

Wetland Monitoring Report



Project Site:

IL 336/US 136 (FAP 315) near the LaMoine River
Hancock County, Illinois

IDOT Sequence Number: 72680



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Project Summary

For the fifth year we monitored the site created for wetland impact mitigation for FAP 315 (IL 336/US 136), LaMoine River site in Hancock County. The site was completed and all trees planted by spring 2007. The attached report includes information detailing monitoring methods and results. The status of the created wetland site is discussed. The areas discussed are marked on the DOQ included in this report. Wetland determination forms are found in Appendix A and photographs of the mitigation site are included in Appendix B.

Signed: 

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Date: January 27, 2012

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Cover Photo: Facing east overlooking south tree planting area.

WETLAND MITIGATION SITE MONITORING REPORT
FAP 315 (IL 336/US 136) Hancock County – LaMoine River Site

Introduction

This report details monitoring of the wetland mitigation site created to compensate for impacts associated with FAP 315 (IL 336/US 136) in Hancock County. The LaMoine River Site consists of approximately 34 ac of wetland creation/restoration (IDOT 2006b). The wetland creation site is located approximately 5.5 mi east of Carthage, IL, near the crossing of IL 336/US 136 over the LaMoine River. The legal location is SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W. The project area lies within the United States Geological Survey Mississippi River hydrologic unit 07130010, LaMoine River. The site was completed and all trees planted by spring 2007. On-site monitoring was conducted on August 29 and 30, 2011.

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

Goals, Objectives, and Performance Standards

Goals, objectives, and performance standards follow those typically used in INHS determinations of mitigation sites. 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 in *Guidelines for Developing Mitigation Proposals* (USACE 1993). Each goal should be attained by the end of the 5-year monitoring period. Goals, objectives, and performance criteria are listed below.

Project goal 1: The created wetland community should be a jurisdictional wetland as defined by current federal standards.

Objective: The created wetland should compensate for the loss of wetland acreage.

Performance criteria:

- a. Predominance of hydrophytic vegetation: More than 50% of the dominant plant species must be hydrophytic.
- b. Occurrence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist at the site.
- c. Presence of wetland hydrology: The area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 12.5% of the growing season.

Project goal 2: The created wetland plant community should meet standards for planted species survival and floristic composition.

Objectives: Planting trees will create a forested wetland. Other herbaceous vegetation will be allowed to colonize the site naturally.

Performance criteria:

- a. Planted species survivorship: At least 80% of the planted trees should be established and living by the end of the five year monitoring period.
- b. Native species composition: At least 90% of the plants present should be non-weedy, native, perennial species.
- c. Dominance of vegetation: None of the three most dominant plant species may be non-native or weedy species, such as cattails, sandbar willow, or reed canary grass.

Methods

Project goal 1

a. Predominance of hydrophytic vegetation

The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) 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 (Reed 1988). Any plant rated facultative or wetter, i.e. FAC, 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. Since the survival of planted hydrophytic trees and shrubs on non-wetlands (e.g. yards) is well documented, these species were excluded from calculations of percentage of dominant hydrophytic species.

b. Occurrence of hydric soils

The soil was sampled in order to monitor hydric soil development. Soil profile morphology including horizon color, texture, and structure was described at various points throughout the site. Additionally, the presence, type, size, and abundance of redoximorphic features were noted. Hydric soils may develop slowly, and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soil indicators at the end of the five-year monitoring period, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation persist at the site.

c. Presence of wetland hydrology

In 2011, the extent of wetland hydrology at the Hancock County, LaMoine River Site was monitored by the Illinois State Geological Survey (Miner et al. 2011). Typically, a wetland occurs when inundation or saturation to land surface is present for greater than 5% of the growing season (10 days at this site), and the soils and vegetation parameters in the *Corps of Engineers*

Wetlands Delineation Manual are also satisfied (Environmental Laboratory 1987). However, the *Management and monitoring plan for the Hancock County wetland mitigation site* [Christopher B. Burke Engineering, Ltd. 2002 (Revised 2003)] specifically states that the 12.5% criterion for wetland hydrology (25 days at this site) must be satisfied. This means that, for this site, an area can lack either soils or vegetation and still be considered wetland, according to the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

Inundation and saturation at the site were monitored using a combination of monitoring wells and stage gauges. Water levels were measured at least biweekly from March through May, and monthly during the remainder of the year. Manual readings were supplemented by dataloggers, which measure surface-water levels at regular intervals to document all hydrologic events. Additional details regarding site conditions and monitoring results for wetland hydrology in 2011 are summarized in the *ISGS Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites, September 1, 2010 through August 31, 2011* (Miner et al. 2011).

Project goal 2

a. Planted species survivorship

In order to create floodplain forest, tree saplings were planted at the compensation site. The number of trees to be planted at the site (IDOT, 2006b) is listed in Table 1, which follows:

Table 1. Tree species planted in the created wetland (Final planting date spring 2007).

| Species | Common Name | Number |
|-------------------------------|-----------------|--------|
| <i>Carya illinoensis</i> | Pecan | 250 |
| <i>Fraxinus pennsylvanica</i> | Green ash | 250 |
| <i>Platanus occidentalis</i> | Sycamore | 250 |
| <i>Quercus bicolor</i> | Swamp white oak | 250 |
| <i>Quercus palustris</i> | Pin oak | 248 |
| TOTAL | | 1248 |

All of the trees were to be 5 gallon containerized trees. Survivorship and density of planted trees was determined through a census of the created wetland. All live trees were counted. Dead trees were counted but not identified by species. Tree survival was calculated as a percentage of the number of stems reported to have been planted: $100 \times (\text{Total number of live planted stems counted} / \text{total number of planted stems reported})$.

b. Native Species Composition

A complete list of plant species present was compiled for each area. This was used to determine the number and percentage of species present that are non-weedy, native, perennials.

In each designated herbaceous plant community (sedge meadow, wet meadow, marsh) vegetation was quantitatively sampled. Parallel transects were established on a north (N) bearing at 50 m intervals. Sample points (39) were located at 25 m intervals along each transect. Vegetation was recorded by species and percent cover within 1 m² quadrats at each sample

point. Within each community, Importance Value was calculated as an average of relative frequency and relative cover for each species present.

In addition, the Floristic Quality Assessment (Taft et al. 1997) was applied to the plant community at the site to evaluate floristic quality and nativity. The assessment methodology is used to identify natural areas and facilitate floristic comparisons among sites. This technique is part of the procedure for the long-term monitoring of natural areas and the monitoring of restored or created wetlands (Swink and Wilhelm 1994). 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. Weedy species were determined to be those species assigned a C of 0 or 1. The Floristic Quality Index (FQI) is computed as $FQI = (\bar{C}) \times (VN)$, where \bar{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).

