytic. A predominance of hydrophytic vegetation in the wetland plant community exists if greater than 50% of the dominant species present are hydrophytic.

B. Hydric Soils – INHS personnel will examine soil cores for field indicators to determine the presence or absence of hydric soils as described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Field Indicators of Hydric Soils in the United States* (USDA 2002). 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 that time, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation are present at the site.

C. Wetland Hydrology – The ISGS will monitor site hydrology through a combination of wells, data loggers, and rain gages. More detailed information can be found in their annual report (Miner et al. 2011). The following is summarized from Miner et al. (2011). Wetland hydrology occurs when inundation or saturation to land surface is present for greater than 5% of the growing season where the soils and vegetation parameters in the *Corps of Engineers Wetland Delineation Manual* also are met; if either is lacking, then inundation or saturation must be present for greater than 12.5% of the growing season to satisfy the wetland hydrology criteria (Environmental Laboratory 1987). In addition, INHS scientists will survey the site annually for field indicators of wetland hydrology.

Project goal 2: The created wetland should meet minimum standards as to floristic composition.

Species composition and dominant plant species will be determined by meander surveys. Originally, species composition and dominance were determined by quantitative sampling. After multiple years of sampling, however, we have determined that these measures are simple enough to be easily and accurately determined by visual estimation. Native plant cover will also be estimated using this method. A comprehensive species list will be generated for each area. Weedy species will be defined as those having a Coefficient of Conservatism (C) of 1 or 0. A Floristic Quality Index (FQI) will be computed annually (Taft et al 1997). 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 Mohlenbrock (2002).

Results

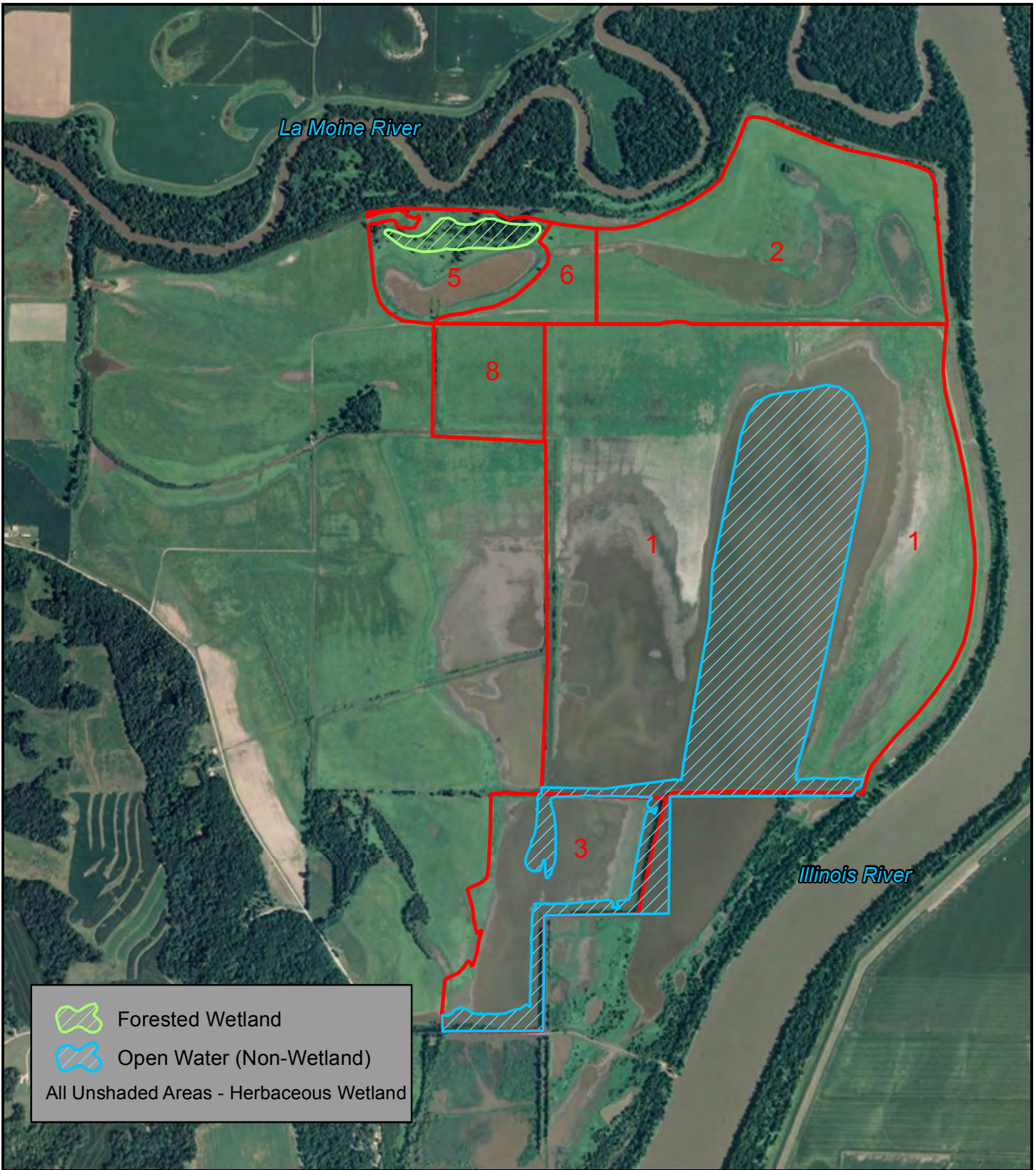
Project Goal 1: The created wetland site should be determined to be jurisdictional by current federal standards.


