

TRANSMITTAL FORM

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

Route and Location

Mark: IL 3
Route: FAP 312
County: Franklin
IDOT District: 9
Section Number: (135) RS -1, B-1
Seq. no. : 9282

Survey Conducted By: Allen Plocher, Scott Wiesbrook, Rick Larimore, Valerie Sivicek, Brad Zercher, and Joyce Hofmann
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Date Conducted: 4, 5 September 2007

Project Summary:

We monitored, for the third year, the site created for wetland impact mitigation for FAP 312 (IL 3) in Franklin Co. The Illinois Dept. of Transportation constructed the site in 2005. The attached report includes information detailing monitoring methods and results. The status of the created wetland site is discussed. The created wetland site is depicted on the enclosed digital ortho quad photo.

Signed: _____
Dr. Allen E. Plocher
INHS/IDOT project Coordinator

Date: _____

Signed: _____
Dr. Edward J. Heske
INHS/IDOT project principal investigator

Date: _____

Wetland Mitigation Monitoring for FAP 312 /IL 3 (Sugar Camp Creek) - 2007

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Introduction

Road construction along IL 3 will result in impacts to 1.41 ha (3.49 acres) of wetland, including a site with Floristic Quality > 20.0 and harboring the State Threatened rice rat (*Oryzomys palustris*). A compensation plan was prepared which called for floodplain forest and emergent wetland restoration at a ratio of 5.5:1 (7.77 ha (19.19 acres)) at a site along Sugar Camp Creek near Benton, IL in Franklin Co. (Legal location: T 5 S, R 4 E, Sect. 32, SE/4 SE/4). Sugar Camp Creek enters the Middle Fork of the Big Muddy River 0.91 km (0.57 mi) south of the property. Over 405 ha (1000 ac) of floodplain forest, including one contiguous 600 acre block along the Middle Fork, occur within 7.25 km (4.5 mi) of the tract. The site consisted of a wet, fallow agricultural field surrounding a straightened and ditched section of the creek. Hydrologic alterations involve blocking a scratch ditch, which drains an abandoned oxbow in the field. The compensation plan calls for restoration of 16.5 acres of floodplain forest and 2.6 acres of emergent wetland (the oxbow). The forest restoration involves the planting of bare root seedlings of nine species at a rate of 562 per acre. The understory is to be seeded with red top (*Agrostis alba*). The emergent restoration is to revegetate naturally. The site is to be monitored annually for the potential presence of *Oryzomys palustris* (rice rat). The wetland restoration site was mostly completed in spring 2005 (Taft et al. 1997, IDOT 2005). An additional 4.0 acres was planted in spring 2006 (IDOT, pers. comm.).

In 2007, field monitoring was conducted on 4 and 5 September, and mammal surveys on 15, 16 and 17 October. This report details results of the 2007 monitoring. Project goals, objectives and performance criteria are included, as are monitoring methods, monitoring results, summary information and recommendations. This project has no monitoring plan.

Project Goals, Objectives and Performance Criteria

Proposed goals and objectives are based on information contained in the original IDOT project request (Sunderland 2005) and the project wetland compensation plan (IDOT 2005).

Performance criteria are based on those specified in the U. S. C. O. E. Wetland Delineation Manual (Environmental Laboratory, 1987), and Guidelines for Developing Mitigation Proposals (USACOE, 1993). Each goal should be attained by the end of the five year monitoring period. Project goals, objectives and performance criteria are listed below.

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

Objective: The wetland restoration should compensate for the loss of 3.49 acres of forested wetland, swamp, marsh and scrub-shrub wetland at a replacement ratio of 5.5:1, for a total requirement of 19.19 acres.

Performance Criteria: The entire wetland restoration 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 site 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 wetland restoration should meet minimum standards as to planted tree survival and floristic composition.

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

Performance Criteria: At the end of the five year monitoring period $\geq 80\%$ of the planted trees should be alive (450 out of 562 per acre). At least 50% of the plant species present should be native and non-weedy. None of the three most dominant species in any stratum may be nonnative or weedy.

Methods

Monitoring will be performed on the wetland restoration site. INHS personnel began monitoring the area in 2005 and will continue yearly monitoring through 2009 (five years). The Illinois State Geological Survey (ISGS) has been tasked to monitor hydrology. Monitoring reports on the status of the site 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 five year monitoring period, written management recommendations will be submitted to IDOT in an effort to correct the problems.

Project Goal 1

A. Hydrophytic Vegetation - Using visual estimation, the dominant species of vegetation in each community are determined. Dominance is based on Importance Value, a numerical average of species' relative frequency, density and aerial coverage (or basal area) (Cox 1985). In each stratum dominant species include, starting with the most abundant, those species whose Importance Values, when summed in descending order, immediately exceed 50%, as well as any additional species whose Importance Values are 20% or greater (Federal Interagency Committee for Wetland Delineation, 1989). Dominant species are assigned wetland indicator status ratings (Reed 1988). Any plant rated facultative or wetter (FAC, FAC+, FACW-, FACW, FACW+ or OBL) is considered hydrophytic. Hydrophytic vegetation is determined to be present if greater than 50% of the dominant species are hydrophytic (Environmental Laboratory 1987).

