

## WETLAND MITIGATION SITE MONITORING REPORT FAU 5822 (Milan Beltway) Rock Island County – Milan Site

### Introduction

This report details monitoring of the wetland mitigation site created to compensate for impacts associated with FAU 5822 (Milan Beltway). This Milan site, approximately 8.9 ha (22 acres) in size, is located in Rock Island County (legal location – NW/4, NE/4, Section 19, T 17 N, R 1 W), bordering the south side of I-280 and the north side of Airport Road, immediately east of the new Milan Beltway extension (United States Geological Survey hydrologic unit 07090005, Rock River - below Rockton). On-site monitoring was conducted for the fourth time on July 9 and September 1, 2009.

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 specified in the Conceptual Wetland Compensation Plan (Illinois Department of Transportation (IDOT) 2002) developed for this site. Amendments to this plan, specifically addressing the amount of wetland compensation acreage required, were agreed to at a meeting held by the Army Corps of Engineers in Rock Island, Illinois on 24 April, 2007. 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* (United States Army Corps of Engineers (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 (Environmental Laboratory 1987).

**Objective:** Establishment of 6.2 ha (15.3 acres) of emergent wetland (including the preexisting marsh present before farming was halted) and 2.0 ha (5.0 acres) of forested wetland.

**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 or restored 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 136 planted trees per hectare should be established and living by the end of the five year monitoring period.
- b. Native species composition: At least 50% 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 (IDOT 2002).

## 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, FACW-, 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.

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

Wetland hydrology at this site was monitored by the Illinois State Geological Survey (Fucciolo et al. 2009). 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 (25 days at this site) to satisfy wetland hydrology criteria (Environmental Laboratory 1987). Inundation and saturation at the site were monitored using a combination of monitoring wells and staff gages (Figure 3). Water levels were measured at least biweekly during April and May and monthly during the remainder of the year. Manual readings were supplemented by dataloggers, which measured surface and groundwater levels at regular intervals to document all hydrologic events.

**Project goal 2**

a. Planted species survivorship

In order to create floodplain forest, tree saplings were to be planted at the compensation site as specified in the Conceptual Wetland Compensation Plan (IDOT 2002). Specific planting numbers are shown in Table 1. Additionally, a supplemental planting of trees species occurred in spring/summer 2009 (IDOT 2009); specific planting information is included in Table 2.

Table 1. Tree species planted in the created wetland (Final planting date spring 2006).

Species	Common Name	Number
<i>Carya illinoensis</i>	Pecan	111
<i>Fraxinus pennsylvanica</i>	Green Ash	111
<i>Platanus occidentalis</i>	Sycamore	111
<i>Quercus bicolor</i>	Swamp White Oak	111
<i>Quercus palustris</i>	Pin Oak	111
TOTAL		555

Table 2. Tree species planted in the created wetland (Final planting date spring/summer 2009).

Species	Common Name	Number
<i>Platanus occidentalis</i>	Sycamore	37
<i>Quercus bicolor</i>	Swamp White Oak	37
<i>Quercus palustris</i>	Pin Oak	36
TOTAL		110

All of the initial planted trees were to be balled and burlapped 4.4-5.1 cm (1.75-2 in) caliper trees, except the *Carya illinoensis*, which were bare root two year old seedlings. No specific information was available as to what type of trees were planted in the supplemental planting. 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 the number live trees per hectare.

b. Native Species Composition

A complete list of plant species present was compiled for both plant communities present in 2009 (marsh and tree planted area). These species lists were used to determine native species composition.

Non-weedy, native, perennial species were to include all native, perennial species with a mean coefficient of conservatism of 2 or greater.

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). The basis of the method is that each native plant species is assigned a conservatism coefficient (C) ranging from 0 to 10. Individual conservatism coefficients are ranks of species behavior and reflect the committee's (Taft et al. 1997) confidence level for a taxon's correspondence to anthropogenic disturbances. Coefficient values range from 0 to 10, with all adventive species given a coefficient of 0. Plant species assigned 0 have low affinities for natural areas, whereas those assigned 10 have very high affinities. When a complete species list is assembled for a wetland site, the overall average conservatism coefficient ( $\bar{c}$ ) and a site floristic quality index (FQI) can be calculated. The  $\bar{c}$  is calculated by summing the coefficients of conservatism ( $\Sigma C$ ) and dividing by the total number of native species (N). The FQI is then calculated by dividing the  $\Sigma C$  by the square root of N. These values provide a measure of site floristic quality. Floristic quality index (FQI) values less than 5 indicate that the area is extremely weedy or in an early successional stage (Swink and Wilhelm 1994). FQI values between 20 and 35 ( $\bar{c} = 3.0$ ) indicate that the area has evidence of native character and can be considered a botanical asset. FQI values between 35 and 50 ( $\bar{c} = 3.5$ ) indicate that the area has significant native character.

c. Dominance of vegetation

Plant species dominance was determined as in 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).