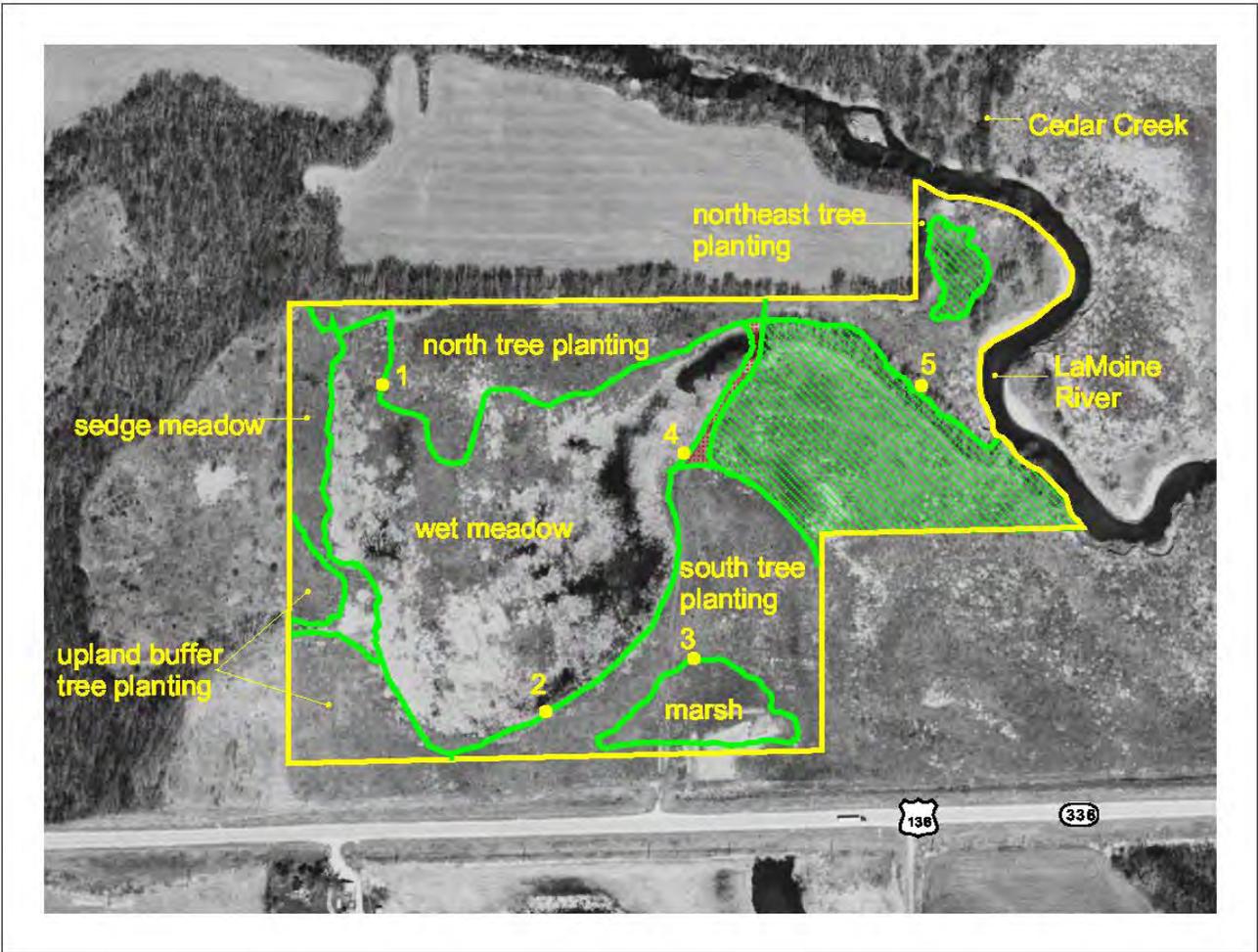
c. Dominance of vegetation

Plant species dominance was determined as in project goal 1a - Predominance of hydrophytic vegetation. The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). Weedy species were determined to be those species assigned a C of 0 or 1.

Photography

Photography stations were established in areas chosen to give maximum representation of the site. Locations of the photography stations can be seen in Figure 1 (page 8). Photographs were taken from the permanent photography stations established in 2007 and are included in Appendix B of this report.

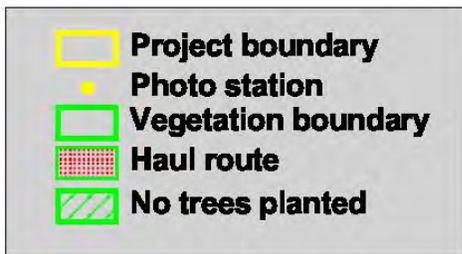
LaMoine River Mitigation Site (FAP 315) Hancock County, Illinois



0 400 800 Feet

scale 1:4800
1 inch=400 ft

0 100 200 Meters



12/2011

Figure 1. Site and photography station locations, and vegetation community boundaries.

Results

Project goal 1

a. Predominance of hydrophytic vegetation

At all areas within this site, except the upland buffer tree planting area, a majority of dominant plant species in 2011 were rated OBL, FACW, FAC+, or FAC and were hydrophytic. Four areas had 100% of the dominants being hydrophytic and two areas had 80%; all of which meet the minimum project goal of greater than 50%. The upland buffer tree planting had 50% of the dominants hydrophytic, and therefore did not meet the minimum project goal of greater than 50%. Dominant species lists for each area can be found within the routine on-site wetland determination forms located in Appendix A of this report.

b. Occurrence of hydric soils

Soils examined at the site were found to be relatively undisturbed with the exception of the marsh. Hydric soil indicators are present within the sedge meadow, wet meadow, marsh, and the north tree planting area; these areas therefore met the hydric soil criterion. The northeast, south and upland buffer tree planting areas lacked hydric soil indicators and therefore do not meet the hydric soil criterion. A typical soil profile description for each area can be found within the routine on-site wetland determination forms located in Appendix A of this report.

c. Presence of wetland hydrology

The ISGS stated that “the area of the site that satisfied wetland hydrology criteria for more than 12.5% of the 2011 growing season was estimated to be 16.5 ac out of an area of 46.1 ac” (Figure 2, page 10) (Miner, et al. 2011). More information is available in the *Hancock County near Carthage, Wetland Compensation Site* report (ibid).

Hancock County near Carthage Wetland Mitigation Site (IL 336, FAP 315)

Estimated Areal Extent of 2011 Wetland Hydrology

September 1, 2010 through August 31, 2011

Map based on USGS digital orthophotograph, Carthage East SE quarter quadrangle
produced from 2005 aerial photography (ISGS 2005)

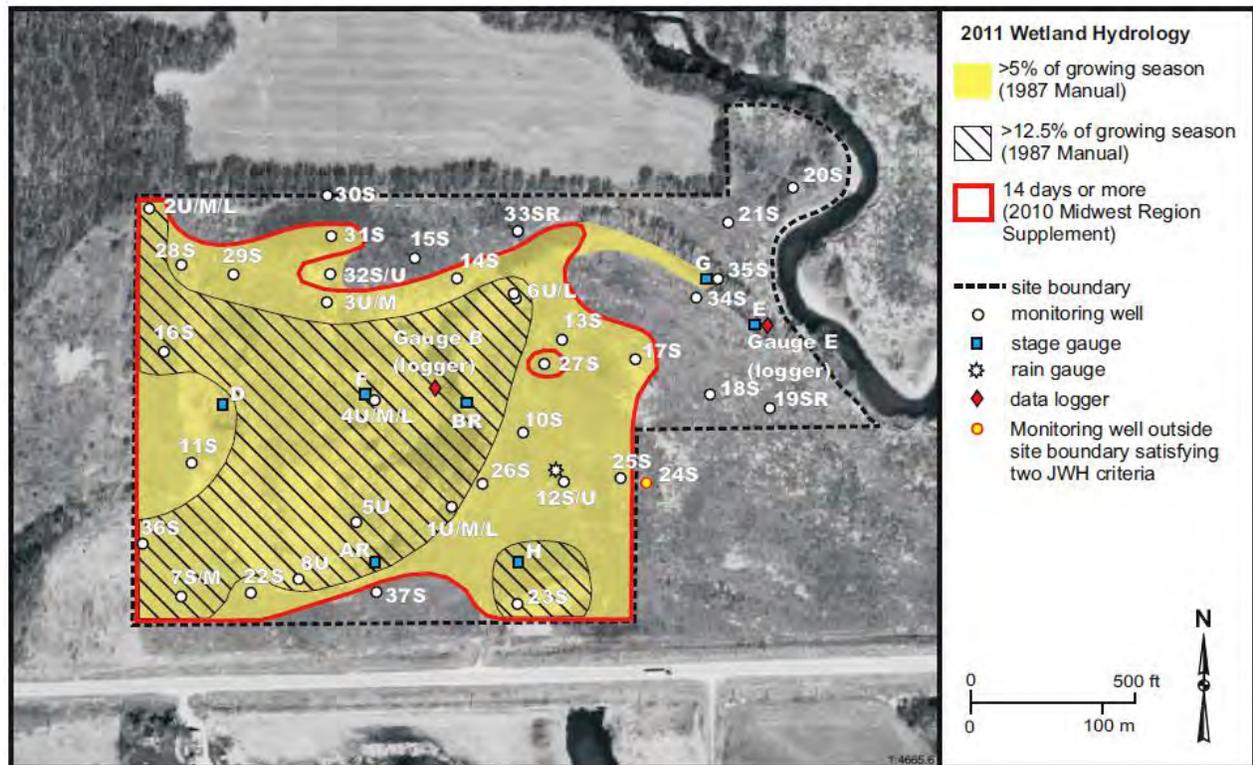


Figure 2. “Estimated Areal Extent of 2011 Wetland Hydrology” (Miner, et al. 2011).

Project goal 2

a. Planted species survivorship

Table 2 (page 11) shows the results of the census. There was again a minor discrepancy between the numbers of trees reported as planted and the number of trees counted, as we counted 76 trees fewer than were reported as planted. There were once again many gaps in the rows where trees had (presumably) been planted, but since there was no longer anything to count, these spots were not counted as dead trees. Table 2 also shows the percent survival for the trees. These figures were calculated both by species and overall for the entire site. About 90% of the total trees reported planted were counted as surviving. This exceeds the project goal of >80%.