B. Hydric Soils - Soil cores collected from the mitigation site are examined for the presence of redoximorphic features (Environmental Laboratory 1987). Hydrologic alteration at this site is minimal, consisting of blocking a scratch ditch draining the oxbow area. Therefore, soil conditions are not expected to change greatly over time.

C. Wetland Hydrology - The extent of wetland hydrology at this site was monitored by the Illinois State Geological Survey and is shown on the accompanying figure (Pociask et al. 2007). Wetland hydrology occurs when inundation or saturation to land surface is present for greater than 5% of the growing season (10 days at this site) 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 (26 days at this site) to satisfy wetland hydrology criteria (Environmental Laboratory 1987 [<http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf>]). Inundation and saturation at the site were monitored using a combination of 9 monitoring wells and 1 stage gauge. Water levels were measured at least biweekly during April and May, and monthly during the remainder of the year. Manual readings were supplemented by 2 dataloggers, which measured surface-water and shallow ground-water levels at regular intervals to document all hydrologic events. Additional details regarding site conditions and monitoring results for wetland hydrology in 2007 are summarized in ISGS' Annual Report for Active IDOT Wetland Compensation and Hydrologic Monitoring Sites, September 1, 2006 to September 1, 2007 (Pociask 2007).

Information provided by the ISGS concerning hydrology of the site is included in this report. In addition, visual inspection of the site for field indicators of wetland hydrology, such as landscape position, inundation or surface saturation or wetland drainage and debris patterns will be used to determine the presence of wetland hydrology (Environmental Laboratory 1987).

Project Goal 2

A. Woody vegetation - Within the forest restoration site, quantitative sampling of planted tree species is conducted. Starting 152 m (500 ft) in from the northeast corner of the site, and proceeding north to south then south to north on consecutive planted rows, the first 30 m (99 ft) in each 304 m (997 ft) section of row is sampled (10.6 ft X 99 ft (0.0241 acre) plot). This

procedure results in a 10% sample (n = 48). Within each sampled section (or plot) live trees are tallied by species. A minimum of 450 live, planted trees/acre (80% of 562/acre) must be present after five years. Importance Values of planted species are calculated as an average of relative frequency and relative density. The tree planting areas are mapped using Trimble GPS (global positioning system) and overlaid on digital ortho quad imagery using Arcview 3.2.

B. Herbaceous vegetation - Dominant herbaceous species within the wetland compensation site will be determined annually by visual estimation in an attempt to ensure that none of the three most dominant species are nonnative or weedy*, and that at least 50% of the plant species present are native and non-weedy* through the fifth year of monitoring. A species list will be prepared annually and a Floristic Quality Index computed for the site (Taft et al. 1997).

* For our purposes here, certain native, early successional species (C=1) that commonly occur in healthy wetlands and do not tend to overwhelm plant communities are not considered weedy: *Acer saccharinum*, *Bidens frondosa*, *Polygonum pennsylvanicum*, *Cyperus ferruginescens*, etc.

Faunal Surveys (Mammals)

In addition to the stated performance criteria, INHS personnel will conduct annual surveys of small mammals, in order to determine presence and abundance of *Oryzomys palustris* (rice rat).

Live trapping was conducted at the Sugar Camp Creek mitigation site on the nights of 15, 16, and 17 October 2007 by Joyce Hofmann, Jean Mengelkoch, and Steve Amundsen of the INHS. Folding, aluminum Sherman traps measuring 8 x 9 x 23 cm were used (H.B. Sherman Traps, Inc., Tallahassee, FL). The traps were baited with a mixture of rolled oats and peanut butter. The traps were placed on the ground at intervals of approximately 10 m. They were set during the late afternoon and checked the following morning (beginning at 0800 h).

The species, sex, and reproductive condition of captured animals were recorded. The position of the testes (either abdominal or scrotal) was used as a general indicator of the reproductive condition of male rodents. Females were examined for pregnancy (by gentle palpation of the abdomen) or lactation (by examination of the teats). Animals were suspended from a Pesola scale and weighed to the nearest 0.5 g. To determine the number of individuals of each species captured at the site, every animal trapped for the first time on the first or second morning of the trapping session was marked temporarily by clipping a small patch of fur on its flank. This made it possible to distinguish individuals that were re-captured from those that were being caught for the first time. After examination animals were released near the trap location.

The compensation site was totally dry on 15 October 2007. A line of 56 traps was placed along the bank of Sugar Camp Creek, which was the only source of water in the area. This trap line (A) ran the length of the area that has been released from cultivation. Three transects crossed the compensation site in areas where standing water had been present during 2006. Two lines consisting of 17 traps each (B, C) were established across the southern portion of the site where there had been a large pond in 2006. The third transect of 17 traps (D) crossed the northern portion of the site where there had been a Y-shaped channel of water in 2006.

On the night of 15 October the sky was overcast and the overnight low temperature was approximately 14°C. The sky was mostly clear during the night of 16 October and the overnight low was approximately 10°C. There was a very thin, waxing crescent moon. There was heavy rain during the night of 17 October, with a low temperature of approximately 18°C. On the morning of 18 October there were small areas of standing water in the middle of the northern and southern sections of the compensation site (crossed by transects C and D).