**Photography Stations**

Six photography stations were established around the perimeter of the site, in an attempt to document changes in the plant communities over time (Figure 1). Photographs are contained in Appendix B.

Milan Beltway (FAU 5822) Wetland Compensation  
Milan Site - Rock Island County  
Photostations



 Project site



Figure 1. Photography stations at the Milan wetland compensation site.

## Results

### Project goal 1

#### a. Predominance of hydrophytic vegetation

Dominant plant species for both plant communities on the site are found in Tables 3 and 4. Plant communities are shown in Figure 2. The marsh community is the only community to have dominant hydrophytic vegetation solely based on naturally occurring vegetation. The tree planted area has dominant hydrophytic vegetation when including planted tree species; it lacks dominant hydrophytic vegetation when these species are excluded.

Table 3. Dominant plant species for the marsh community, July 2009.

Dominant Plant Species	Stratum	Indicator Status
1. <i>Typha angustifolia</i>	herb	OBL

Table 4. Dominant plant species for the tree planted area (including planted tree species), July 2009.

Dominant Plant Species	Stratum	Indicator Status
1. <i>Fraxinus pennsylvanica</i>	sapling	FACW
2. <i>Platanus occidentalis</i>	sapling	FACW
3. <i>Quercus bicolor</i>	sapling	FACW+
4. <i>Quercus palustris</i>	sapling	FACW
5. <i>Bromus inermis</i>	herb	UPL
6. <i>Eupatorium serotinum</i>	herb	FAC+
7. <i>Poa pratensis</i>	herb	FAC-
8. <i>Solidago canadensis</i>	herb	FACU

Milan Beltway (FAU 5822) Wetland Compensation  
Milan Site - Rock Island County



Figure 2. Plant communities at the Milan wetland compensation site, July 2009.

b. Occurrence of hydric soils

Soils across the entire site appear to be hydric. Based on site examination, Sawmill silty clay loam was found throughout the area. Sawmill is a poorly drained Cumulic Endoaquoll and is found on the Rock Island County hydric soils list. More specific soils information can be found within the wetland determination forms (Appendix A).

c. Presence of wetland hydrology

The ISGS estimated that the area that the entire site, 8.9 ha (22.0 acres), satisfied the wetland hydrology criteria for the 2009 growing season (Figure 3) (ISGS, Benton, personal communication 2010). This was a substantial increase over previous years and was due to a combination of abnormally high precipitation on the site and a newly constructed beaver dam, that blocked drainage in the northeast corner of the site (Figure 3). More detailed hydrologic information can be found in the ISGS annual report for active IDOT wetland compensation and hydrologic monitoring sites (Fucciolo et al. 2009).

### Milan Beltway, Airport Road Wetland Compensation Site (FAU 5822)

#### Updated Estimated Areal Extent of 2009 Wetland Hydrology

September 1, 2009 through November 5, 2009

Map based on USGS digital orthophotograph, Milan SW quarter quadrangle  
from 03/30/2000 aerial photography (ISGS 2005)

