

TRANSMITTAL

To: Bureau of Design and Environment
 Attention: Matthew J. Sunderland
 From: Illinois Natural History Survey
 Regarding: Wetland Mitigation Monitoring

Title and Location

Title: FAU 5822 (Milan Beltway)
 Location: West Rock River Crossing
 Site: Milan
 Job Number: P-92-096-84 (BDE Seq. No. 67)
 Section Number: 1-3
 County: Rock Island
 IDOT District: 2

Survey Conducted By: Brian Wilm, David Ketzner, and Jason Zylka
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Date Conducted: July 6, 2006

Project Summary:

Monitoring was conducted for the first on the site created as wetland compensation for FAU 5822 (Milan Beltway). This is the Milan site, located in Rock Island County, Illinois. Introductory information, goals, objectives, performance criteria, methods, and results are presented in this report, followed by discussion, summary and recommendations. A tree planting list and a copy of the digital orthoquad (DOQ) (with the site identified) are also included. Appendices contain the wetland determination forms (including full species lists) and photographs.

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

Signed: _____
 Dr. Edward J. Heske
 INHS/IDOT Project Principal Investigator

Date: _____

Date: _____

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 8.1 ha 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 first time on July 6, 2006. All trees had apparently been planted at the time of monitoring.

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. 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.

Objective: Establishment of 3.24 ha of emergent wetland (including the preexisting marsh present before farming was halted) and 4.83 ha 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, and 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 (*i.e.* 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

Illinois State Geological Survey (ISGS) personnel have installed a variety of hydrologic monitoring devices at the site and will be responsible for monitoring site hydrology (Fucciolo et al. 2006).

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.

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

All of the 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. 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 each of the three plant communities present in 2006 (marsh, non-native grassland 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 1 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 (ΣC) and dividing by the total number of native species (N). The FQI is then calculated by dividing the ΣC 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

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

Results

Project goal 1

a. Predominance of hydrophytic vegetation

Dominant plant species for all three plant communities on the site are found in Tables 2-4. The marsh community is the only community to have dominant hydrophytic vegetation. The non-native grassland and the tree planted area are both dominated by non-hydrophytic vegetation. If planted tree species were included, the tree planted area would then have dominant hydrophytic vegetation.

Table 2. Dominant plant species for the marsh community, July 2006.

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

Table 3. Dominant plant species for the non-native grassland community, July 2006.

Dominant Plant Species	Stratum	Indicator Status
1. <i>Bromus inermis</i>	herb	UPL
2. <i>Solidago canadensis</i>	herb	FACU

Table 4. Dominant plant species for the tree planted area (excluding planted trees), July 2006.

Dominant Plant Species	Stratum	Indicator Status
1. <i>Bromus inermis</i>	herb	UPL
2. <i>Lolium perenne</i>	herb	FACU

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 satisfied the wetland hydrology criteria for more than 5% of the 2006 growing season was 4.4 ha (Fucciolo et al. 2006). This was the exact same area that satisfied the wetland hydrology criteria for more than 12.5% of the growing season (Fucciolo et al. 2006). This area corresponded to the portion of the site covered by the marsh community (Figure 1). The rest of the site did not meet the wetland hydrology criteria during 2006. More detailed hydrologic information can be found in the ISGS annual report for active IDOT wetland compensation and hydrologic monitoring sites (Fucciolo et al. 2006).

Milan Beltway (FAU 5822) Wetland Compensation
Milan Site - Rock Island County
July 2006



0 400 800 Feet



scale 1:4800
1 inch=400 ft

0 100 200 Meters



 Project site



Figure 1. Plant communities at the Milan wetland compensation site, July 2006.

Project goal 2

a. Planted species survivorship

Results of the planted tree count are shown in Table 5. Tree survival appeared to very high, with the exception of pecan. In all, 90.6% survival was reported for 2006. Based on a calculated area of 2.8 hectares for the tree planted area, 179.6 trees/ha were found alive in 2006. This exceeds the performance criteria of a minimum of 136 trees/ha.

Table 5. Number of trees counted and percent tree survival (by species).