Results

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

In 2007, precipitation was 91% of normal, but conditions were dry March through August. There were three minor floods during the growing season. The emergent wetland, and a small area surrounding it, conclusively displayed wetland hydrology – 2.35 ha (5.8 acres), while 6.0 ha (14.8 acres) may possess wetland hydrology (figure 1) (Pociask 2007). The emergent area is dominated by *Panicum dichotomiflorum* (FACW-), *Echinochloa muricata* (OBL) and *Polygonum pensylvanicum* (FACW+), and the forest restoration area is dominated by *Agrostis alba* (FACW), *Eupatorium serotinum* (FAC+) and *Solidago canadensis* (FACU). Therefore, both of these areas have hydrophytic vegetation. An additional 0.45 ha (1.1 acre) tree planting, probably established in 2006, was discovered west of the emergent wetland. And the previously mapped 2006 planting was found to be 1.17 ha (2.9 acres) rather than 1.0 ha (2.5 acres). This brings the total tree planting area to 6.19 ha (15.3 acres). Of this, 1.48 ha (3.65 acres) is underlain by non-hydric Belknap silt loam. The remaining 4.72 ha (11.65 acres) of forest restoration plus the 1.44 ha (3.55 acres) of emergent wetland are underlain by hydric Bonnie silt loam. Therefore, in 2007, out of 7.63 ha (18.85 acres) of mitigation area, 5.02 ha (12.4 acres) have hydrophytic vegetation, hydric soils and may possess wetland hydrology (5%) (figure 2, Appendix 1).

Project goal 2: The wetland restoration should meet minimum standards as to planted tree survival and floristic composition.

- A. Woody vegetation – At this site, nine species were listed for planting – *Betula nigra*, *Quercus palustris*, *Carya illinoensis*, *Q. bicolor*, *Platanus occidentalis*, *Fraxinus pennsylvanica*, *Q. shumardii*, *Taxodium distichum* and the shrub, *Cornus stolonifera*. The rate of stocking was specified as 562 stems/acre for 16.5 acres. All listed species are still present. The listed, seeded ground cover, *Agrostis alba*, is now a dominant understory species at the site. In 2007, a larger number of planted trees were observed than in 2006. As trees grow in height, they become less difficult to locate in the dense ground cover. In the 10.75 acre first planting, 490 trees/acre are present, predominantly *Betula nigra*, *Quercus palustris* and *Carya illinoensis*. Together with an additional 0.55 acre with 103 *Betula nigra* and 10 *Fraxinus pennsylvanica*, survival is 84.7%. In the 4.0 acre second planting, 268 trees/acre are present, predominantly *Fraxinus* and *Platanus occidentalis*. In this area, survival is 47.7%. Within the emergent wetland restoration, a

census revealed that 151 planted trees were present - *Taxodium distichum* (90) and *Betula nigra* (61). Scattered natural regeneration of seven native tree species (*Acer rubrum*, *Acer negundo*, *Celtis occidentalis*, *Diospyros virginiana*, *Fraxinus pennsylvanica*, *Populus deltoides* and *Ulmus americana*) was also observed. In 2007, the aerial extent of forest restoration falls short of the stated objective of 16.5 acres. The density of living planted trees is less than 450/acre (80% of the proposed 562/acre) in the second planting (Table 1, 2, 3, Appendix 1).

- B. Herbaceous vegetation – Three years out of agriculture, the quality of vegetation is improving, but is still early successional in nature. The dominant vegetation in the forest restoration (*Agrostis alba*, *Eupatorium serotinum*, and *Solidago canadensis*), and the emergent wetland (*Panicum dichotomiflorum*, *Echinochloa muricata*, *Polygonum pennsylvanicum*) is little changed from last year. In the forest restoration, the number of plant species increased from 86 to 98 and FQI increased from 22.0 to 23.0. Percent native species remained about the same (86% vs. 85%) but percent nonnative or weedy increased from 35% to 38%. In the emergent wetland, number of species increased from 44 to 58 and FQI increased from 16.0 to 19.0. Percent native species remained the same (89%) and percent nonnative or weedy decreased from 34% to 30%. The number of rather conservative species colonizing the site has increased from seven to twelve (*Pluchea camphorata* C=8, *Lobelia cardinalis* C=6, *Mimulus alatus* C=6, *Panicum rigidulum* C=6, *Carex trichocarpa* C=6, *Cyperus pseudovegatus* C= 5, *Hibiscus lasiocarpus* C= 5, *Stachys palustris* C=5, *Lycopus virginicus* C= 5, *Commelina virginica* C= 5, *Ludwigia alternifolia* C= 5, *Carex luipulina* C= 5).). In 2007, the percentage of nonnative or weedy native species remains well less than 50% at both forested and emergent restoration sites. Therefore, this stated objective is met. However, neither site yet meets the requirement that none of the three most dominant species may be nonnative or weedy (Appendix 1).