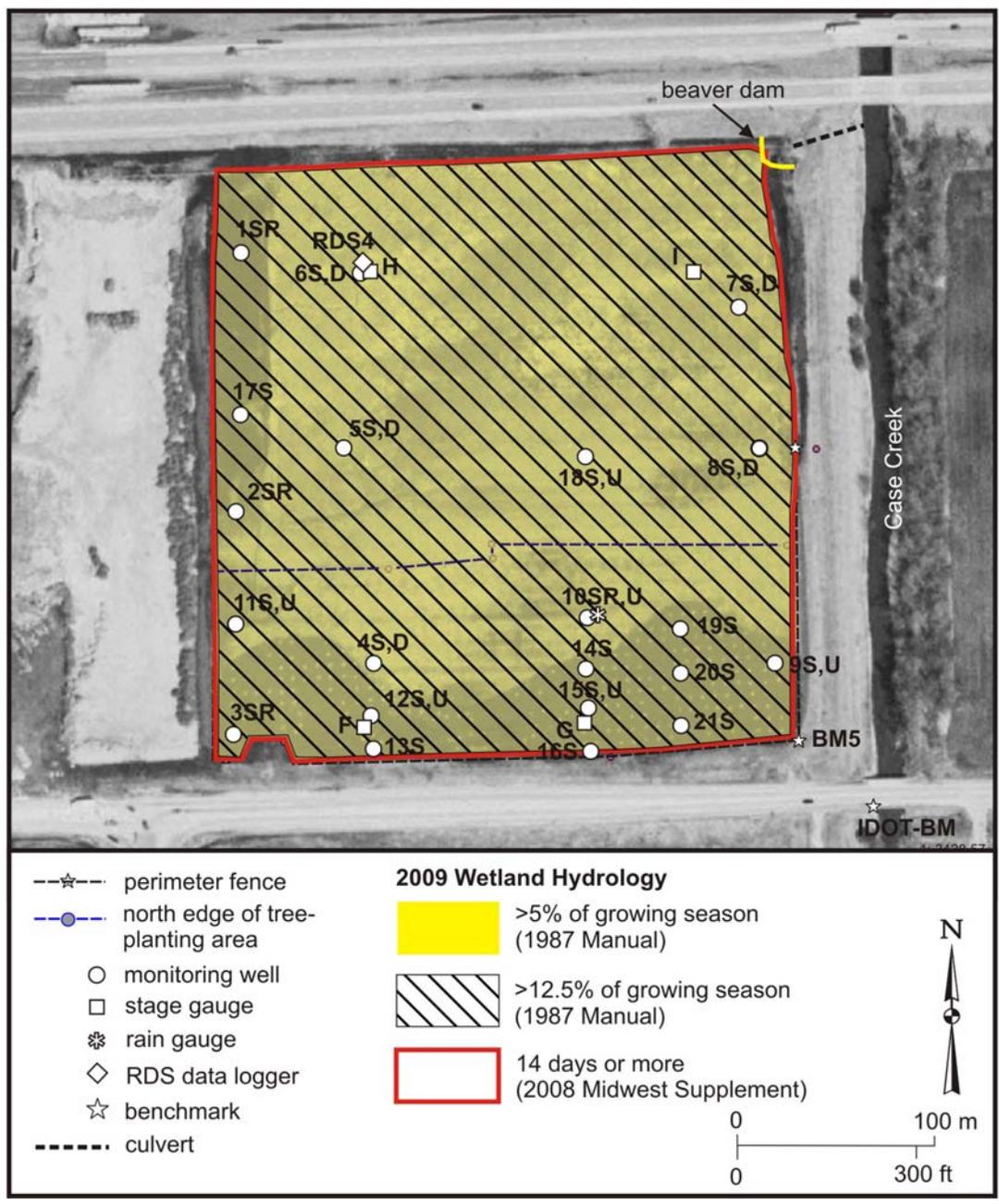


Figure 3. Areal extent of wetland hydrology at the Milan wetland compensation site, 2009 (courtesy of Steve Benton, ISGS (Fucciolo et al. 2009)).

## Project goal 2

### a. Planted species survivorship

Results of the planted tree count are shown in Table 6. Tree survival was very good, totaling 82.6% for 2009. Based on a calculated area of 2.8 hectares for the tree planted area, 196.1 trees/ha were found alive in 2009. This far exceeds the performance criteria of a minimum of 136 trees/ha.

Table 5. Number of trees counted and percent tree survival, 2009.

Species	Common Name	Number Planted	Number Counted	% Survival
<i>Carya illinoensis</i>	Pecan	111	51	
<i>Fraxinus pennsylvanica</i>	Green Ash	111	107	
<i>Platanus occidentalis</i>	Sycamore	148	129	
<i>Quercus palustris</i>	Pin Oak	147	143	
<i>Quercus bicolor</i>	Swamp White Oak	148	119	
Dead (apparently)			41	
TOTAL (apparently live)		665	549	82.6%

### b. Native species composition

Within the marsh community, 53.0% of the plant species present were non-weedy, native perennials. Within the tree planted area, only 38.2% of plant species were non-weedy, native perennials; when planted tree species were included this rose to 41.7%. Therefore, the marsh met the minimum standard for native species composition (50%), while the tree planted area did not.