Delineated wetland acreage for 2011 is depicted in Figure 2.

A. Hydrophytic Vegetation – All areas (both herbaceous communities and the floodplain forest community) are dominated by hydrophytic vegetation. Dominant species are shown in the wetland determination forms (Appendix A).

B. Hydric Soils - In 2000, soil cores collected from the mitigation site were examined for the presence of redoximorphic features (Environmental Laboratory 1987) and were classified as Wagner silt loam. Being on the floodplain of the Illinois River, virtually the entire mitigation bank is underlain by hydric soils (IDOT 2002). Soils are considered to be unchanged since the initial examination. More detailed soils information can be found in the wetland determination forms (Appendix A).

C. Wetland Hydrology – In 2011, all areas conclusively supported wetland hydrology. According to the ISGS, virtually the entire wetland mitigation bank supported wetland hydrology, based on the 12.5% of the growing season criterion (Miner et al. 2011). Areal extent of wetland hydrology is shown in Figure 3.




 Forested Wetland
 Open Water (Non-Wetland)
 All Unshaded Areas - Herbaceous Wetland




ILLINOIS
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Delineated Wetlands Acreage - 2011
LaGrange Mitigation Bank
Brown County

Seq. No: 9579

0 Meters 400

 1 : 18,000

0 Feet 1,500

 1 inch : 1,500 feet

02/2012

Figure 2



La Grange Wetland Mitigation Bank

Estimated Areal Extent of 2011 Wetland Hydrology

September 1, 2010 through August 31, 2011

Map based upon Illinois National Agriculture Imagery Program (NAIP) digital orthophotograph, Cooperstown NE quarter quadrangle, taken August 8, 2010 (USDA-FSA 2010)