Species	Common Name	Number Planted	Number Counted	% Survival.
<i>Carya illinoensis</i>	Pecan	111	56	54.3
<i>Fraxinus pennsylvanica</i>	Green Ash	111	113	100.5
<i>Platanus occidentalis</i>	Sycamore	111	111	99.8
<i>Quercus palustris</i>	Pin Oak	111	118	96.4
<i>Quercus bicolor</i>	Swamp White Oak	111	105	94.6
Dead (apparently)			58	
TOTAL (apparently live)		555	503	90.6

b. Native species composition

Within the marsh community, 58.9% of the species present were non-weedy, native perennials and within the non-native grassland, 54.5%. However, within the tree planted area, only 29.5% of the plant species were non-weedy, native, perennials. The marsh and non-native grassland communities meet the minimum standard for native species composition (50%), while the tree planted area does not, even if native, planted tree species were included.

The calculated floristic quality index (FQI) for the marsh community was 14.66, with a mean coefficient of conservatism (mean C) of 2.26. The non-native grassland community showed a FQI of 9.17 and a mean C of 1.91. The tree planted area had a FQI of 7.49 and a mean C of 1.30 when excluding planted trees, as compared to 10.54 and 1.71 when they were included. The marsh can be considered to have fair floristic quality, while both the non-native grassland and the tree planted area have poor floristic quality.

c. Dominance of vegetation

None of the three plant communities present on the wetland compensation site meet 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 non-native grassland community, awnless brome (*Bromus inermis*), an exotic, is by far the most dominant species. For the tree planted area, both dominants awnless brome and crested rye grass (*Lolium perenne*) are exotics.

Discussion, Summary and Recommendations

After the first monitoring season, Project Goal 1 (creation of jurisdictional wetland) has only partially been met. Wetland habitat appears to be present only in the marsh community. Hydric soils are present throughout the site, but only in the marsh are dominant hydrophytic vegetation and wetland

hydrology present. Continued hydrologic monitoring by the ISGS will determine whether or not wetland hydrology develops in the areas currently lacking. It is possible that wetland hydrology might yet occur or that 2006 may just have been a “dry” year at the site. The lack of dominant hydrophytic vegetation within the non-native grassland and the tree planted area may not be favorably resolved without active management. Specifically, the presence of awnless brome is especially problematic. This species is already present as a near monoculture throughout much of the non-native grassland community. Once established in high density, it tends to maintain itself, usually expanding and excluding other favorable species. If dominant hydrophytic vegetation is to become established, herbicide treatment of the awnless brome may be necessary.

Project goal 2 (meeting minimum standards for planted species survival and floristic composition) has also met with mixed results thus far. Planted tree survivorship, as measured in 2006, appears to be favorable. Over 90% of planted trees were found alive and at a density of 179.6 trees/ha, well above the required performance criteria.

Minimum standards for native species composition were found to have been met in the marsh and non-native grassland community, but not in the tree planted area. Many annual and exotic species typical of disturbed, early successional communities were prevalent in this area. However, in time, it is very likely that many of these species will disappear and that native, perennials may take their place. Continued monitoring in upcoming years will determine whether or not this appears to be the trend. If so, active management of the plant community (e.g., herbicide treatment) may not be necessary. Also, as planted tree species grow, they will likely shade out some of early successional, shade intolerant species.

Floristic quality within the marsh community appears to be acceptable (fair), while it appears very poor within the non-native grassland and planted tree area. The dominance of awnless brome in the non-native grassland has a very negative impact on floristic quality. Its active management, as already discussed, could have a positive impact on the floristic quality. Within the tree planted area, natural succession over time, also as previously discussed, should increase floristic quality to an acceptable level.

All three 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. The non-native grassland is greatly dominated by awnless brome. Like narrowleaf cattail, awnless brome is likely to persist and dominate without herbicide control. Within the tree planted area, awnless brome and crested rye grass, both exotics, are the only dominants. However, they are not strongly dominant in this area and a variety of early successional species are present in this disturbed community. Natural community development may enable favorable dominant species to become prevalent over time. If not, herbicide treatment may also be an option for this area.