The calculated floristic quality index (FQI) for the marsh community was 19.9, with a mean coefficient of conservatism (mean C) of 2.7. The tree planted area had a FQI of 14.7 and a mean C of 2.1 when excluding planted trees, as compared to 16.9 and 2.4 when they were included. The marsh can be considered to have marginally good floristic quality, while the tree planted area shows only fair floristic quality.

### c. Dominance of vegetation

Neither of the plant communities present on the wetland compensation site met the performance criteria for dominance of vegetation. Narrowleaf cattail (*Typha angustifolia*), an invasive, exotic species, is the only dominant in the marsh community. Within the tree planting area, awnless brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*), both exotics, are dominants and among the three most prevalent species.

## Discussion, Summary and Recommendations

Significant changes occurred at this wetland compensation site during 2009, the fourth monitoring season. For the first time, jurisdictional wetland habitat was present across the entire site (Figure 3), thus meeting Project Goal 1 (creation of jurisdictional wetland). Abnormally high precipitation at the site, in combination with a newly constructed beaver dam in the northeast corner of the site, led to substantially more water being held on the site throughout the 2009 growing season. These wetter conditions led to the expansion of the marsh community, which totally engulfed the area of the site formally covered by the non-native grassland community, even encroaching into the tree planting area on the southernmost end of the site (Figure 2). As a result of these wetter conditions, wetland hydrology was present across the whole site (Figure 3). Dominant hydrophytic vegetation was also present throughout for the first time, as both the marsh and tree planted areas had dominant hydrophytic vegetation. For the tree planted area, dominant hydrophytic vegetation was present only when planted tree species were included. Based on agreement with the Army Corps of Engineers (USACE, Betker, personal communication 2006), including planted trees in the determination of dominant hydrophytic vegetation is acceptable. Hydric soils have been present throughout the site during all monitoring years. As a result, total wetland acreage in 2009 was 8.9 ha (22.0 acres) (ISGS, Benton, personal communication 2010). However, 2009 was considered an abnormally wet year and these results may not be typical of what can be expected in most years, even if the beaver dam remains in place. Continued hydrologic monitoring by the ISGS will determine whether or not wetland hydrology maintains itself throughout the site.

Project goal 2 (meeting minimum standards for planted species survival and floristic composition) has met with mixed results thus far. Planted tree survivorship, as measured in all three monitoring years, appears to be favorable. In 2009, 82.6% of planted trees were found alive and at a density of 196.1 trees/ha, well above the required performance criteria.

Minimum standards for native species composition were found to have been met in the marsh, but not in the tree planted area. Within the marsh, 53% of the plant species present were non-weedy, native perennials and the community had a floristic quality index of 19.9 and a mean coefficient of conservatism of 2.7. Within the tree planted area, however, many annual and exotic species typical of disturbed, early successional communities were prevalent, resulting in only 41.7% of plant species being non-weedy, native perennials, even when planted tree species were present. Consequently, this area also had a lower FQI (16.9) and a lower mean C (2.4), even when planted tree species were included. Given that it is very likely that many of these unfavorable species will disappear and that native perennials may take their place as the community develops, the Army Corps of Engineers is not particularly concerned about the composition of this herbaceous community (USACE, Betker, personal communication 2006).

Both plant communities have problems involving acceptable plant species dominance. The marsh community is dominated solely by narrowleaf cattail, an invasive exotic. This species is likely to persist and expand without herbicide control. However, the Army Corps of Engineers seems to accept the presence and dominance of this species (USACE, Betker, personal communication 2006), realizing that, in reality, little can be done to control it in the long run. Within the tree planting area, awnless brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*), both exotics, are dominants. If site conditions continue to be as wet as during 2009, both of these species may drop

out, or at least see their prevalence decrease dramatically. However, if drier site conditions prevail, both species are likely to strongly persist without herbicide control, at least until the canopy of planted tree saplings begins to close. Natural floodplain forest community development may enable favorable dominant species to become prevalent over time. Also, as stated previously, the Army Corps of Engineers is not particularly concerned with the herbaceous community in this tree planted area (USACE, Betker, personal communication 2006).