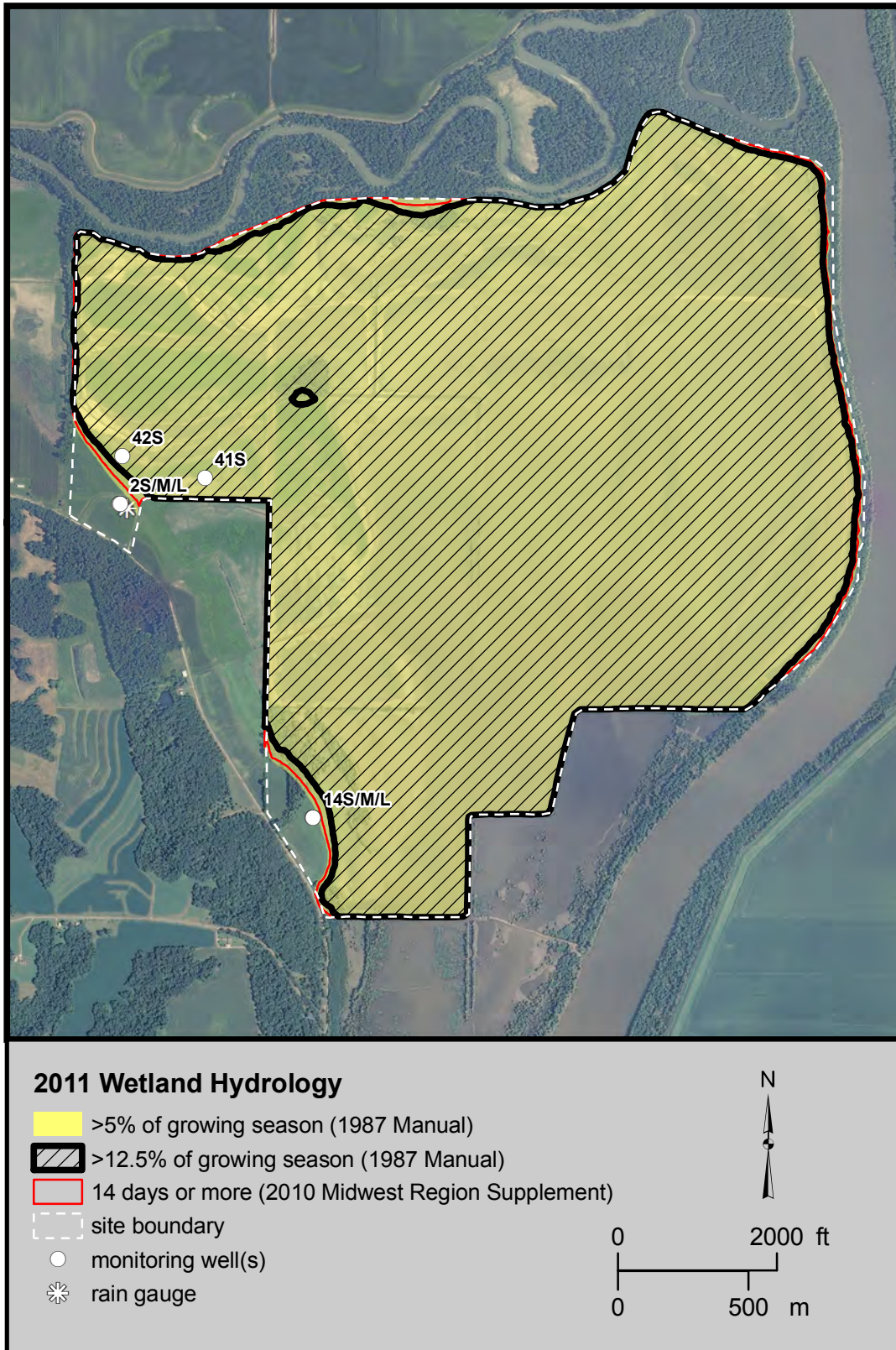


Figure 3. Areal extent of wetland hydrology, 2011 (Miner et al. 2011).

Project goal 2: The created wetland should meet minimum standards as to floristic composition.

In 2011, the plant communities of the mitigation bank met with mixed results, specifically with respect to meeting performance criteria for minimum standards of floristic composition.

Regarding the performance criterion requiring a 90% non-weedy, native species composition, this standard was not met for any of the three plant communities. Results were substantially below the required standard, 49%, 50%, and 67%, respectively, for the three communities (see species lists - Appendix A).

The performance standard requiring that none of the three most dominant plant species be non-native or weedy was also not met for any of the three plant communities (Table 1). Weedy native plants were prevalent and dominant throughout all communities (Appendix A).

Table 1. Three most dominant plant species by community, 2011.

Herbaceous Community Areas 1, 2 and 3	Herbaceous Community Areas 5, 6 and 8	Floodplain Forest Community Area 5
<i>Persicaria amphibium</i>	<i>Xanthium strumarium</i> *	<i>Acer saccharinum</i> *
<i>Persicaria lapathifolia</i> *	<i>Cyperus esculentus</i> *	<i>Campsis radicans</i>
<i>Cyperus esculentus</i> *	<i>Echinochloa muricata</i> *	<i>Xanthium strumarium</i> *

* Weedy, native species.

Positive results, however, were shown for the performance criterion requiring at least 75% native plant species cover. All dominant plant species, with the single exception of *Abutilon theophrasti*, were native (Appendix A); therefore, it seems clear that at least 75% of plant cover is native.