Table 2. Number of trees counted and percent tree survival (by species).

| Species | Common Name | Number Planted | Number Counted | % Survival |
|-------------------------------|--------------------|----------------|----------------|------------|
| <i>Carya illinoensis</i> | Pecan | 250 | 211 | 84.4 |
| <i>Fraxinus pennsylvanica</i> | Green ash | 250 | 234 | 93.6 |
| <i>Platanus occidentalis</i> | Sycamore | 250 | 205 | 82.0 |
| <i>Quercus palustris</i> | Pin oak | 248 | 218 | 87.9 |
| <i>Quercus bicolor</i> | Swamp white oak | 250 | 230 | 92.0 |
| Spp. | Miscellaneous dead | - | 46 | X |
| TOTAL SURVIVING | | 1248 | 1128 | 90.4 |

b. Native species composition

Table 3 below shows the percentage non-weedy, native species for each area of this site. These values show that none of the areas meet the requirement for native species composition (>90%). This calculation does not take into account whether a species is annual or perennial, but the numbers would obviously be lower if we excluded all annual species as well as the non-native and weedy species. It is normal for a site to begin very weedy and develop more native character over time, so this site may be expected to increase in native species composition over time. However, this goal seems unrealistically high, as many quality natural areas would likely not meet the desired level of 90% of species native, non-weedy, and perennial.

Table 3. Percentage non-weedy, native species, by year and area of site.

| Area \ Year | Sedge Meadow | Wet Meadow | Marsh | North tree planting | South tree planting | Upland buffer tree planting | Northeast tree planting |
|-------------|--------------|------------|-------|---------------------|---------------------|-----------------------------|-------------------------|
| 2007 | 50.0 | 45.8 | 56.0 | 55.4 | 16.7 | 38.7 | * |
| 2008 | 52.4 | 69.0 | 64.0 | 45.1 | 27.3 | 47.9 | * |
| 2009 | 54.5 | 58.1 | 74.2 | 56.3 | 40.4 | 47.6 | * |
| 2010 | 65.5 | 74.1 | 77.3 | 64.4 | 50.0 | 53.1 | 55.3 |
| 2011 | 64.0 | 64.4 | 67.6 | 63.9 | 51.6 | 48.0 | 65.6 |

* Prior to 2010 monitoring season, this area was grouped in with the North tree planting area.

FQI and mean $c(\bar{c})$ values were also calculated for this site from the species lists included in Appendix A. These values are displayed in Table 4 (page 12).

Table 4. FQI and \bar{c} values, by year and area of site.

| Year | Sedge Meadow | | Wet Meadow | | Marsh | | North tree planting | | South tree planting | | Upland buffer tree planting | | Northeast tree planting* | |
|------|--------------|-----------|------------|-----------|-------|-----------|---------------------|-----------|---------------------|-----------|-----------------------------|-----------|--------------------------|-----------|
| | FQI | \bar{c} | FQI | \bar{c} | FQI | \bar{c} | FQI | \bar{c} | FQI | \bar{c} | FQI | \bar{c} | FQI | \bar{c} |
| 2007 | 13.9 | 2.0 | 14.7 | 2.1 | 11.6 | 2.6 | 17.4 | 2.2 | 8.0 | 1.6 | 12.3 | 1.8 | * | * |
| 2008 | 20.2 | 2.4 | 20.9 | 2.4 | 12.8 | 2.7 | 14.3 | 1.9 | 8.0 | 1.5 | 20.8 | 2.5 | * | * |
| 2009 | 17.7 | 2.4 | 17.5 | 2.2 | 16.6 | 3.1 | 21.0 | 2.3 | 13.2 | 2.2 | 20.0 | 2.5 | * | * |
| 2010 | 21.7 | 3.1 | 20.0 | 2.7 | 14.3 | 3.2 | 15.6 | 2.4 | 14.7 | 2.3 | 19.4 | 2.7 | 13.9 | 2.4 |
| 2011 | 18.3 | 2.7 | 18.3 | 2.7 | 14.7 | 2.6 | 21.0 | 2.6 | 16.7 | 2.3 | 18.9 | 2.5 | 18.9 | 2.6 |

* Prior to 2010 monitoring season, this area was grouped in with the North tree planting area.

These values indicate that all the areas are of fair to good natural quality. These values may generally be expected to increase over time in each of the areas, as higher quality vegetation becomes established.

c. Dominance of vegetation

Quantitative vegetation sampling was conducted in the sedge meadow, wet meadow, and marsh communities. The three most dominant species were determined using the calculated importance value. *Phalaris arundinacea*, *Aster lanceolatus*, and *Carex vulpinoidea* dominated the sedge meadow (Table 5, page 13). In the wet meadow, the dominant species were *Phalaris arundinacea*, *Persicaria pensylvanica*, and *Bolboschoenus fluviatilis* (Table 6, page 14). *Phalaris arundinacea*, *Typha angustifolia*, and *Alisma subcordatum* dominated the marsh (Table 7, page 14).

Based on visual estimation, the three most dominant species in the north tree planting area were *Phalaris arundinacea*, *Aster lanceolatus*, and *Ambrosia trifida*. *Phalaris arundinacea*, *Humulus japonicus*, and *Ambrosia trifida* dominated in the northeast tree planting area. The upland buffer tree planting area was dominated by *Phalaris arundinacea*, *Solidago canadensis*, and *Sorghastrum nutans*. *Phalaris arundinacea*, *Eupatorium serotinum*, and *Agrostis alba* dominated in the south tree planting area. In all of the communities at least one of the three most dominant species is non-native or weedy native. At this time none of the areas meet the performance criteria for dominance of vegetation.

Table 5. Species composition of Sedge Meadow (Site 1). Cover (m²/m²), Relative Cover, Frequency, Relative Frequency, Importance Value (%), N=7.

| Species | Cover | Relative Cover | Frequency | Relative Frequency | IV (%) |
|-------------------------------|--------|----------------|-----------|--------------------|--------|
| <i>Phalaris arundinacea</i> | 32.14 | 26.71 | 0.57 | 7.69 | 17.20 |
| <i>Aster lanceolatus</i> | 19.00 | 15.79 | 0.71 | 9.62 | 12.70 |
| <i>Carex vulpinoidea</i> | 10.93 | 9.08 | 0.86 | 11.54 | 10.31 |
| <i>Agrimonia parviflora</i> | 10.71 | 8.90 | 0.29 | 3.85 | 6.37 |
| <i>Solidago canadensis</i> | 5.14 | 4.27 | 0.57 | 7.69 | 5.98 |
| <i>Carex tribuloides</i> | 6.21 | 5.16 | 0.43 | 5.77 | 5.47 |
| <i>Geum laciniatum</i> | 3.43 | 2.85 | 0.57 | 7.69 | 5.27 |
| <i>Carex frankii</i> | 4.71 | 3.92 | 0.43 | 5.77 | 4.84 |
| <i>Lysimachia nummularia</i> | 5.79 | 4.81 | 0.29 | 3.85 | 4.33 |
| <i>Elymus virginicus</i> | 4.29 | 3.56 | 0.29 | 3.85 | 3.70 |
| <i>Toxicodendron radicans</i> | 5.36 | 4.45 | 0.14 | 1.92 | 3.19 |
| <i>Scirpus atrovirens</i> | 2.57 | 2.14 | 0.29 | 3.85 | 2.99 |
| <i>Carex trichocarpa</i> | 0.86 | 0.71 | 0.29 | 3.85 | 2.28 |
| <i>Acalypha rhomboidea</i> | 0.50 | 0.42 | 0.29 | 3.85 | 2.13 |
| <i>Eupatorium serotinum</i> | 0.50 | 0.42 | 0.29 | 3.85 | 2.13 |
| <i>Lycopus americanus</i> | 2.14 | 1.78 | 0.14 | 1.92 | 1.85 |
| <i>Lycopus virginicus</i> | 2.14 | 1.78 | 0.14 | 1.92 | 1.85 |
| <i>Persicaria punctata</i> | 2.14 | 1.78 | 0.14 | 1.92 | 1.85 |
| <i>Ambrosia trifida</i> | 0.43 | 0.36 | 0.14 | 1.92 | 1.14 |
| <i>Cinna arundinacea</i> | 0.43 | 0.36 | 0.14 | 1.92 | 1.14 |
| <i>Rumex altissimus</i> | 0.43 | 0.36 | 0.14 | 1.92 | 1.14 |
| <i>Ulmus americana</i> | 0.43 | 0.36 | 0.14 | 1.92 | 1.14 |
| <i>Phyla lanceolata</i> | 0.07 | 0.06 | 0.14 | 1.92 | 0.99 |
| | 120.36 | 100.00 | 7.43 | 100.00 | 100.00 |

Table 6. Species composition of Wet Meadow (Site 2). Cover (m²/m²), Relative Cover, Frequency, Relative Frequency, Importance Value (%), N=27.