In summary, the primary concern for this wetland compensation site is the continued prevalence of wetland hydrology throughout the site. Based on 2009 monitoring, the entire site had wetland hydrology and met jurisdictional wetland status. A secondary concern is the development of acceptable, dominant, native, hydrophytic plant communities. Total wetland acreage in 2009 was 8.9 hectares (22.0 acres).

### **Literature Cited**

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**Appendix A. Wetland Determination Forms**

**ROUTINE ONSITE WETLAND DETERMINATION**

Wetland Compensation for Milan Beltway-Milan Site

Marsh (page 1 of 4)

**Field Investigators:** Wilm, Wiesbrook, and Ketzner**Dates:** July 9 and September 1, 2009**Project Name:** FAU 5822 (Milan Beltway-Milan Site)**IDOT District:** 2**State:** Illinois**County:** Rock Island**Community Name:** Marsh**Legal Description:** NW/4, NE/4, Section 19, T. 17 N., R. 1 W**Location:** The northern portion of site, just south of I-280Do 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>Typha angustifolia</i>	herb	OBL

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

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

Series and phase: Sawmill silty clay loam (Cumulic 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: 5YR 4/4Redox Depletions? Yes: No: 

Matrix color: N 3/

Other indicators: None

**Hydric soils?** Yes:  No:**Rationale:** The Natural Resources Conservation Service identifies Sawmill silty clay loam as a Cumulic Endoaquoll which is poorly drained. The presence of redoximorphic concentrations within a gleyed matrix indicates conditions of saturation for significant duration during the growing season. Therefore, the soil at this site meets the hydric soil criteria. This soil meets NRCS hydric soil indicator A12 – thick dark surface.

**ROUTINE ONSITE WETLAND DETERMINATION**  
 Wetland Compensation for Milan Beltway-Milan Site  
 Marsh (page 2 of 4)

**Field Investigators:** Wilm, Wiesbrook, and Ketzner

**Dates:** July 9 and September 1, 2009

**Project Name:** FAU 5822 (Milan Beltway-Milan Site)

**IDOT District:** 2

**State:** Illinois

**County:** Rock Island

**Community Name:** Marsh

**Legal Description:** NW/4, NE/4, Section 19, T. 17 N., R. 1 W

**Location:** The northern portion of site, just south of I-280

**HYDROLOGY**

Inundated: Yes:  No:  Depth of standing water: Up to about 0.61 m (24 in)

Depth to saturated soil: Inundated or saturated at the surface throughout the entire area

Overview of hydrological flow through the system: Hydrologic inputs include surface runoff (from I-280 and Airport Road), precipitation, and possible groundwater influence from the nearby Rock River. Hydrologic outputs include evapotranspiration and soil infiltration.

Size of watershed:  $<2.6 \text{ km}^2$  ( $<1 \text{ mi}^2$ ), excluding any groundwater influence of the Rock River

Other field evidence observed: Surface saturation and inundation were observed throughout the entire area. It also appears that beaver have blocked drainage via a culvert at the northeast corner of the site, thereby substantially increasing the amount of water held on-site.

**Wetland hydrology:** Yes:  No:

**Rationale:** Field evidence cited above, as well as ISGS data (Fucciolo et al. 2009), 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:  No:

**Rationale:** Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all present across the entire area.

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**ROUTINE ONSITE WETLAND DETERMINATION**  
Wetland Compensation for Milan Beltway-Milan Site  
Marsh (page 3 of 4)