Summary and Recommendations

In 2011, all areas not covered by standing water within Areas 1, 2, 3, 5, 6 and 8 were determined to have dominant hydrophytic vegetation, hydric soils, and wetland hydrology and were therefore determined to be jurisdictional wetland. Total delineated wetland acreage was 679.1 acres. Herbaceous wetland accounted for all wetland acreage, with the exception of 9.2 acres of floodplain forest wetland found within Area 5. Wetland acreages for specific areas can be found in Table 2. Non-wetland, open water accounted for 162.8 acres.

Table 2. Delineated wetland acreage, 2011.

	Acreage
Area 1	373.9
Area 2	144.5
Area 3	61.1
Area 5	44.0
Area 6	20.3
Area 8	35.3
TOTAL	679.1

Plant cover appears to be strongly dominated by native species, thereby meeting the performance criterion. However, far less than 90% of plant species in each community were non-weedy and native, and in all communities, at least two of the three most dominant species were weedy natives. These data strongly conflict with the required performance criteria. As these areas are continually disturbed by severe flooding, it remains to be seen whether or not mature, native, non-weedy plant communities will ever develop. However, non-weedy, native, perennial hydrophytes do occur throughout all communities; in time they may come to dominate the plant communities.

Although observed in previous years, the state and federally listed decurrent aster (*Boltonia decurrens*) was not observed in 2011.

Literature Cited

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Appendix A – Wetland Determination Forms

ROUTINE ON-SITE WETLAND DETERMINATION

Herbaceous Wetland Complex – Areas 1, 2 and 3 (page 1 of 4)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011

Sequence No: 9579 **Project Name:** LaGrange Mitigation Bank

State: Illinois **County:** Brown **Applicant:** IDOT District 6

Legal Description: T. 1 S., R. 1 W., Sections 16, 21, 29

Do normal environmental conditions exist at this site? Yes: X No:
 Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. <i>Persicaria amphibium</i>	herb	OBL
2. <i>Persicaria lapathifolia</i>	herb	FACW+
3. <i>Cyperus esculentus</i>	herb	FACW
4. <i>Echinochloa muricata</i>	herb	OBL
5. <i>Eragrostis hypnoides</i>	herb	OBL
6. <i>Xanthium strumarium</i>	herb	FAC
7. <i>Persicaria pensylvanica</i>	herb	FACW+
8. <i>Abutilon theophrasti</i>	herb	FACU-

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 88%

Hydrophytic vegetation: Yes: X No:

Rationale: More than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

(originally described in 2000) (IDOT 2002)

Series and phase: Mapped as Darwin silty clay, Titus silty clay loam, and Water by NRCS.

Revised to Wagner silt loam.

On county hydric soils list? Yes: X No:
 Is the soil a histosol? Yes: No: X
 Histic epipedon present? Yes: No: X
 Redox Concentrations? Yes: X No:
 Redox Depletions? Yes: X No:

Matrix color: N 4/ and 5Y 4/1

Other indicators: level to slightly depressional landscape position within an active floodplain

Hydric soils? Yes: X No:

Rationale: This soil meets the requirements for NRCS hydric soil indicators F2 (loamy gleyed matrix) and F3 (depleted matrix).

ROUTINE ON-SITE WETLAND DETERMINATION

Herbaceous Wetland Complex – Areas 1, 2 and 3 (page 2 of 4)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011
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State: Illinois **County:** Brown **Applicant:** IDOT District 6
Legal Description: T. 1 S., R. 1 W., Sections 16, 21, 29

HYDROLOGY

Inundated: Yes: X (in places) No: Depth of standing water: 0 - 6 inches

Depth to saturated soil: Inundated or saturated at the surface

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, sheetflow and river overflow. Evapotranspiration and sheetflow back towards the river are the major outputs.

Watershed data: This site is in the watershed of the Illinois River, which has a drainage area of 62,748 km² (24,227 mi²) at Beardstown, IL (Ogata 1975). The U.S. Geological Survey hydrologic unit code (HUC) is 07130011 - Illinois River, Lower.