In summary, the primary concerns are establishing wetland hydrology over the majority of the site and developing acceptable, dominant, native, hydrophytic, plant communities. As of 2006, only 4.4 ha of wetland had been created.

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, Ketzner, and Zylka **Date:** July 6, 2006
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

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>Typha angustifolia</i>	herb	OBL

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

Hydrophytic vegetation: Yes: X 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: 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

Redox Depletions? Yes: No: X

Matrix color: N 3/

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. 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 3 of 4)

Field Investigators: Wilm, Wiesbrook, Ketzner, and Zylka **Date:** July 6, 2006
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>Abutilon theophrasti</i>	buttonweed	herb	FACU-	*
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer saccharinum</i>	silver maple	shrub	FACW	1
<i>Alisma plantago-aquatica</i>	broad-leaf water-plantain	herb	OBL	2
<i>Amaranthus tuberculatus</i>	tall waterhemp	herb	OBL	1
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	3
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Carex cristatella</i>	crested oval sedge	herb	FACW+	3
<i>Carex stipata</i>	prickly sedge	herb	OBL	2
<i>Carex tribuloides</i>	sedge	herb	FACW+	3
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	2
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	*
<i>Cyperus</i> sp.	flatsedge	herb	----	--
<i>Epilobium coloratum</i>	cinnamon willow herb	herb	OBL	3
<i>Erechtites hieracifolia</i>	fire weed	herb	FACU	2
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Fraxinus pennsylvanica</i>	green ash	sapling	FACW	2
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Hordeum jubatum</i>	fox-tail barley	herb	FAC+	*
<i>Juncus dudleyi</i>	Dudley rush	herb	FAC	4
<i>Juncus torreyi</i>	Torrey rush	herb	FACW	3
<i>Lactuca serriola</i>	compass plant	herb	FAC	*
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<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	*

*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, Ketzner, and Zylka **Date:** July 6, 2006
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>Morus alba</i>	white mulberry	shrub, herb	FAC	*
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Phyla lanceolata</i>	fog-fruit	herb	OBL	1
<i>Physalis subglabrata</i>	smooth ground cherry	herb	UPL	0
<i>Polygonum hydropiper</i>	common smartweed	herb	OBL	*
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Populus deltoides</i>	eastern cottonwood	tree, sapling	FAC+	2
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix amygdaloides</i>	peach-leaved willow	sapling, shrub	FACW	4
<i>Salix exigua</i>	sandbar willow	shrub	OBL	1
<i>Salix nigra</i>	black willow	sapling	OBL	3
<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>Sphenopholis obtusata</i>	prairie wedge grass	herb	FAC	5
<i>Taraxacum officinale</i>	common dandelion	herb	FACU	*
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2
<i>Xanthium strumarium</i>	cockle bur	herb	FAC	0

*Species not native to Illinois

$$FQI = R/\sqrt{N} = 95/\sqrt{42} = 14.66$$

$$\text{mean } C = R/N = 95/42 = 2.26$$

ROUTINE ONSITE WETLAND DETERMINATION
Wetland Compensation for Milan Beltway-Milan Site
Non-native Grassland (page 1 of 3)

Field Investigators: Wilm, Wiesbrook, Ketzner, and Zylka **Date:** July 6, 2006
Project Name: FAU 5822 (Milan Beltway-Milan Site) **IDOT District:** 2
State: Illinois **County:** Rock Island **Community Name:** Non-native Grassland
Legal Description: NW/4, NE/4, Section 19, T. 17 N., R. 1 W
Location: The central portion of site, between the marsh and the tree planted area

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>Bromus inermis</i>	herb	UPL
2. <i>Solidago canadensis</i>	herb	FACU

Percentage of dominant species that are OBL, FACW, FACW+, FACW-, FAC+, or FAC: 0%

Hydrophytic vegetation: Yes: No: X

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

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

Redox Depletions? Yes: No: X

Matrix color: 2.5 Y 2.5/1 over N 3/ over 2.5Y 3/1 and 4/1

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 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.