**Field Investigators:** Wilm, Wiesbrook, and Ketzner

**Dates:** July 9 and September 1, 2009

**Project Name:** FAU 5822 (Milan Beltway-Milan Site)

**IDOT District:** 2

**State:** Illinois

**County:** Rock Island

**Community Name:** Marsh

**Legal Description:** NW/4, NE/4, Section 19, T. 17 N., R. 1 W

**Location:** The northern portion of site, just south of I-280

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Acer negundo</i>	box elder	shrub, herb	FACW-	1
<i>Acer saccharinum</i>	silver maple	sapling, shrub, herb	FACW	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Alisma plantago-aquatica</i>	broad-leaf water-plantain	herb	OBL	2
<i>Ammannia coccinea</i>	long-leaved ammannia	herb	OBL	5
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Azolla mexicana</i>	Mexican azolla	herb	OBL	8
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex frankii</i>	sedge	herb	OBL	4
<i>Carex spp.</i>	sedges	herb	----	--
<i>Carex stipata</i>	prickly sedge	herb	OBL	2
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Catalpa sp.</i>	catalpa	shrub	----	--
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cornus drummondii</i>	rough-leaved dogwood	shrub, herb	FAC	2
<i>Cornus obliqua</i>	pale dogwood	shrub, herb	FACW+	4
<i>Cyperus esculentus</i>	yellow nut-sedge	herb	FACW	0
<i>Cyperus strigosus</i>	straw-colored flatsedge	herb	FACW	0
<i>Echinochloa crus-galli</i>	barnyard grass	herb	FACW	*
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Eleocharis erythropoda</i>	spike rush	herb	OBL	3
<i>Epilobium coloratum</i>	cinnamon willow herb	herb	OBL	3
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Fraxinus pennsylvanica</i>	green ash	sapling, shrub	FACW	2
<i>Hordeum jubatum</i>	squirrel-tail	herb	FAC+	*
<i>Juncus dudleyi</i>	Dudley's rush	herb	FAC	4
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Juniperus virginiana</i>	eastern red cedar	shrub	FACU	1
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lemna minor</i>	common duckweed	herb	OBL	3

\*Species not native to Illinois

(Species list continued on next page.)

**ROUTINE ONSITE WETLAND DETERMINATION**  
Wetland Compensation for Milan Beltway-Milan Site  
Marsh (page 4 of 4)

**Field Investigators:** Wilm, Wiesbrook, and Ketzner

**Dates:** July 9 and September 1, 2009

**Project Name:** FAU 5822 (Milan Beltway-Milan Site)

**IDOT District:** 2

**State:** Illinois

**County:** Rock Island

**Community Name:** Marsh

**Legal Description:** NW/4, NE/4, Section 19, T. 17 N., R. 1 W

**Location:** The northern portion of site, just south of I-280

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Leptochloa fascicularis</i>	bearded sprangle top	herb	OBL	0
<i>Lindernia dubia</i>	false pimpernel	herb	OBL	5
<i>Ludwigia polycarpa</i>	false loosestrife	herb	OBL	5
<i>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Lysimachia nummularia</i>	moneywort	herb	FACW+	*
<i>Lythrum alatum</i>	winged loosestrife	herb	OBL	5
<i>Lythrum salicaria</i>	purple loosestrife	herb	OBL	*
<i>Mimulus ringens</i>	monkey flower	herb	OBL	5
<i>Morus alba</i>	white mulberry	shrub, herb	FAC	*
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Phragmites australis</i>	common red reed	herb	FACW+	1
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum hydropiper</i>	common smartweed	herb	OBL	*
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Polygonum</i> sp.	smartweed	herb	----	--
<i>Populus deltoides</i>	eastern cottonwood	tree, sapling, shrub	FAC+	2
<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 amygdaloides</i>	peach-leaved willow	tree, sapling, shrub	FACW	4
<i>Salix exigua</i>	sandbar willow	shrub	OBL	1
<i>Salix nigra</i>	black willow	tree, sapling, shrub	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scirpus cyperinus</i>	wool grass	herb	OBL	5
<i>Scirpus fluviatilis</i>	river bulrush	herb	OBL	3
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Ulmus americana</i>	American elm	shrub, herb	FACW-	5
<i>Ulmus pumila</i>	Siberian elm	shrub	UPL	*
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

\*Species not native to Illinois

$$FQI = R/\sqrt{N} = 146/\sqrt{54} = 19.9$$

$$\text{mean } C = R/N = 146/54 = 2.7$$



**ROUTINE ONSITE WETLAND DETERMINATION**  
 Wetland Compensation for Milan Beltway-Milan Site  
 Tree Planted Area (page 2 of 5)

**Field Investigators:** Wilm, Wiesbrook, and Ketzner

**Dates:** July 9 and September 1, 2009

**Project Name:** FAU 5822 (Milan Beltway-Milan Site)

**IDOT District:** 2

**State:** Illinois    **County:** Rock Island    **Community Name:** Tree Planted Area

**Legal Description:** NW/4, NE/4, Section 19, T. 17 N., R. 1 W

**Location:** The southern portion of site, just north of airport road

**SOILS**

Series and phase: NRCS mapped as Sawmill silty clay loam and Coffeen silt loam; revised to Sawmill silty clay loam (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: 5YR 4/4 & 7.5YR 4/4

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

Matrix color: 10YR 3/1

Other indicators: None

**Hydric soils?** Yes: X      No:

**Rationale:** The Natural Resources Conservation Service identifies Sawmill as a Cumulic Endoaquoll which is poorly drained. The presence of redoximorphic concentrations and depletions within a low chroma matrix indicates conditions of saturation for significant duration during the growing season. Therefore, the soil at this site meets the hydric soil criteria. This soil meets NRCS hydric soil indicator A12 – thick dark surface.