**Sugar Camp Creek Wetland Compensation Site
(FAP 312 and Proposed Wetland Mitigation Bank)**

Estimated Areal Extent of 2007 Wetland Hydrology

based on data collected between September 1, 2006 and September 1, 2007

Map based on USGS digital orthophotograph, Ewing SE quarter quadrangle,
aerial photography from April 1998 (ISGS 2000)

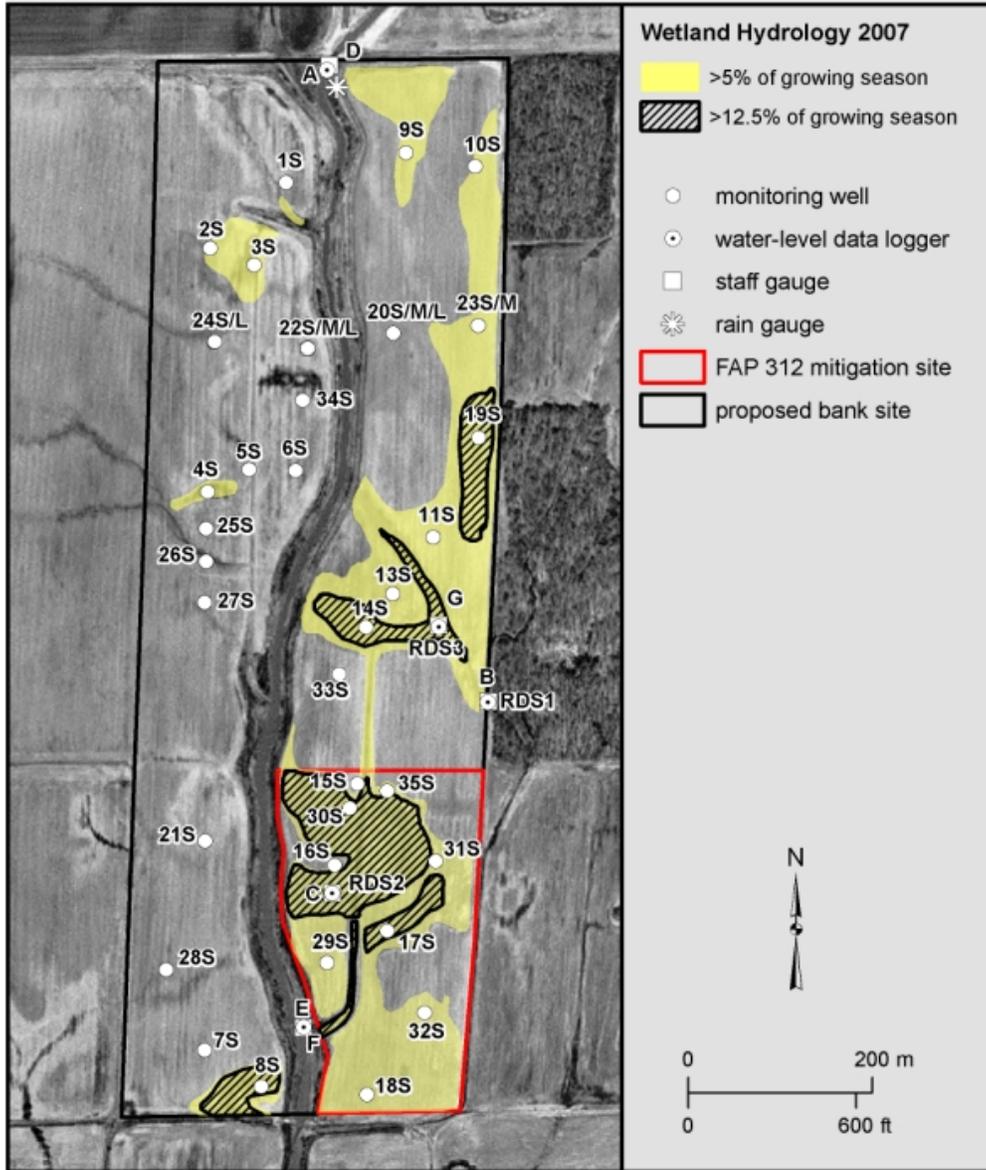


figure 1. Aerial extent of measured wetland hydrology – 2007

Table 1. Planted Tree Species – east section. stems/acre, Importance Value (IV), percent survival, n=37

	stems/acre	I.V.	percent of 562/ac
<i>Betula nigra</i>	115.52	21.91	
<i>Quercus palustris/shumardi</i>	100.91	17.25	
<i>Carya illinoensis</i>	80.75	17.10	
<i>Fraxinus pennsylvanica</i>	68.42	16.47	
<i>Platanus occidentalis</i>	54.94	14.47	
<i>Quercus bicolor</i>	69.54	12.79	
Total (on 10.75 acres)	490.08	99.99	87.2%
Total (plus 103 <i>Betula</i> and 10 <i>Fraxinus</i> on addit. 0.55 acre)	476.23		84.7%

Table 2. Planted Tree Species – west section. stems/acre, Importance Value (IV), percent survival, n=11

	stems/acre	I.V.	percent of 562/ac
<i>Fraxinus pennsylvanica</i>	116.93	44.05	
<i>Platanus occidentalis</i>	90.54	28.01	
<i>Quercus bicolor</i>	33.94	9.12	
<i>Quercus palustris</i>	7.55	6.96	
<i>Cornus stolonifera</i>	7.55	4.19	
<i>Betula nigra</i>	7.55	4.19	
<i>Carya illinoensis</i>	3.78	3.48	
Total (on 3.6 acres)	267.84	100.00	47.7%

Table 3. Planted Tree Species – emergent wetland.

	stems
<i>Taxodium distichum</i>	90
<i>Betula nigra</i>	61
Total (on 3.55 acres)	151

Faunal Surveys (Mammals)

The total number of trap-nights (one trap-night = one trap set for one night) during the trapping session was 291 (corrected for 30 traps that were closed, but unoccupied, when checked). Eleven small mammals were captured during the first night, 14 the second night, and 10 the third night. The total number of captures was 35, which represented an overall trapping success ([number of captures/number of trap-nights] x 100) of 12.0%.