| Species | Cover | Relative Cover | Frequency | Relative Frequency | IV (%) |
|----------------------------------|-------|----------------|-----------|--------------------|--------|
| <i>Phalaris arundinacea</i> | 63.15 | 73.63 | 0.93 | 41.67 | 57.65 |
| <i>Periscaria pensylvanica</i> | 9.02 | 10.52 | 0.26 | 11.67 | 11.09 |
| <i>Bolboschoenus fluviatilis</i> | 7.52 | 8.77 | 0.19 | 8.33 | 8.55 |
| <i>Echinochola muricata</i> | 0.78 | 0.91 | 0.11 | 5.00 | 2.95 |
| <i>Persicaria amphibium</i> | 2.31 | 2.70 | 0.04 | 1.67 | 2.18 |
| <i>Sagittaria latifolia</i> | 0.67 | 0.78 | 0.07 | 3.33 | 2.06 |
| <i>Calystegia sepium</i> | 0.13 | 0.15 | 0.07 | 3.33 | 1.74 |
| <i>Amaranthus tuberculatus</i> | 0.13 | 0.15 | 0.07 | 3.33 | 1.74 |
| <i>Carex vulpinoidea</i> | 0.04 | 0.04 | 0.07 | 3.33 | 1.69 |
| <i>Ambrosia trifida</i> | 0.56 | 0.65 | 0.04 | 1.67 | 1.16 |
| <i>Carex</i> sp. | 0.56 | 0.65 | 0.04 | 1.67 | 1.16 |
| <i>Smilax hispida</i> | 0.11 | 0.13 | 0.04 | 1.67 | 0.90 |
| <i>Sambucus canadensis</i> | 0.11 | 0.13 | 0.04 | 1.67 | 0.90 |
| <i>Rudbeckia laciniata</i> | 0.11 | 0.13 | 0.04 | 1.67 | 0.90 |
| <i>Solidago canadensis</i> | 0.11 | 0.13 | 0.04 | 1.67 | 0.90 |
| <i>Solanum carolinense</i> | 0.11 | 0.13 | 0.04 | 1.67 | 0.90 |
| <i>Cyperus esculentus</i> | 0.11 | 0.13 | 0.04 | 1.67 | 0.90 |
| <i>Xanthium strumarium</i> | 0.11 | 0.13 | 0.04 | 1.67 | 0.90 |
| <i>Lysimachia nummularia</i> | 0.11 | 0.13 | 0.04 | 1.67 | 0.90 |
| <i>Aster lanceolatus</i> | 0.02 | 0.02 | 0.04 | 1.67 | 0.84 |
| Total | 85.76 | 100.00 | 2.22 | 100.00 | 100.00 |

Table 7. Species composition of Marsh (Site 3). Cover (m²/m²), Relative Cover, Frequency, Relative Frequency, Importance Value (%), N = 5.

| Species | Cover | Relative Cover | Frequency | Relative Frequency | IV (%) |
|----------------------------------|-------|----------------|-----------|--------------------|--------|
| <i>Phalaris arundinacea</i> | 23.00 | 34.85 | 0.60 | 12.00 | 23.42 |
| <i>Typha angustifolia</i> | 13.10 | 19.85 | 0.40 | 8.00 | 13.92 |
| <i>Alisma subcordatum</i> | 7.20 | 10.91 | 0.80 | 16.00 | 13.45 |
| <i>Typha latifolia</i> | 8.70 | 13.18 | 0.60 | 12.00 | 12.59 |
| <i>Echinochloa muricata</i> | 1.30 | 1.97 | 0.60 | 12.00 | 6.98 |
| <i>Bolboschoenus fluviatilis</i> | 3.60 | 5.45 | 0.40 | 8.00 | 6.73 |
| <i>Persicaria pensylvanica</i> | 3.00 | 4.55 | 0.20 | 4.00 | 4.27 |
| <i>Persicaria punctata</i> | 3.00 | 4.55 | 0.20 | 4.00 | 4.27 |
| <i>Amaranthus tuberculatus</i> | 0.60 | 0.91 | 0.20 | 4.00 | 2.45 |
| <i>Eleocharis erythropoda</i> | 0.60 | 0.91 | 0.20 | 4.00 | 2.45 |
| <i>Ludwigia polycarpa</i> | 0.60 | 0.91 | 0.20 | 4.00 | 2.45 |
| <i>Carex</i> sp. | 0.60 | 0.91 | 0.20 | 4.00 | 2.45 |
| <i>Carex lupulina</i> | 0.60 | 0.91 | 0.20 | 4.00 | 2.45 |
| <i>Ammannia coccinea</i> | 0.10 | 0.15 | 0.20 | 4.00 | 2.08 |
| Total | 66.00 | 100.00 | 5.00 | 100.00 | 100.00 |

Discussion

After this fifth monitoring season, this site shows some progress toward forested wetland establishment. All standards for Project Goal 1 have been met at four areas; therefore these areas (sedge meadow, wet meadow, most of the north tree planting area, and marsh) are jurisdictional wetlands. In addition, a portion of the upland buffer, and the south tree planting area satisfied the criteria for 12.5% wetland hydrology, therefore these areas are also jurisdictional wetland. The entire upland buffer area, and a large portion of the south tree planting area, lacks hydric soils, and there is little evidence that they will develop hydric soils in the future. The northeast tree planting area met the dominant hydrophytic vegetation criteria, but lacks hydric soils and wetland hydrology. No areas have met all of the standards for Project Goal 2, although as the vegetative succession proceeds, this site may comply with that goal by the end of the monitoring period. The performance criterion for native species composition is probably unrealistically high, however, and will likely not be met at this site. The presence of the aggressive, weedy, non-native *Phalaris arundinacea* across this site is a concern, and it may need to be controlled in order to meet the standards for Project Goal 2.

While the vegetation is hydrophytic at all areas except the upland buffer tree planting area, at no area is the dominance criteria for native non-weedy species or the dominance of vegetation requirement met. The planted trees exhibited excellent survival, and should meet the planted species performance criteria at the end of the monitoring period. While there are many species at each site that have very low coefficients of conservatism (C), this is common on disturbed and early successional sites and is not a cause for concern at this time. It is likely that as succession progresses, more conservative species will become established on the site.

Currently, the primary concerns for this site are establishing non-weedy, native dominant hydrophytic vegetation at all areas, and establishing hydric soils and lasting wetland hydrology at the south and northeast tree planting areas.

The results of the 5-year post-construction monitoring reveal that all of the wet meadow, sedge meadow, marsh, most of the north tree planting area, and portions of the upland buffer tree planting area and south tree planting area satisfy the wetland criteria. Therefore, current wetland acreage at this site is estimated to be approximately 32.4 ac, which corresponds to the area that satisfied the 12.5% wetland hydrology criteria for most of the 5-year monitoring period (Figure 3, page 16). This estimate will continue to be refined in future years as more hydrologic data is gathered.

Hancock County near Carthage Wetland Compensation Site (IL 336, FAP 315)
 5-year (2007-2011) post-construction monitoring results
 12.5% jurisdictional wetland hydrology criteria

Base map from the 2007 National Aerial Imagery Program (NAIP) digital raster map of Hancock County, Illinois

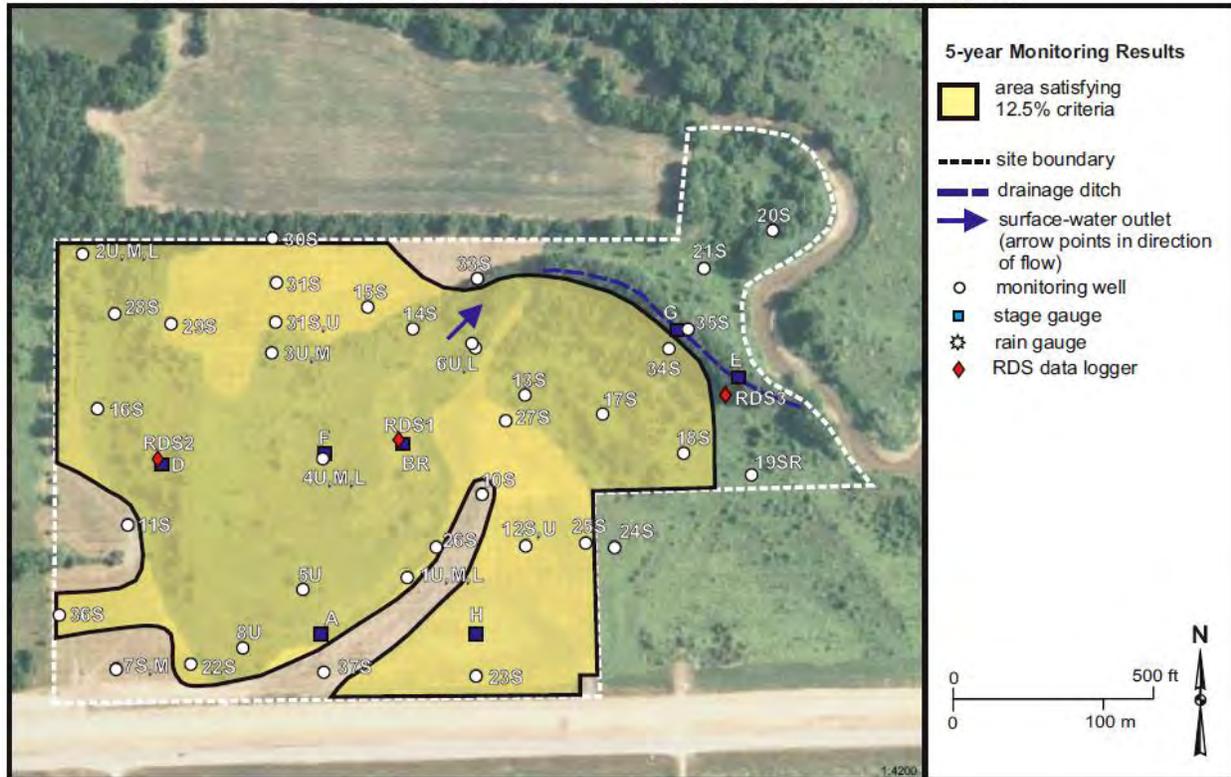


Figure 3. "5-year (2007-2011) post-construction monitoring results."