Other field evidence observed: level to depressional landscape position within an active floodplain, drift lines, bare areas

Wetland hydrology: Yes: X No:

Rationale: ISGS well data (Miner et al. 2011), along with field evidence listed above, indicate that this site is flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland? : Yes: X No:

Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all present; therefore, the site is a wetland. The site is coded by the NWI as: PEMFh (palustrine, emergent, semipermanently flooded, diked/impounded), PEMCh (palustrine, emergent, seasonally flooded, diked/impounded), PEMC (palustrine, emergent, seasonally flooded), PEMF (palustrine, emergent, semipermanently flooded), PEMA (palustrine, emergent, temporarily flooded), PABG (palustrine, aquatic bed, intermittently exposed), L2EM2G (lacustrine, littoral, emergent, nonpersistent, intermittently exposed), L1UBG (lacustrine, limnetic, unconsolidated bottom, intermittently exposed), and U (upland).

ROUTINE ON-SITE WETLAND DETERMINATION

Herbaceous Wetland Complex – Areas 1, 2 and 3 (page 3 of 4)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011
Sequence No: 9579 **Project Name:** LaGrange Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Legal Description: T. 1 S., R. 1 W., Sections 16, 21, 29

Determined by: Allen Plocher (vegetation and hydrology)
 Dave Ketzner (vegetation, hydrology, GPS)
 Dennis Keene (soils)
 University of Illinois
 Prairie Research Institute
 Illinois Natural History Survey
 Wetland Science Program
 1816 S. Oak St.
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SPECIES LIST

Dominant species are in bold.

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Abutilon theophrasti</i>	velvet leaf	herb	FACU-	*
<i>Amaranthus tuberculatus</i>	water hemp	herb	OBL	1
<i>Ammannia coccinea</i>	ammannia	herb	OBL	5
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Bidens cernua</i>	beggar's ticks	herb	OBL	2
<i>Bidens connata</i>	beggar's ticks	herb	OBL	2
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Bolboschoenus fluviatilis</i>	river bulrush	herb	OBL	3
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Cephalanthus occidentalis</i>	buttonbush	herb	OBL	4
<i>Chamaechrista fasciculata</i>	partridge pea	herb	FACU-	1
<i>Chamaesyce humistrata</i>	milk spurge	herb	FACW	1
<i>Cyperus erythrorhizos</i>	red rooted sedge	herb	OBL	1
<i>Cyperus esculentus</i>	chufa	herb	FACW	0
<i>Cyperus odoratus</i>	rusty flatsedge	herb	OBL	1
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis ovata</i>	spikerush	herb	OBL	2
<i>Eragrostis hypnoides</i>	creeping lovegrass	herb	OBL	5
<i>Eupatorium serotinum</i>	late flowering thoroughwort	herb	FAC+	1

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

* Non-native species

(Species list continues on following page.)

ROUTINE ON-SITE WETLAND DETERMINATION

Herbaceous Wetland Complex – Areas 1, 2 and 3 (page 4 of 4)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011

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State: Illinois **County:** Brown **Applicant:** IDOT District 6

Legal Description: T. 1 S., R. 1 W., Sections 16, 21, 29

SPECIES LIST (continued)

Dominant species are in bold.

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Geranium carolinianum</i>	wild cranesbill	herb	UPL	2
<i>Hibiscus laevis</i>	halberd leaved rose mallow	herb	OBL	4
<i>Ipomaea lacunosa</i>	small white morning glory	herb	FACW	1
<i>Leptochloa fascicularis</i>	bearded sprangletop	herb	OBL	0
<i>Leptochloa panicoides</i>	salt meadow grass	herb	OBL	9
<i>Lindernia dubia</i>	false pimpernel	herb	OBL	5
<i>Ludwigia peploides</i>	creeping primrose willow	herb	OBL	5
<i>Panicum capillare</i>	witch grass	herb	FAC	0
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Persicaria amphibia</i>	water smartweed	herb	OBL	3
<i>Persicaria lapathifolia</i>	nodding smartweed	herb	FACW+	0
<i>Persicaria pensylvanica</i>	giant smartweed	herb	FACW+	1
<i>Populus deltoides</i>	cottonwood	herb	FAC+	2
<i>Potentilla norvegica</i>	rough cinquefoil	herb	FAC	0
<i>Ranunculus sceleratus</i>	cursed crowfoot	herb	OBL	3
<i>Rorippa palustris</i>	marsh yellow cress	herb	OBL	4
<i>Rorippa sessiliflora</i>	sessile flowered cress	herb	OBL	3
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Salix amygdaloides</i>	peach leaf willow	sapling	FACW	4
<i>Salix interior</i>	sandbar willow	shrub	OBL	1
<i>Salix nigra</i>	black willow	sapling	OBL	3
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Sonchus arvensis</i>	field sowthistle	herb	FAC-	*
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