Two species of rodents were trapped – the white-footed mouse (*Peromyscus leucopus*) and house mouse (*Mus musculus*). The most frequently captured species was the white-footed mouse (13 individuals). No marsh rice rats (*Oryzomys palustris*) were captured.

Overall trapping success at this site was lower in 2007 than in the two preceding years. Trapping success in 2005 was 35.9%, and 13.4% in 2006. Unlike the previous years, no prairie voles (*Microtus ochrogaster*) or deer mice (*P. maniculatus*) were captured in the compensation site.

Five rice rats were caught in 2005 — one on the creek bank and four in the field in the southern portion of the compensation site. Only one rice rat was captured in 2006. It was in the northern portion of the compensation site, which had been released from cultivation that year. Rice rats may have deserted the compensation site in 2007 because it was dry. Alternatively, the small population of rice rats at the site may have been lost through local extirpation.

Summary and Recommendations

In the third year, this restoration site is still making good progress. Although rice rats (*Oryzomys*) were not located this year, their absence may be due to dry conditions during most of the growing season. An additional 1.5 acres of forest restoration was located this year. In both forest restoration and emergent wetland, the FQI and number of plant species present have increased every year. The percent nonnative or weedy species decreased again in 2007 in the emergent wetland, although this value increased slightly in the forest restoration. The number of conservative plant species present continues to increase. Due to height growth, we were able to locate a larger number of planted trees and, in the first planting, greater than 80% of the original planting survives. The second planting is still well below the required 450/acre, however.

In 2007, less than 50% of species present in both communities are nonnative or weedy. However, both forest restoration and emergent wetland still have weedy species among the three most dominant. Six species present in 2007 in low numbers have the potential to persist and overwhelm some sites (*Phalaris arundinacea*, *Ambrosia trifida*, *Phragmites australis*, *Typha angustifolia*, *Solidago canadensis*, *Eleagnus umbellata*). The second planting falls short of the required 450 trees/acre. This year, 12.4 acres have hydrophytic vegetation, hydric soil, and may possess wetland hydrology (5%).

Literature Cited

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- United States Army Corps of Engineers. 1993. Guidelines for developing mitigation proposals. Chicago District.

**Appendix 1: Wetland Determinations
and Species Lists**

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 1 of 5)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher, Sivicek

Date: 4, 5 September 2007

Sect. No.: 102 (RS – 5, W –1)

Project Name: FAP 312 (IL 3)

State: Illinois **County:** Franklin **Applicant:** IDOT District 9

Site Name: wet meadow/forest restoration

Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4

Location: majority of the site

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>Agrostis alba</i>	herb	FACW
2. <i>Solidago canadensis</i>	herb	FACU
3. <i>Eupatorium serotinum</i>	herb	FAC+

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 66.7%

Hydrophytic vegetation: Yes: X No:

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

SOILS

Series and phase: Bonnie silt loam (Typic Fluvaquent)

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: Color: 10YR 4/4, 4/3, and 4/6

Redox Depletions? Yes: X No: Color: 2.5Y 5/2

Matrix color: 10YR 4/3 over 2.5Y 7/1 and 5/2

Other indicators: This soil is found in a level to depressional area along a creek and was saturated to the surface in some areas.

Hydric soils? Yes: X No:

Rationale: The Natural Resources Conservation Service identifies Bonnie as a Typic Fluvaquent that is poorly drained. The presence of redox concentrations and depletions within a low chroma matrix indicates conditions of saturation for long duration during the growing season. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 – Depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 2 of 5)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher, Sivicek

Date: 4, 5 September 2007

Sect. No.: 102 (RS – 5, W –1)

Project Name: FAP 312 (IL 3)

State: Illinois **County:** Franklin **Applicant:** IDOT District 9

Site Name: wet meadow/forest restoration

Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4

Location: majority of the site

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA

Depth to saturated soil: 0.2 m (8 in)

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and ditch/creek overflow. Evapotranspiration and sheetflow are the major outputs.

Size of watershed: 101 km² (39 mi²)

Other field evidence observed: This site is level to depressional. Driftlines were observed.

Wetland hydrology: Yes: X No:

Rationale: Field evidence cited above indicates that the 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: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. The site is not coded by the NWI as wetland.