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Appendix A

Wetland Determination Forms

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 1 of 4)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Sedge meadow

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland is located along the western edge of the site.

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

VEGETATION

| Dominant Plant Species | Stratum | Indicator Status |
|--------------------------------|---------|------------------|
| 1. <i>Phalaris arundinacea</i> | Herb | FACW+ |
| 2. <i>Aster lanceolatus</i> | Herb | FACW |
| 3. <i>Carex vulpinoidea</i> | Herb | OBL |
| 4. <i>Agrimonia parviflora</i> | Herb | FAC+ |
| 5. <i>Solidago canadensis</i> | Herb | FACU |

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 80%

Hydrophytic vegetation: Yes: No:

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

SOILS

Series and phase: NRCS mapped as Sawmill silty clay loam;
revised to Birds silt loam (Typic Fluvaquent)

On county hydric soils list? Yes: No:
Is the soil a histosol? Yes: No:
Histic epipedon present? Yes: No:
Redox Concentrations? Yes: No: Color: 10YR 5/4 and 5/6
Redox Depletions? Yes: No: Color: N 5/
Matrix color: 10YR 3.5/1

Other indicators: None.

Hydric soils: Yes: No:

Rationale: The Natural Resources Conservation Service identifies Birds silt loam as a Typic Fluvaquent which is poorly drained. This soil possesses redox concentrations and depletions within a low chroma matrix, which indicates saturated or reduced conditions for extended duration. 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 4)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Sedge meadow

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland is located along the western edge of the site.

HYDROLOGY

Inundated: Yes: No: X

Depth of standing water: N/A

Depth to saturated soil: >12 in

Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the LaMoine River, sheet flow from surrounding uplands, some directed drainage from US 136, and precipitation. Water leaves the area via evapotranspiration, possible groundwater recharge, and drainage into the river.

Size of watershed: 655 mi² for the LaMoine River approximately 10 river miles downstream at Colmar, IL (Wicker, et al. 1996)

Other field evidence observed: The ISGS estimated that this area met the wetland hydrology criterion (Miner et al. 2011). Wetland drainage patterns were observed.

Wetland hydrology: Yes: X No:

Rationale: Field evidence cited above and ISGS data indicate that this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: X No:

Rationale: Hydric soil, dominant hydrophytic vegetation, and wetland hydrology are present at this area; therefore, we determined that this area is a wetland.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 3 of 4)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Sedge meadow

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland is located along the western edge of the site.

SPECIES LIST (Dominant species and strata indicated by bold)

| Scientific name | Common name | Stratum | Wetland indicator status | Coefficient of conservatism# |
|------------------------------------|--------------------------|----------------------------|--------------------------|------------------------------|
| <i>Acalypha rhomboidea</i> | three-seeded mercury | herb | FACU | 0+ |
| <i>Acer saccharinum</i> | silver maple | tree, sapling, shrub, herb | FACW | 1+ |
| <i>Agrimonia parviflora</i> | swamp agrimony | herb | FAC+ | 5 |
| <i>Ambrosia artemisiifolia</i> | common ragweed | herb | FACU | 0+ |
| <i>Ambrosia trifida</i> | giant ragweed | herb | FAC+ | 0+ |
| <i>Apocynum cannabinum</i> | dogbane | herb | FAC | 2 |
| <i>Asclepias incarnata</i> | swamp milkweed | herb | OBL | 4 |
| <i>Aster lanceolatus</i> | panicked aster | herb | FACW | 3 |
| <i>Baptisia lactea</i> | white wild indigo | herb | FACU | 6 |
| <i>Bidens frondosa</i> | common beggar's ticks | herb | FACW | 1+ |
| <i>Boehmeria cylindrica</i> | false nettle | herb | OBL | 3 |
| <i>Calystegia sepium</i> | American bindweed | herb | FAC | 1+ |
| <i>Carex frankii</i> | sedge | herb | OBL | 4 |
| <i>Carex lupulina</i> | hop sedge | herb | OBL | 5 |
| <i>Carex sp.</i> | sedge | herb | ---- | -- |
| <i>Carex squarrosa</i> | sedge | herb | OBL | 5 |
| <i>Carex tribuloides</i> | sedge | herb | FACW+ | 3 |
| <i>Carex trichocarpa</i> | sedge | herb | OBL | 6 |
| <i>Carex vulpinoidea</i> | fox sedge | herb | OBL | 3 |
| <i>Cinna arundinacea</i> | stout wood reed | herb | FACW | 5 |
| <i>Elymus virginicus</i> | Virginia wild rye | herb | FACW- | 4 |
| <i>Eupatorium serotinum</i> | late boneset | herb | FAC+ | 1+ |
| <i>Fraxinus lanceolata</i> | green ash | shrub | FACW | 2 |
| <i>Geum laciniatum</i> | rough avens | herb | FACW | 2 |
| <i>Helenium autumnale</i> | sneezeweed | herb | FACW+ | 3 |
| <i>Lycopus americanus</i> | common water horehound | herb | OBL | 3 |
| <i>Lycopus virginicus</i> | bugleweed | herb | OBL | 5 |
| <i>Lysimachia nummularia</i> | moneywort | herb | FACW+ | *+ |
| <i>Mentha arvensis villosa</i> | field mint | herb | FACW | 4 |
| <i>Mimulus ringens</i> | monkey flower | herb | OBL | 5 |
| <i>Oxalis stricta</i> | yellow wood sorrel | herb | FACU | 0+ |
| <i>Penthorum sedoides</i> | ditch stoncrop | herb | OBL | 2 |
| <i>Persicaria pensylvanica</i> | giant smartweed | herb | FACW+ | 1+ |
| <i>Persicaria punctata</i> | dotted smartweed | herb | OBL | 3 |
| <i>Phalaris arundinacea</i> | reed canary grass | herb | FACW+ | *+ |
| <i>Phyla lanceolata</i> | fog-fruit | herb | OBL | 1+ |

Species list continued on next page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Wet meadow

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland occupies the large area on the west-central portion of the site where no trees were planted.

Do normal environmental conditions exist at this area? Yes: X No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

| Dominant Plant Species | Stratum | Indicator Status |
|--------------------------------|---------|------------------|
| 1. <i>Phalaris arundinacea</i> | Herb | FACW+ |

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

Hydrophytic vegetation: Yes: X No:

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

SOILS

Series and phase: NRCS mapped as Sawmill silty clay loam and Huntsville silt loam; revised to Birds 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 5/4 and 5/6 |
| Redox Depletions? | Yes: X | No: | Color: N 5/ |
| Matrix color: | 10YR 3.5/1 | | |

Other indicators: None.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service identifies Birds silt loam as a Typic Fluvaquent which is poorly drained. This soil possesses redox concentrations and depletions within a low chroma matrix, which indicates saturated or reduced conditions for extended duration. 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 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Wet meadow

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland occupies the large area on the west-central portion of the site where no trees were planted.

HYDROLOGY

Inundated: Yes: No: X

Depth of standing water: N/A

Depth to saturated soil: 8 in

Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the LaMoine River, sheet flow from surrounding uplands, some directed drainage from US 136, and precipitation. Water leaves the area via evapotranspiration, possible groundwater recharge, and drainage into the river.

Size of watershed: 655 mi² for the LaMoine River approximately 10 river miles downstream at Colmar, IL (Wicker, et al. 1996)

Other field evidence observed: The ISGS estimated that this area met the wetland hydrology criterion (Miner et al. 2011). Drift was observed.

Wetland hydrology: Yes: X No:

Rationale: Field evidence cited above and ISGS data indicate that this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: X No:

Rationale: Hydric soil, dominant hydrophytic vegetation, and wetland hydrology are present at this area; therefore, we determined that this area is a wetland.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 3 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Wet meadow

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland occupies the large area on the west-central portion of the site where no trees were planted.