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

$$mCv = \sum C/N = 2.2$$

* Non-native species

$$FQI = \sum C/VN = 14.1$$

Percent native and non-weedy: 49%

ROUTINE ON-SITE WETLAND DETERMINATION

Herbaceous Wetland Complex – Areas 5, 6 and 8 (page 1 of 3)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011
Sequence No: 9579 **Project Name:** LaGrange Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Legal Description: T. 1 S., R. 1 W., Sections 16, 17

Do normal environmental conditions exist at this site? Yes: X No:
 Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. <i>Xanthium strumarium</i>	herb	FACW+
2. <i>Cyperus esculentus</i>	herb	FACW
3. <i>Echinochloa muricata</i>	herb	OBL

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:

Rationale: More than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

(originally described in 2000) (IDOT 2002)

Series and phase: Mapped as Darwin silty clay and Water by NRCS. Revised to Wagner silt loam.

On county hydric soils list? Yes: X No:
 Is the soil a histosol? Yes: No: X
 Histic epipedon present? Yes: No: X
 Redox Concentrations? Yes: X No:
 Redox Depletions? Yes: X No:

Matrix color: N 4/

Other indicators: level to slightly depressional landscape position within an active floodplain

Hydric soils? Yes: X No:

Rationale: This soil meets the requirements for NRCS hydric soil indicator F2 (loamy gleyed matrix).

ROUTINE ON-SITE WETLAND DETERMINATION

Herbaceous Wetland Complex – Areas 5, 6 and 8 (page 2 of 3)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011
Sequence No: 9579 **Project Name:** LaGrange Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Legal Description: T. 1 S., R. 1 W., Sections 16, 17

HYDROLOGY

Inundated: Yes: X (in places) No: Depth of standing water: 0 - 3 inches

Depth to saturated soil: Inundated or saturated at the surface

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, sheetflow and river overflow. Evapotranspiration and sheetflow back towards the river are the major outputs.

Watershed data: This site is in the watershed of the Illinois River, which has a drainage area of 62,748 km² (24,227 mi²) at Beardstown, IL (Ogata 1975). The U.S. Geological Survey hydrologic unit code (HUC) is 07130011 - Illinois River, Lower.

Other field evidence observed: level to depressional landscape position within an active floodplain, drift lines, bare areas

Wetland hydrology: Yes: X No:

Rationale: ISGS well data (Miner et al. 2011), along with field evidence listed above, indicate that this site is flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland? : Yes: X No:

Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all present; therefore, the site is a wetland. The site is coded by the NWI as PFO1A (palustrine, forested, broad-leaved deciduous, temporarily flooded) and U (upland).

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Herbaceous Wetland Complex – Areas 5, 6 and 8 (page 3 of 3)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011
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SPECIES LIST

Dominant species are in bold.

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Abutilon theophrasti</i>	velvet leaf	herb	FACU-	*
<i>Amaranthus tuberculatus</i>	water hemp	herb	OBL	1
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Aster lanceolatus</i>	panicked aster	herb	FACW	3
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Cephalanthus occidentalis</i>	buttonbush	shrub	OBL	4
<i>Cyperus esculentus</i>	chufa	herb	FACW	0
<i>Diospyros virginiana</i>	persimmon	herb	FAC	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eragrostis hypnoides</i>	creeping lovegrass	herb	OBL	5
<i>Fraxinus lanceolata</i>	green ash	herb	FACW	2
<i>Ipomoea lacunosa</i>	small white morning glory	herb	FACW	1
<i>Panicum capillare</i>	witch grass	herb	FAC	0
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Persicaria amphibia</i>	water smartweed	herb	OBL	3
<i>Persicaria lapathifolia</i>	nodding smartweed	herb	FACW+	0
<i>Persicaria pensylvanica</i>	giant smartweed	herb	FACW+	1
<i>Populus deltoides</i>	cottonwood	herb	FAC+	2
<i>Rorippa sessiliflora</i>	sessile flowered cress	herb	OBL	3
<i>Salix nigra</i>	black willow	herb	OBL	3
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