Determined by: Allen Plocher (vegetation and hydrology)
Scott Wiesbrook (soils and hydrology)
Brad Zercher (GPS and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 3 of 5)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher, Sivicek
Date: 4, 5 September 2007
Sect. No.: 102 (RS – 5, W –1) **Project Name:** FAP 312 (IL 3)
State: Illinois **County:** Franklin **Applicant:** IDOT District 9
Site Name: wet meadow/forest restoration
Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4
Location: majority of the site

SPECIES LIST

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	seedling	FACW-	1
<i>Acer rubrum</i>	red maple	seedling	FAC	5
<i>Achillea millifolium</i>	yarrow	herb	FACU	*
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Andropogon virginicus</i>	broomsedge	herb	FAC-	1
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Asclepias syriaca</i>	common milkweed	herb	UPL	0
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster prealtus</i>	willow leaf aster	herb	FACW	4
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Betula nigra</i>	river birch	seedling	planted	4
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Bidens vulgata</i>	beggar's ticks	herb	FACW	0
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Bromus commutatus</i>	hairy brome	herb	UPL	*
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carex annectans</i>	sedge	herb	FACW	3
<i>Carex tribuloides</i>	sedge	herb	FACW+	3
<i>Carex trichocarpa</i>	sedge	herb	OBL	6
<i>Carya illinoensis</i>	pecan	seedling	planted	6
<i>Celtis occidentalis</i>	hackberry	seedling	FAC-	3
<i>Chamaesyce maculata</i>	nodding spurge	herb	FACU-	0
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	*
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cornus stolonifera</i>	red osier dogwood	shrub	planted	4
<i>Cyperus ferruginescens</i>	flat sedge	herb	OBL	1
<i>Cyperus strigosus</i>	yellow flat sedge	herb	FACW	0
<i>Daucus carota</i>	Queen Ann's lace	herb	UPL	*

**Coefficient of conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

* nonnative species

Continued on following page

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 4 of 5)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher, Sivicek

Date: 4, 5 September 2007

Sect. No.: 102 (RS – 5, W –1)

Project Name: FAP 312 (IL 3)

State: Illinois **County:** Franklin **Applicant:** IDOT District 9

Site Name: wet meadow/forest restoration

Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4

Location: majority of the site

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Dicanthelium clandestinum</i>	deer tongue grass	herb	FACW	4
<i>Diodea virginiana</i>	large buttonweed	herb	FACW	4
<i>Diospyros virginiana</i>	persimmon	seedling	FAC	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleagnus umbellata</i>	autumn olive	seedling	UPL	*
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Eupatorium coelestinum</i>	mistflower	herb	FAC+	3
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Eupatorium serotinum</i>	late flowering thoroughwort	herb	FAC+	1
<i>Euthamia graminifolia</i>	grass leaf goldenrod	herb	FACW-	3
<i>Festuca pratensis</i>	English bluegrass	herb	FACU-	*
<i>Fraxinus pennsylvanica</i>	green ash	seedling	FACW	2
<i>Geum canadense</i>	white avens	herb	FAC	2
<i>Hibiscus lasiocarpus</i>	hairy rose mallow	herb	FACW+	5
<i>Ipomoea hederacea</i>	ivy leaf morning glory	herb	FAC	*
<i>Ipomoea lacunosa</i>	small white morning glory	herb	FACW	1
<i>Ipomoea pandurata</i>	wild potato vine	herb	FACU	2
<i>Iva annua</i>	sumpweed	herb	FAC	0
<i>Juncus interior</i>	inland rush	herb	FAC	3
<i>Lactuca canadensis</i>	Canada lettuce	herb	FACU+	1
<i>Lobelia cardinalis</i>	cardinal flower	herb	OBL	6
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Morus alba</i>	white mulberry	seedling	FAC	*
<i>Muhlenbergia frondosa</i>	satin grass	herb	FACW	3
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0
<i>Panicum virgatum</i>	switchgrass	herb	FAC+	4
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phalaris arundinacea</i>	reed canarygrass	herb	FACW+	*
<i>Phyla lanceolata</i>	fog fruit	herb	OBL	1

**Floristic Quality Index, as developed by Taft, Ladd, Wilhelm and Masters (1997)

* nonnative species

Continued on following page

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 5 of 5)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher, Sivicek
Date: 4, 5 September 2007
Sect. No.: 102 (RS – 5, W –1) **Project Name:** FAP 312 (IL 3)
State: Illinois **County:** Franklin **Applicant:** IDOT District 9
Site Name: wet meadow/forest restoration
Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4
Location: majority of the site

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Platanus occidentalis</i>	sycamore	seedling	planted	3
<i>Pluchea camphorata</i>	camphorweed	herb	FACW	8
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Populus deltoides</i>	cottonwood	seedling	FAC+	2
<i>Pycnanthemum tenuifolia</i>	slender mountain mint	herb	FAC	4
<i>Quercus bicolor</i>	swamp white oak	seedling	planted	7
<i>Quercus palustris</i>	pin oak	seedling	planted	4
<i>Quercus shumardii</i>	Shumard oak	seedling	planted	7
<i>Rhus coppalina</i>	winged sumac	shrub	UPL	2
<i>Rubus allegheniensis</i>	blackberry	herb	FACU+	2
<i>Rudbeckia laciniata</i>	cutleaf coneflower	herb	FACW+	3
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Setaria glauca</i>	yellow foxtail	herb	FAC	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Sorghum halapense</i>	Johnson grass	herb	FACU	*
<i>Stachys palustris</i>	marsh hedge nettle	herb	OBL	5
<i>Toxicodendron radicans</i>	poison ivy	herb	FAC+	1
<i>Tridens flavus</i>	purple top	herb	UPL	1
<i>Ulmus americana</i>	American elm	seedling	FACW-	5
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vernonia missurica</i>	Missouri ironweed	herb	FAC+	5
<i>Viola pratincola</i>	common blue violet	herb	FAC	1
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