SPECIES LIST (Dominant species and strata indicated by bold)

| Scientific name | Common name | Stratum | Wetland indicator status | Coefficient of conservatism# |
|----------------------------------|----------------------|-------------------------|--------------------------|------------------------------|
| <i>Acalypha rhomboidea</i> | three-seeded mercury | herb | FACU | 0+ |
| <i>Acer negundo</i> | box elder | sapling, shrub | FACW- | 1+ |
| <i>Acer saccharinum</i> | silver maple | tree, sapl, shrub, herb | FACW | 1+ |
| <i>Agrimonia parviflora</i> | swamp agrimony | herb | FAC+ | 5 |
| <i>Amaranthus tuberculatus</i> | tall waterhemp | herb | OBL | 1+ |
| <i>Apocynum cannabinum</i> | dogbane | herb | FAC | 2 |
| <i>Asclepias incarnata</i> | swamp milkweed | herb | OBL | 4 |
| <i>Asclepias syriaca</i> | common milkweed | herb | UPL | 0+ |
| <i>Aster lanceolatus</i> | panicked aster | herb | FACW | 3 |
| <i>Boehmeria cylindrica</i> | false nettle | herb | OBL | 3 |
| <i>Bolboschoenus fluviatilis</i> | river bulrush | herb | OBL | 3 |
| <i>Boltonia asteroides</i> | false aster | herb | FACW | 5 |
| <i>Calystegia sepium</i> | American bindweed | herb | FAC | 1+ |
| <i>Carex frankii</i> | sedge | herb | OBL | 4 |
| <i>Carex grayi</i> | bur sedge | herb | FACW+ | 6 |
| <i>Carex lupulina</i> | hop sedge | herb | OBL | 5 |
| <i>Carex tribuloides</i> | sedge | herb | FACW+ | 3 |
| <i>Carex vulpinoidea</i> | fox sedge | herb | OBL | 3 |
| <i>Cicuta maculata</i> | water hemlock | herb | OBL | 4 |
| <i>Cirsium discolor</i> | pasture thistle | herb | UPL | 3 |
| <i>Cyperus esculentus</i> | yellow nut-sedge | herb | FACW | 0+ |
| <i>Echinochloa muricata</i> | barnyard grass | herb | OBL | 0+ |
| <i>Eleocharis erythropoda</i> | spike rush | herb | OBL | 3 |
| <i>Eleocharis macrostachya</i> | spike rush | herb | OBL | 5 |
| <i>Elymus virginicus</i> | Virginia wild rye | herb | FACW- | 4 |
| <i>Eupatorium serotinum</i> | late boneset | herb | FAC+ | 1+ |
| <i>Fragaria virginiana</i> | wild strawberry | herb | FAC- | 2 |
| <i>Fraxinus lanceolata</i> | green ash | tree, sapling, shrub | FACW | 2 |
| <i>Geum laciniatum</i> | rough avens | herb | FACW | 2 |
| <i>Gleditsia triacanthos</i> | honey locust | sapling, shrub | FAC | 2 |
| <i>Ludwigia polycarpa</i> | false loosestrife | herb | OBL | 5 |
| <i>Lysimachia nummularia</i> | moneywort | herb | FACW+ | *+ |
| <i>Menispermum canadense</i> | moonseed | herb | FAC | 4 |
| <i>Morus alba</i> | white mulberry | shrub | FAC | *+ |
| <i>Oxalis stricta</i> | yellow wood sorrel | herb | FACU | 0+ |

Species list continued on next page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 4 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Wet meadow

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland occupies the large area on the west-central portion of the site where no trees were planted.

SPECIES LIST (Dominant species and strata indicated by bold)

| Scientific name | Common name | Stratum | Wetland indicator status | Coefficient of conservatism# |
|------------------------------------|--------------------------|----------------------|--------------------------|------------------------------|
| <i>Penthorum sedoides</i> | ditch stonecrop | herb | OBL | 2 |
| <i>Persicaria amphibia</i> | water smartweed | herb | OBL | 3 |
| <i>Persicaria pennsylvanica</i> | giant smartweed | herb | FACW+ | 1+ |
| <i>Persicaria punctata</i> | dotted smartweed | herb | OBL | 3 |
| <i>Phalaris arundinacea</i> | reed canary grass | herb | FACW+ | *+ |
| <i>Platanus occidentalis</i> | sycamore | tree, sapling, shrub | FACW | 3 |
| <i>Poa pratensis</i> | Kentucky bluegrass | herb | FAC- | *+ |
| <i>Populus deltoides</i> | eastern cottonwood | tree, sapling, shrub | FAC+ | 2 |
| <i>Rosa multiflora</i> | multiflora rose | shrub | FACU | *+ |
| <i>Rudbeckia laciniata</i> | cutleaf coneflower | herb | FACW+ | 3 |
| <i>Ruellia strepens</i> | smooth ruellia | herb | FAC+ | 6 |
| <i>Sagittaria latifolia</i> | arrowhead | herb | OBL | 4 |
| <i>Salix interior</i> | sandbar willow | sapling, shrub | OBL | 1+ |
| <i>Salix nigra</i> | black willow | tree, sapling, shrub | OBL | 3 |
| <i>Sambucus canadensis</i> | common elder | shrub | FACW- | 2 |
| <i>Scutellaria lateriflora</i> | mad-dog skullcap | herb | OBL | 4 |
| <i>Smilax hispida</i> | bristly greenbrier | herb | FAC | 3 |
| <i>Solanum carolinense</i> | horse nettle | herb | FACU- | 0+ |
| <i>Solidago canadensis</i> | Canada goldenrod | herb | FACU | 1+ |
| <i>Solidago gigantea</i> | late goldenrod | 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 (Taft et al. 1997) + weedy native or non-native species, *non-native species

FQI = 18.3 $\bar{C} = 2.7$

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 5 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Wet meadow

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland occupies the large area on the west-central portion of the site where no trees were planted.

Determined by:

Scott Wiesbrook and George Geatz (soils and hydrology)

Brian Wilm (vegetation and hydrology)

University of Illinois

Prairie Research Institute

Illinois Natural History Survey

Wetland Science Program

1816 South Oak Street

Champaign, Illinois 61820

swiesbro@uiuc.edu

(217) 265-0368 (Wiesbrook)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 1 of 4)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Marsh

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland occupies the excavated area in the southeastern corner of the site.

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

VEGETATION

| Dominant Plant Species | Stratum | Indicator Status |
|--------------------------------|---------|------------------|
| 1. <i>Phalaris arundinacea</i> | Herb | FACW+ |
| 2. <i>Typha angustifolia</i> | Herb | OBL |
| 3. <i>Alisma subcordatum</i> | Herb | OBL |

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

Hydrophytic vegetation: Yes: No:

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

SOILS

Series and phase: NRCS mapped as Hickory loam; revised to generic Typic Endoaquoll

On county hydric soils list? Yes: No:

Is the soil a histosol? Yes: No:

Histic epipedon present? Yes: No:

Redox Concentrations Yes: No: Color: 10YR 4/4 and 7.5YR 4/4

Redox Depletions? Yes: No: Color: N/A

Matrix color: 10YR 2.5/1 over N 3.5/

Other indicators: This site is located within an excavated depression.

Hydric soils: Yes: No:

Rationale: The Natural Resources Conservation Service defines Typic Endoaquolls as poorly drained. Presence of redox concentrations within a low chroma and gleyed matrix indicates that this site is saturated or inundated for a significant duration during the growing season. Therefore, this soil meets the hydric soil criterion. This soil meets NRCS hydric soil indicator A11 – Depleted below dark surface.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 2 of 4)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Marsh

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland occupies the excavated area in the southeastern corner of the site.

HYDROLOGY

Inundated: Yes: No: X

Depth of standing water: N/A

Depth to saturated soil: 6 in

Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the LaMoine River, sheet flow from surrounding uplands, some directed drainage from US 136, and precipitation. Water leaves the area via evapotranspiration, possible groundwater recharge, and drainage into the river.

Size of watershed: 655 mi² for the LaMoine River approximately 10 river miles downstream at Colmar, IL (Wicker, et al. 1996)

Other field evidence observed: The ISGS estimated that this area met the wetland hydrology criterion (Miner et al. 2011). Drift, surface soil cracks, and algal mats were observed.

Wetland hydrology: Yes: X No:

Rationale: Field evidence cited above indicates that this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: X No:

Rationale: Hydric soil, dominant hydrophytic vegetation, and wetland hydrology are present at this area; therefore, we determined that this area is a wetland.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 3 of 4)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Marsh

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This wetland occupies the excavated area in the southeastern corner of the site.