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

$$mCv = \sum C/N = 1.9$$

* Non-native species

$$FQI = \sum C/\sqrt{N} = 8.5$$

Percent native and non-weedy: 50%

ROUTINE ON-SITE WETLAND DETERMINATION
Floodplain Forest Wetland – Area 5 (page 2 of 3)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011
Sequence No: 9579 **Project Name:** LaGrange Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Legal Description: T. 1 S., R. 1 W., Section 17

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: none

Depth to saturated soil: 15 in

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, sheetflow and river overflow. Evapotranspiration and sheetflow back towards the river are the major outputs.

Watershed data: This site is in the watershed of the Illinois River, which has a drainage area of 62,748 km² (24,227 mi²) at Beardstown, IL (Ogata 1975). The U.S. Geological Survey hydrologic unit code (HUC) is 07130011 - Illinois River, Lower.

Other field evidence observed: level to nearly level landscape position within an active floodplain

Wetland hydrology: Yes: X No:

Rationale: ISGS well data (Miner et al. 2011), along with field evidence listed above, indicate that this site is flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: X No:

Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all present; therefore, the site is a wetland. The site is coded by the NWI as PFO1A (palustrine, forested, broad-leaved deciduous, temporarily flooded).

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ROUTINE ON-SITE WETLAND DETERMINATION
Floodplain Forest Wetland – Area 5 (page 3 of 3)

Field Investigators: Plocher, Ketzner, Keene **Date:** 19, 20 October 2011
Sequence No: 9579 **Project Name:** LaGrange Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Legal Description: T. 1 S., R. 1 W., Section 17

SPECIES LIST
Dominants are in bold.

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Acalypha rhomboidea</i>	three seeded Mercury	herb	FACU	0
<i>Acer negundo</i>	box elder	tree	FACW-	1
<i>Acer saccharinum</i>	silver maple	tree, sapling	FACW	1
<i>Amaranthus tuberculatus</i>	water hemp	herb	OBL	1
<i>Betula nigra</i>	river birch	tree	FACW	4
<i>Campsis radicans</i>	trumpet creeper	woody vine, herb	FAC	2
<i>Carya illinoensis</i>	pecan	tree	FACW	6
<i>Celtis occidentalis</i>	hackberry	tree	FAC-	3
<i>Cephalanthus occidentalis</i>	buttonbush	shrub	OBL	4
<i>Diospyros virginiana</i>	persimmon	tree/herb	FAC	2
<i>Fraxinus lanceolata</i>	green ash	tree/herb	FACW	2
<i>Gleditsia triacanthos</i>	honey locust	tree	FAC	2
<i>Ipomaea lacunosa</i>	small white morning glory	herb	FACW	1
<i>Menispermum canadense</i>	moonseed	herb	FAC	4
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Pilea pumila</i>	clearweed	herb	FACW	3
<i>Platanus occidentalis</i>	sycamore	tree	FACW	3
<i>Populus deltoides</i>	cottonwood	tree	FAC+	2
<i>Quercus macrocarpa</i>	burr oak	tree	FAC-	5
<i>Quercus palustris</i>	pin oak	tree	FACW	4
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Smilax tamnoides hispida</i>	bristly greenbriar	woody vine, herb	FAC	3
<i>Solanum ptycanthum</i>	black nightshade	herb	FACU-	0
<i>Toxicodendron radicans</i>	poison ivy	woody vine, herb	FAC+	1
<i>Ulmus americana</i>	American elm	tree, herb	FACW-	5
<i>Urtica dioica</i>	stinging nettle	herb	FAC+	2
<i>Vitis aestivalis</i>	summer grape	woody vine, herb	FACU	4
<i>Vitis riparia</i>	riverbank grape	woody vine, herb	FACW-	2
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

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

$$mCv = \sum C/N = 2.4$$

* Non-native species

$$FQI = \sum C/\sqrt{N} = 13.2$$

Percent native and non-weedy: 67%