**HYDROLOGY**

Inundated: Yes: X (50% of the site)      No:              Depth of standing water: Up to 0.15 m (6 in)

Depth to saturated soil: Inundated or saturated throughout the area

Overview of hydrological flow through the system: Hydrologic inputs include surface runoff (from I-280 and Airport Road), precipitation, and possible groundwater influence from the nearby Rock River. Hydrologic outputs include evapotranspiration and soil infiltration.

Size of watershed: <2.6 km<sup>2</sup> (<1 mi<sup>2</sup>), excluding any groundwater influence of the Rock River

Other field evidence observed: Surface saturation and inundation were observed throughout the entire area. It also appears that beaver have blocked drainage via a culvert at the northeast corner of the site, thereby substantially increasing the amount of water held on-site.

**Wetland hydrology:** Yes: X              No:

**Rationale:** Field evidence cited above, as well as ISGS data (Fucciolo et al. 2009), indicates that this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

**ROUTINE ONSITE WETLAND DETERMINATION**  
Wetland Compensation for Milan Beltway-Milan Site  
Tree Planted Area (page 3 of 5)

**Field Investigators:** Wilm, Wiesbrook, and Ketzner

**Dates:** July 9 and September 1, 2009

**Project Name:** FAU 5822 (Milan Beltway-Milan Site)

**IDOT District:** 2

**State:** Illinois    **County:** Rock Island    **Community Name:** Tree Planted Area

**Legal Description:** NW/4, NE/4, Section 19, T. 17 N., R. 1 W

**Location:** The southern portion of site, just north of airport road

**DETERMINATION AND RATIONALE:**

**Is the area a wetland?** Yes: X      No:

**Rationale:** Hydric soils are present throughout this area, as is dominant hydrophytic vegetation when planted tree species are included. Based on field evidence and ISGS data, wetland hydrology is also present throughout the entire (Figure 3).

Determined by:      Brian Wilm (vegetation and hydrology)  
                                 Scott Wiesbrook (soils)  
                                 David Ketzner (vegetation)  
                                 University of Illinois  
                                 Institute of Natural Resource Sustainability  
                                 Illinois Natural History Survey  
                                 1816 S. Oak Street  
                                 Champaign, IL 61820  
                                 (217) 244-2176 (Wilm)  
                                 wilm@uiuc.edu

**SPECIES LIST**

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Acer negundo</i>	box elder	shrub, herb	FACW-	1
<i>Agropyron repens</i>	quack grass	herb	FACU	*
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Amaranthus tuberculatus</i>	tall waterhemp	herb	OBL	1
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ammannia coccinea</i>	long-leaved ammannia	herb	OBL	5
<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>Asclepias verticillata</i>	horsetail milkweed	herb	UPL	1
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Boltonia asteroides</i>	false aster	herb	FACW	5

\*Species not native to Illinois

(Species list continued on next page.)

**ROUTINE ONSITE WETLAND DETERMINATION**  
Wetland Compensation for Milan Beltway-Milan Site  
Tree Planted Area (page 4 of 5)