SPECIES LIST (Dominant species and strata indicated by bold)

| Scientific name | Common name | Stratum | Wetland indicator status | Coefficient of conservatism# |
|------------------------------------|----------------------------------|-------------|--------------------------|------------------------------|
| <i>Agrostis alba</i> | red top | herb | FACW | 0+ |
| <i>Alisma subcordatum</i> | broad-leaf water-plantain | herb | OBL | 2 |
| <i>Amaranthus tuberculatus</i> | water hemp | herb | OBL | 1+ |
| <i>Ammannia coccinea</i> | long-leaved ammannia | herb | OBL | 5 |
| <i>Asclepias incarnata</i> | swamp milkweed | herb | OBL | 4 |
| <i>Aster lanceolatus</i> | panicled aster | herb | FACW | 3 |
| <i>Bolboschoenus fluviatilis</i> | river bulrush | herb | OBL | 3 |
| <i>Carex frankii</i> | sedge | herb | OBL | 4 |
| <i>Carex lupulina</i> | hop sedge | herb | OBL | 5 |
| <i>Carex</i> sp. | sedge | herb | ---- | -- |
| <i>Carex tribuloides</i> | sedge | herb | FACW+ | 3 |
| <i>Carex vulpinoidea</i> | fox sedge | herb | OBL | 3 |
| <i>Cyperus acuminatus</i> | taperleaf flatsedge | herb | OBL | 2 |
| <i>Cyperus esculentus</i> | yellow nut-sedge | herb | FACW | 0+ |
| <i>Cyperus</i> sp. | flatsedge | herb | ---- | -- |
| <i>Echinochloa muricata</i> | barnyard grass | herb | OBL | 0+ |
| <i>Eclipta prostrata</i> | yerba de tajo | herb | FACW | 2 |
| <i>Eleocharis acicularis</i> | needle spikerush | herb | OBL | 3 |
| <i>Eleocharis erythropoda</i> | spike rush | herb | OBL | 3 |
| <i>Eleocharis macrostachya</i> | spike rush | herb | OBL | 5 |
| <i>Eleocharis obtusa</i> | spikerush | herb | OBL | 2 |
| <i>Eupatorium serotinum</i> | late flowering thoroughwort | herb | FAC+ | 1+ |
| <i>Lemna minor</i> | common duckweed | herb | OBL | 3 |
| <i>Ludwigia alternifolia</i> | alternate leaf seedbox | herb | OBL | 5 |
| <i>Ludwigia polycarpa</i> | false loosestrife | herb | OBL | 5 |
| <i>Penthorum sedoides</i> | ditch stonecrop | herb | OBL | 2 |
| <i>Persicaria pensylvanica</i> | giant smartweed | herb | FACW+ | 1+ |
| <i>Persicaria punctata</i> | dotted smartweed | herb | OBL | 3 |
| <i>Phalaris arundinacea</i> | reed canary grass | herb | FACW+ | *+ |
| <i>Sagittaria latifolia</i> | arrowhead | herb | OBL | 4 |
| <i>Salix interior</i> | sandbar willow | shrub | OBL | 1+ |
| <i>Salix nigra</i> | black willow | shrub | OBL | 3 |
| <i>Scirpus atrovirens</i> | dark green bulrush | herb | OBL | 4 |

Species list continued on next page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 1 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz
Project Name: FAP 315 (LaMoine River Site)
State: Illinois
Area Name: North tree planting area
Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W
Location: This tree planting area occupies the area north of the silt-fenced areas and west of the haul route.

Date: August 29 & 30, 2011
Section No.: 34-4 (4B, B-1)
County: Hancock
Applicant: IDOT District 6

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

VEGETATION

| Dominant Plant Species | Stratum | Indicator Status |
|--------------------------------|---------|------------------|
| 1. <i>Phalaris arundinacea</i> | Herb | FACW+ |
| 2. <i>Aster lanceolatus</i> | Herb | FACW |

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

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: NRCS mapped as Sawmill silty clay loam and Coffeen silt loam; revised to Sawmill (Cumulic Endoaquoll)

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: 7.5YR 4/6, 10YR 4/3 and 5/6
Redox Depletions? Yes: No: X Color: N/A
Matrix color: 10YR 3/1 over 10YR 4/2
Other indicators: None.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service identifies Sawmill silty clay loam as a Cumulic Endoaquoll which is poorly drained. This soil possesses redox concentrations within a low chroma matrix, which indicates saturated or reduced conditions for extended duration. Therefore, the soil at this site meets the hydric soil criterion. This soil meets none of the NRCS hydric soil indicators.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 2 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: North tree planting area

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This tree planting area occupies the area north of the silt-fenced areas and west of the haul route.

HYDROLOGY

Inundated: Yes: No: X

Depth of standing water: N/A

Depth to saturated soil: 12 in

Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the LaMoine River, sheet flow from surrounding uplands, and precipitation.

Water leaves the area via evapotranspiration, possible groundwater recharge, and drainage into the river.

Size of watershed: 655 mi² for the LaMoine River approximately 10 river miles downstream at Colmar, IL (Wicker, et al. 1996)

Other field evidence observed: The ISGS estimated that the majority of this area met the wetland hydrology criterion (Miner et al. 2011). Wetland drainage patterns and drift were observed.

Wetland hydrology: Yes: X No:

Rationale: Field evidence cited above and ISGS data indicate that most of this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: X No:

Rationale: Hydric soil, dominant hydrophytic vegetation, and wetland hydrology are present at part of this area; therefore, we determined that most of this area is a wetland. Site 4 in 2007, 2008, and 2009 reports included this area and site 7 (new area in 2010).

ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 4 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: North tree planting area

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This tree planting area occupies the area north of the silt-fenced areas and west of the haul route.

SPECIES LIST (Dominant species and strata indicated by bold)

| Scientific name | Common name | Stratum | Wetland indicator status | Coefficient of conservatism# |
|------------------------------------|--------------------------|----------------------|--------------------------|------------------------------|
| <i>Humulus japonicus</i> | Japanese hops | herb | FACU | *+ |
| <i>Laportea canadensis</i> | wood nettle | herb | FACW | 2 |
| <i>Lycopus virginicus</i> | bugle weed | herb | OBL | 5 |
| <i>Lysimachia nummularia</i> | moneywort | herb | FACW+ | *+ |
| <i>Mentha arvensis villosa</i> | field mint | herb | FACW | 4 |
| <i>Mimulus ringens</i> | monkey flower | herb | OBL | 5 |
| <i>Morus alba</i> | white mulberry | tree, sapling, shrub | FAC | *+ |
| <i>Penthorum sedoides</i> | ditch stonecrop | herb | OBL | 2 |
| <i>Persicaria hydropiper</i> | common smartweed | herb | OBL | *+ |
| <i>Persicaria pensylvanica</i> | giant smartweed | herb | FACW+ | 1+ |
| <i>Persicaria punctata</i> | dotted smartweed | herb | OBL | 3 |
| <i>Phalaris arundinacea</i> | reed canary grass | herb | FACW+ | *+ |
| <i>Phyla lanceolata</i> | fog-fruit | herb | OBL | 1+ |
| <i>Pilea pumila</i> | Canada clearweed | herb | FACW | 3 |
| <i>Populus deltoides</i> | eastern cottonwood | tree, shrub, herb | FAC+ | 2 |
| <i>Ratibida pinnata</i> | drooping coneflower | herb | UPL | 4 |
| <i>Rorippa islandica</i> | marsh yellow cress | herb | OBL | 4 |
| <i>Rosa multiflora</i> | multiflora rose | shrub | FACU | *+ |
| <i>Rubus occidentalis</i> | black raspberry | shrub | UPL | 2 |
| <i>Rudbeckia laciniata</i> | cutleaf coneflower | herb | FACW+ | 3 |
| <i>Ruellia strepens</i> | smooth ruellia | herb | FAC+ | 6 |
| <i>Rumex altissimus</i> | pale dock | herb | FACW- | 2 |
| <i>Rumex crispus</i> | curly dock | herb | FAC+ | *+ |
| <i>Sagittaria latifolia</i> | arrowhead | herb | OBL | 4 |
| <i>Salix interior</i> | sandbar willow | shrub | OBL | 1+ |
| <i>Salix nigra</i> | black willow | tree, sapling, shrub | OBL | 3 |
| <i>Sambucus canadensis</i> | common elder | shrub, herb | FACW- | 2 |
| <i>Scirpus atrovirens</i> | dark green bulrush | herb | OBL | 4 |
| <i>Scutellaria lateriflora</i> | mad-dog skullcap | herb | OBL | 4 |
| <i>Solidago canadensis</i> | Canada goldenrod | herb | FACU | 1+ |
| <i>Solidago gigantea</i> | late goldenrod | herb | FACW | 3 |
| <i>Ulmus americana</i> | American elm | tree, sapling, herb | 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+ |

Species list continued on next page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 5 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz
Project Name: FAP 315 (LaMoine River Site)
State: Illinois **County:** Hancock
Area Name: North tree planting area
Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W
Location: This tree planting area occupies the area north of the silt-fenced areas and west of the haul route.