**Coefficient of conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

* nonnative species

FQI (with planted species) = $211/\sqrt{84} = 23.0$, mean rated quality = $211/84 = 2.51$

FQI (without planted species) = $176/\sqrt{77} = 20.1$, mean rated quality = $176/77 = 2.29$

Percent nonnative or weedy native (perennial or annual) species – $30/98 = 37.8\%$

Percent native species – 85.7%

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 4)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher

Date: 4, 5 September 2007

Sect. No.: 102 (RS – 5, W –1)

Project Name: FAP 312 (IL 3)

State: Illinois **County:** Franklin **Applicant:** IDOT District 9

Site Name: wet meadow/oxbow

Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4

Location: northwest portion of the site

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>Echinochloa muricata</i>	herb	OBL
2. <i>Panicum dichotomiflorum</i>	herb	FACW-
3. <i>Polygonum pensylvanicum</i>	herb	FACW+

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

Series and phase: Bonnie silt loam (Typic Fluvaquent)

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: Color: 10YR 4/4, 4/3, and 4/6

Redox Depletions? Yes: X No: Color: 2.5Y 5/2

Matrix color: 10YR 4/3 over 2.5Y 7/1 and 5/2

Other indicators: This soil is found in a depressional area along a creek and is inundated.

Hydric soils? Yes: X No:

Rationale: The Natural Resources Conservation Service identifies Bonnie as a Typic Fluvaquent that is poorly drained. The presence of redox concentrations and depletions within a low chroma matrix indicates conditions of saturation for long duration during the growing season. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 – Depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 2 of 4)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher

Date: 4, 5 September 2007

Sect. No.: 102 (RS – 5, W –1)

Project Name: FAP 312 (IL 3)

State: Illinois **County:** Franklin **Applicant:** IDOT District 9

Site Name: wet meadow/oxbow

Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4

Location: northwestern portion of the site

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: 0.15 m (6 in)

Depth to saturated soil: at surface

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and ditch/creek overflow. Evapotranspiration and sheetflow are the major outputs.

Size of watershed: 101 km² (39 mi²)

Other field evidence observed: This site is depressional. Driftlines and bare areas were observed.

Wetland hydrology: Yes: X No:

Rationale: Field evidence cited above indicates that the 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: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. The site is not coded by the NWI as wetland.

Determined by: Allen Plocher (vegetation and hydrology)
Scott Wiesbrook (soils and hydrology)
Brad Zercher (GPS and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 3 of 4)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher

Date: 4, 5 September 2007

Sect. No.: 102 (RS – 5, W –1)

Project Name: FAP 312 (IL 3)

State: Illinois **County:** Franklin **Applicant:** IDOT District 9

Site Name: wet meadow/oxbow

Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4

Location: northwestern portion of the site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Amaranthus tuberculatus</i>	water hemp	herb	OBL	1
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Betula nigra</i>	river birch	shrub	planted	4
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens vulgata</i>	beggar's ticks	herb	FACW	0
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carex annectans</i>	sedge	herb	FACW	3
<i>Carex frankii</i>	sedge	herb	OBL	4
<i>Carex lupulina</i>	hop sedge	herb	OBL	5
<i>Carex stipata</i>	prickly sedge	herb	OBL	2
<i>Carex</i> sp.	sedge	herb	-----	--
<i>Cephalanthus occidentalis</i>	buttonbush	shrub	OBL	4
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Commelina virginica</i>	dayflower	herb	FACW	5
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cyperus ferruginescens</i>	flat sedge	herb	OBL	1
<i>Cyperus pseudovegatus</i>	flat sedge	herb	FACW	5
<i>Cyperus strigosus</i>	straw colored flat sedge	herb	FACW	0
<i>Dicanthelium clandestinum</i>	deer tongue grass	herb	FACW	4
<i>Diodea virginiana</i>	buttonweed	herb	FACW	4
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis erythropoda</i>	red rooted spikerush	herb	OBL	3
<i>Erechtites hieracifolia</i>	fire weed	herb	FACU	2
<i>Eupatorium serotinum</i>	late flowering thoroughwort	herb	FAC+	1
<i>Hibiscus lasiocarpus</i>	hairy rose mallow	herb	FACW+	5
<i>Ipomaea lacunosa</i>	small white morning glory	herb	FACW	1
<i>Iva annua</i>	sumpweed	herb	FAC	0

**Coefficient of conservatism, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

* nonnative species

Continued on following page

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 4 of 4)

Field Investigators: Plocher, Larimore, Wiesbrook, Zercher

Date: 4, 5 September 2007

Sect. No.: 102 (RS – 5, W –1)

Project Name: FAP 312 (IL 3)