**Field Investigators:** Wilm, Wiesbrook, and Ketzner

**Dates:** July 9 and September 1, 2009

**Project Name:** FAU 5822 (Milan Beltway-Milan Site)

**IDOT District:** 2

**State:** Illinois    **County:** Rock Island    **Community Name:** Tree Planted Area

**Legal Description:** NW/4, NE/4, Section 19, T. 17 N., R. 1 W

**Location:** The southern portion of site, just north of airport road

**SPECIES LIST (Continued)**

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Bromus inermis</i>	awnless brome grass	herb	UPL	*
<i>Carex</i> spp.	sedges	herb	----	--
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	*
<i>Cornus drummondii</i>	rough-leaved dogwood	shrub, herb	FAC	2
<i>Cyperus</i> sp.	nut-sedge	herb	----	--
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eleocharis erythropoda</i>	spike rush	herb	OBL	3
<i>Erechtites hieracifolia</i>	fire weed	herb	FACU	2
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Erigeron strigosus</i>	daisy fleabane	herb	FAC-	2
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Festuca arundinacea</i>	tall fescue	herb	FACU+	*
<i>Fraxinus pennsylvanica</i>	green ash	shrub, herb	FACW	2
<i>Hordeum jubatum</i>	squirrel-tail	herb	FAC+	*
<i>Juncus dudleyi</i>	Dudley's rush	herb	FAC	4
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Juniperus virginiana</i>	eastern red cedar	shrub, herb	FACU	1
<i>Lotus corniculatus</i>	birdsfoot-trefoil	herb	FAC-	*
<i>Ludwigia polycarpa</i>	false loosestrife	herb	OBL	5
<i>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phyla lanceolata</i>	fog-fruit	herb	OBL	1
<i>Poa pratensis</i>	Kentucky bluegrass	herb	FAC-	*
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum hydropiper</i>	common smartweed	herb	OBL	*
<i>Polygonum lapathifolium</i>	curttop lady's thumb	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum persicaria</i>	spotted lady's thumb	herb	FACW	*
<i>Polygonum ramosissimum</i>	bushy knotweed	herb	FAC-	3
<i>Polygonum</i> sp.	smartweed	herb	----	--
<i>Populus deltoides</i>	eastern cottonwood	tree, sapl, shrub, herb	FAC+	2
<i>Ratibida pinnata</i>	drooping coneflower	herb	UPL	4

\*Species not native to Illinois

(Species list continued on next page.)

**ROUTINE ONSITE WETLAND DETERMINATION**

Wetland Compensation for Milan Beltway-Milan Site  
Tree Planted Area (page 5 of 5)

**Field Investigators:** Wilm, Wiesbrook, and Ketzner

**Dates:** July 9 and September 1, 2009

**Project Name:** FAU 5822 (Milan Beltway-Milan Site)

**IDOT District:** 2

**State:** Illinois    **County:** Rock Island    **Community Name:** Tree Planted Area

**Legal Description:** NW/4, NE/4, Section 19, T. 17 N., R. 1 W

**Location:** The southern portion of site, just north of airport road

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Rubus allegheniensis</i>	common blackberry	shrub	FACU+	2
<i>Rudbeckia hirta</i>	black-eyed Susan	herb	FACU	2
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Salix nigra</i>	black willow	shrub	OBL	3
<i>Senecio pauperculus</i>	balsam groundsel	herb	FAC+	3
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Sporobolus asper</i>	drop seed	herb	UPL	3
<i>Taraxacum officinale</i>	common dandelion	herb	FACU	*
<i>Trifolium hybridum</i>	alsike clover	herb	FAC-	*
<i>Trifolium pratense</i>	red clover	herb	FACU+	*
<i>Trifolium repens</i>	white clover	herb	FACU+	*
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Ulmus americana</i>	American elm	shrub, herb	FACW-	5
<i>Ulmus pumila</i>	Siberian elm	tree, shrub, herb	UPL	*
<i>Ulmus rubra</i>	slippery elm	shrub	FAC	3
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Verbena stricta</i>	hoary vervain	herb	UPL	2
<i>Verbena urticifolia</i>	white vervain	herb	FAC+	3
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

\*Species not native to Illinois

$$FQI = R/\sqrt{N} = 101/\sqrt{47} = 14.7$$

$$\text{mean } C = R/N = 101/47 = 2.1$$

**Planted Tree Species**

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Carya illinoensis</i>	pecan	shrub	FACW	6
<i>Fraxinus pennsylvanica</i>	green ash	sapling	FACW	2
<i>Platanus occidentalis</i>	sycamore	sapling	FACW	3
<i>Quercus bicolor</i>	swamp white oak	sapling	FACW+	7
<i>Quercus palustris</i>	pin oak	sapling	FACW	4

$$FQI = R/\sqrt{N} = 121/\sqrt{51} = 16.9$$

$$\text{mean } C = R/N = 121/51 = 2.4$$

(These calculations include the complete species list above, as well as the planted trees.)

### **Appendix B. Photographs of Wetland Mitigation Sites**

(Only photographs from Photostations 1 and 2 are included in this report; the cattail marsh had overtaken the other photostations making photo documentation impossible.)



Figure 1. Photo station 1, facing west.



Figure 2. Photo station 2, facing west.