Date: August 29 & 30, 2011

Section No.: 34-4 (4B, B-1)

Applicant: IDOT District 6

SPECIES LIST (Dominant species and strata indicated by bold)

| Scientific name | Common name | Stratum | Wetland indicator status | Coefficient of conservatism# |
|----------------------------|-----------------|------------|--------------------------|------------------------------|
| <i>Vitis riparia</i> | riverbank grape | vine, herb | FACW- | 2 |
| <i>Xanthium strumarium</i> | cocklebur | herb | FAC | 0+ |

Coefficient of Conservatism (Taft et al. 1997) + weedy native or non-native species, *non-native species
 FQI = 21.0 $\bar{C} = 2.6$

Determined by: Scott Wiesbrook and George Geatz (soils and hydrology)
 Brian Wilm (vegetation and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 5 (page 1 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: South tree planting area

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This tree planting area occupies the area south and east of the wet meadow (Site 2).

Do normal environmental conditions exist at this area? Yes: No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No:

VEGETATION

| Dominant Plant Species | Stratum | Indicator Status |
|--------------------------------|---------|------------------|
| 1. <i>Phalaris arundinacea</i> | Herb | FACW+ |
| 2. <i>Eupatorium serotinum</i> | Herb | FAC+ |
| 3. <i>Agrostis alba</i> | Herb | FACW |
| 4. <i>Elymus virginicus</i> | Herb | FACW- |

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

Hydrophytic vegetation: Yes: No:

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

SOILS

Series and phase: NRCS mapped as Larson, Clarksdale, and Fishhook silt loams; revised to Clarksdale silt loam (Udolic Endoaqualf)

On county hydric soils list? Yes: No:

Is the soil a histosol? Yes: No:

Histic epipedon present? Yes: No:

Redox Concentrations? Yes: No: Color: 10YR 4/4 and 5/6

Redox Depletions? Yes: No: Color: 10YR 5/1 and 4/1

Matrix color: 10YR 3/2 over 10YR 5/4 (where topsoil shallow) or 10YR 4/2 (where topsoil deep)

Other indicators: None.

Hydric soils: Yes: No:

Rationale: The Natural Resources Conservation Service identifies Clarksdale silt loam as an Udolic Endoaqualf which is somewhat poorly drained. This soil possesses redox concentrations and depletions within a medium chroma matrix, which indicates saturated or reduced conditions for brief duration. Therefore, the soil at this site does not meet the hydric soil criterion. This soil meets none of the NRCS hydric soil indicators.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 5 (page 2 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz
Project Name: FAP 315 (LaMoine River Site)
State: Illinois
Area Name: South tree planting area
Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W
Location: This tree planting area occupies the area south and east of the wet meadow (Site 2).

Date: August 29 & 30, 2011
Section No.: 34-4 (4B, B-1)
County: Hancock
Applicant: IDOT District 6

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: N/A

Depth to saturated soil: >12 in

Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the LaMoine River, some directed drainage from US 136, and precipitation. Water leaves the area via evapotranspiration, possible groundwater recharge, and drainage into the river.

Size of watershed: 655 mi² for the LaMoine River approximately 10 river miles downstream at Colmar, IL (Wicker, et al. 1996)

Other field evidence observed: The ISGS estimated that while most of this area met the 5% wetland hydrology criterion, it did not meet the 12.5% wetland hydrology criterion (Miner et al. 2011). No field evidence was observed.

Wetland hydrology: Yes: No: X

Rationale: Lack of field evidence and ISGS data from 2007-2011 indicate that the majority of this area is not inundated or saturated for a sufficient duration in most years to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: No: X

Rationale: While dominant hydrophytic vegetation and 5% wetland hydrology were present this year, hydric soil was absent; therefore, we determined that this area is not a wetland.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 5 (page 5 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: South tree planting area

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This tree planting area occupies the area south and east of the wet meadow (Site 2).

Determined by:

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ROUTINE ON-SITE WETLAND DETERMINATION

Site 6 (page 1 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Upland buffer tree planting area

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This tree planting area occupies the area south and west of the wet meadow (Site 2).

Do normal environmental conditions exist at this area? Yes: X No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

| Dominant Plant Species | Stratum | Indicator Status |
|--------------------------------|---------|------------------|
| 1. <i>Phalaris arundinacea</i> | Herb | FACW+ |
| 2. <i>Solidago canadensis</i> | Herb | FACU |
| 3. <i>Sorghastrum nutans</i> | Herb | FACU+ |
| 4. <i>Eupatorium serotinum</i> | Herb | FAC+ |

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 50%

Hydrophytic vegetation: Yes: No: X

Rationale: Not more than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: NRCS mapped as Lawson and Keomah silt loams and Sawmill silty clay loam; revised to Keomah silt loam (Aeric Endoaqualf)

On county hydric soils list? Yes: No: X

Is the soil a histosol? Yes: No: X

Histic epipedon present? Yes: No: X

Redox Concentrations? Yes: X No: Color: 10YR 5/6 and 4/6

Redox Depletions? Yes: X No: Color: 10YR 4/1

Matrix color: 10YR 4/2 over 10YR 5/3

Other indicators: None.

Hydric soils: Yes: No: X

Rationale: The Natural Resources Conservation Service identifies Keomah silt loam as an Aeric Endoaqualf which is somewhat poorly drained. This soil possesses redox concentrations and depletions within a medium chroma matrix, which indicates saturated or reduced conditions for brief duration. Therefore, the soil at this site does not meet the hydric soil criterion. This soil meets none of the NRCS hydric soil indicators.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 7 (page 1 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Northeast tree planting area

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This tree planting area occupies the area north of the silt-fenced areas and east of the haul route.

Do normal environmental conditions exist at this area? Yes: No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No:

VEGETATION

| Dominant Plant Species | Stratum | Indicator Status |
|--------------------------------|---------|------------------|
| 1. <i>Phalaris arundinacea</i> | Herb | FACW+ |
| 2. <i>Humulus japonicus</i> | Herb | FACU |
| 3. <i>Ambrosia trifida</i> | Herb | FAC+ |
| 4. <i>Acer saccharinum</i> | Tree | FACW |
| 5. <i>Acer negundo</i> | Tree | FACW- |

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 80%

Hydrophytic vegetation: Yes: No:

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

SOILS

Series and phase: Riley loam (Fluvaquentic Hapludoll)

On county hydric soils list? Yes: No:

Is the soil a histosol? Yes: No:

Histic epipedon present? Yes: No:

Redox Concentrations? Yes: No: Color: N/A

Redox Depletions? Yes: No: Color: N/A

Matrix color: 10YR 3/1 over 10YR 3/1 and 4/1 strata over 10YR 4/2

Other indicators: None.

Hydric soils: Yes: No:

Rationale: The Natural Resources Conservation Service identifies Riley loam as a Fluvaquentic Hapludoll which is somewhat poorly drained. This soil lacks redox concentrations and depletions within a low chroma matrix, which indicates saturated or reduced conditions for short duration. Therefore, the soil at this site does not meet the hydric soil criterion. This soil meets none of the NRCS hydric soil indicators.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 7 (page 5 of 5)

Field Investigators: Wiesbrook, Wilm, and Geatz

Date: August 29 & 30, 2011

Project Name: FAP 315 (LaMoine River Site)

Section No.: 34-4 (4B, B-1)

State: Illinois

County: Hancock

Applicant: IDOT District 6

Area Name: Northeast tree planting area

Legal Description: SW/4, SE/4, and SE/4, SW/4 Section 18, T. 5 N., R. 5 W

Location: This tree planting area occupies the area north of the silt-fenced areas and east of the haul route.

Determined by:

Scott Wiesbrook and George Geatz (soils and hydrology)

Brian Wilm (vegetation and hydrology)

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Appendix B

Photographs of Wetland Mitigation Site



Picture 1. Facing east from photostation 1 (overlooking north tree planting).



Picture 2. Facing west from photostation 1 (overlooking wet meadow).



Picture 3. Facing east from photostation 2 (overlooking south tree planting).



Picture 4. Facing south from photostation 3 (overlooking marsh towards highway).



Picture 5. Facing north from photostation 3 (overlooking south tree planting).



Picture 6. Facing west from photostation 4 (overlooking wet meadow).



Picture 7. Facing east from photostation 4 [overlooking area with no trees planted (background)].



Picture 8. Facing northeast from photostation 5 (overlooking north tree planting).



Picture 9. Facing northeast from IL 336/US 136 [overlooking wet meadow (photo left), south tree planting (photo middle), and marsh (photo right)].



Picture 10. Facing northwest from IL 336/US 136 [overlooking upland buffer tree planting (photo left and middle), and wet meadow (photo right)].