State: Illinois **County:** Franklin **Applicant:** IDOT District 9

Site Name: wet meadow/oxbow

Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4

Location: northwestern portion of the site

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Ludwigia alternifolia</i>	seedbox	herb	OBL	5
<i>Ludwigia peploides</i>	creeping primrose willow	herb	OBL	5
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugleweed	herb	OBL	5
<i>Panicum anceps</i>	panic grass	herb	FACW	3
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Panicum rigidulum</i>	Munro grass	herb	FACW	6
<i>Paspalum laeve</i>	smooth lens grass	herb	FACW-	2
<i>Phalaris arundinacea</i>	reed canarygrass	herb	FACW+	*
<i>Phragmites australis</i>	common reed	herb	FACW+	1
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum lapathifolium</i>	nodding smartweed	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Polygonum ramosissimum</i>	bushy knotweed	herb	FAC-	3
<i>Rotala ramosior</i>	tooth cup	herb	OBL	4
<i>Rumex altissimus</i>	pale dock	herb	FACW-	2
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Salix nigra</i>	black willow	shrub	OBL	3
<i>Setaria glauca</i>	yellow foxtail	herb	FAC	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Taxodium distichum</i>	bald cypress	seedling	planted	*
<i>Typha angustifolia</i>	narrow leaf cattail	herb	OBL	*
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Verbena urticifolia</i>	white vervain	herb	FAC+	3
<i>Xanthium strumarium</i>	cockle bur	herb	FAC	0

**Coefficient of conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

* nonnative species

FQI (with planted species) = $136/\sqrt{51} = 19.0$, mean rated quality = $136/51 = 2.67$

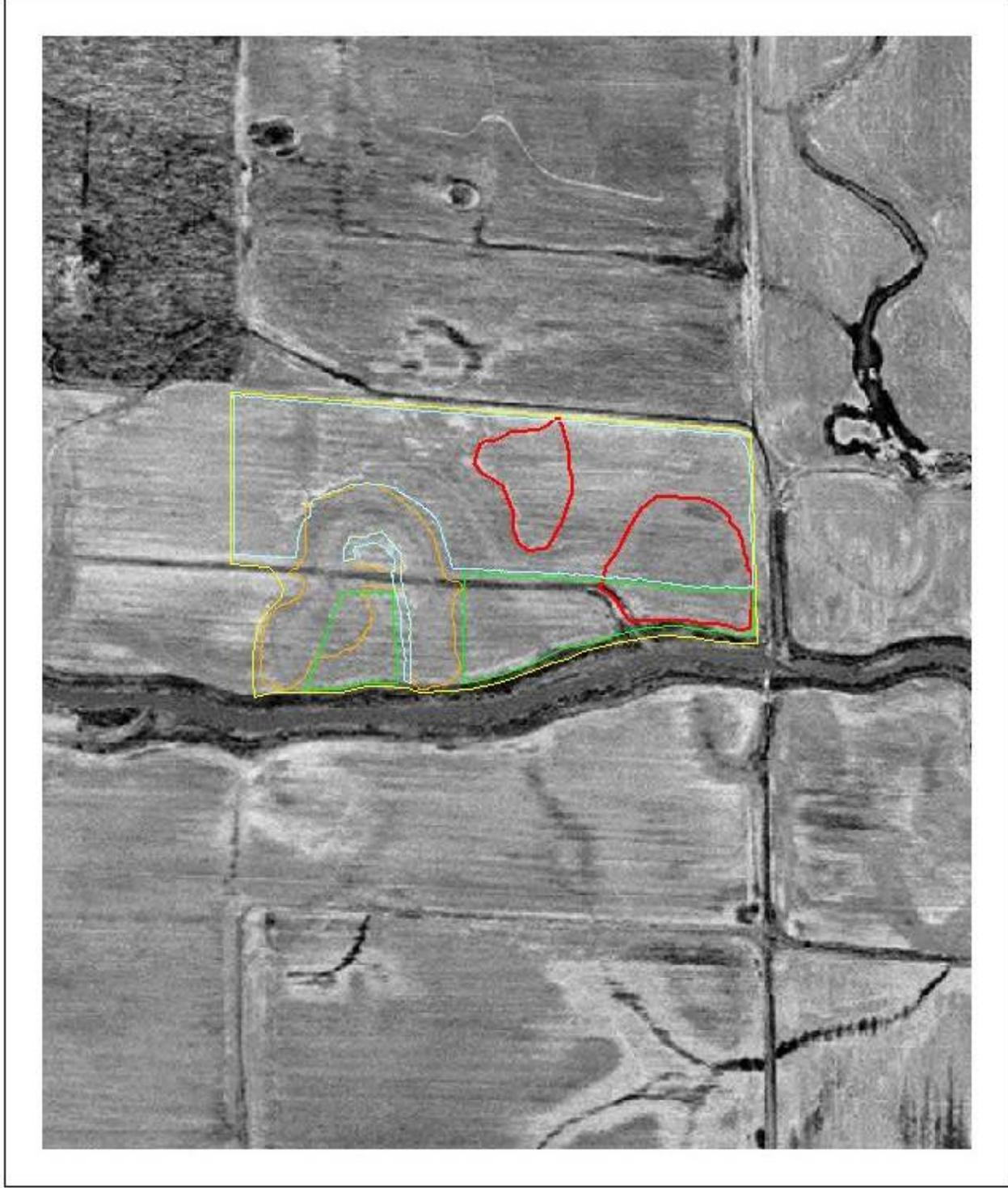
FQI (without planted species) = $132/\sqrt{50} = 18.7$, mean rated quality = $132/50 = 2.64$

Percent nonnative or weedy native (perennial or annual) species – $17/57 = 29.8\%$

Percent native species – 89.5%

Wetland Mitigation Monitoring - 2007
FAP 312 (IL 3), Willis Property
Franklin County

figure 2



scale 1:4800
1 inch=400 ft

0 400 800 Feet
0 100 200 Meters