ROUTINE ONSITE WETLAND DETERMINATION
Wetland Compensation for Milan Beltway-Milan Site
Non-native Grassland (page 3 of 3)

Field Investigators: Wilm, Wiesbrook, Ketzner, and Zylka **Date:** July 6, 2006
Project Name: FAU 5822 (Milan Beltway-Milan Site) **IDOT District:** 2
State: Illinois **County:** Rock Island **Community Name:** Non-native Grassland
Legal Description: NW/4, NE/4, Section 19, T. 17 N., R. 1 W
Location: The central portion of site, between the marsh and the tree planted area

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Acer negundo</i>	box elder	shrub	FACW-	1
<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>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bromus inermis</i>	awnless brome grass	herb	UPL	*
<i>Carduus nutans</i>	musk bristle thistle	herb	UPL	*
<i>Catalpa</i> sp.	catalpa	shrub	FACU	0
<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>Daucus carota</i>	Queen-Anne's-lace	herb	FACU-	*
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Fraxinus pennsylvanica</i>	green ash	shrub, herb	FACW	2
<i>Geum laciniatum</i>	rough avens	herb	FACW	2
<i>Juncus dudleyi</i>	Dudley rush	herb	FAC	4
<i>Juniperus virginiana</i>	eastern red cedar	herb	FACU	1
<i>Lactuca canadensis</i>	Canada lettuce	herb	FACU+	1
<i>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Lythrum alatum</i>	winged loosestrife	herb	OBL	5
<i>Melilotus</i> sp.	sweet clover	herb	FACU	*
<i>Morus alba</i>	white mulberry	shrub	FAC	*
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Poa pratensis</i>	Kentucky bluegrass	herb	FAC-	*
<i>Populus deltoides</i>	eastern cottonwood	shrub, herb	FAC+	2
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Scirpus atrovirens</i>	dark green rush	herb	OBL	4
<i>Senecio pauperculus</i>	balsam groundsel	herb	FAC+	4
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Taraxacum officinale</i>	common dandelion	herb	FACU	*
<i>Ulmus americana</i>	American elm	herb	FACW-	5
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

*Species not native to Illinois

$FQI = R/\sqrt{N} = 44/\sqrt{23} = 9.17$
mean $C = R/N = 44/23 = 1.91$

ROUTINE ONSITE WETLAND DETERMINATION
Wetland Compensation for Milan Beltway-Milan Site
Tree Planted Area (page 1 of 5)

Field Investigators: Wilm, Wiesbrook, Ketzner, and Zylka **Date:** July 6, 2006
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

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>Bromus inermis</i>	herb	UPL
2. <i>Lolium perenne</i>	herb	FACU

Percentage of dominant species that are OBL, FACW, FACW+, FACW-, FAC+, or FAC: 0%

Hydrophytic vegetation: Yes: No: X

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

***If planted tree species were included, dominant hydrophytic vegetation would be present.**

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.

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

Field Investigators: Wilm, Wiesbrook, Ketzner, and Zylka **Date:** July 6, 2006
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

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Abutilon theophrasti</i>	buttonweed	herb	FACU-	*
<i>Acer negundo</i>	box elder	shrub	FACW-	1
<i>Agropyron repens</i>	couch grass	herb	FACU	*
<i>Amaranthus tuberculatus</i>	tall waterhemp	herb	OBL	1
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	common ragweed	herb	FAC+	0
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	3
<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>Bidens frondosa</i>	common beggar-ticks	herb	FACW	1
<i>Brassica nigra</i>	black mustard	herb	UPL	*
<i>Bromus commutatus</i>	hairy brome	herb	UPL	*
<i>Bromus inermis</i>	awnless brome grass	herb	UPL	*
<i>Calystegia sepium</i>	American bindweed	herb	FAC	1
<i>Carduus nutans</i>	musk bristle thistle	herb	UPL	*
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	2
<i>Chamaesyce maculata</i>	nodding spurge	herb	FACU-	0
<i>Chenopodium album</i>	lamb's quarters	herb	FAC-	*
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	*
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cornus drummondii</i>	rough-leaved dogwood	shrub, herb	FAC	2
<i>Cyperus</i> sp.	flatsedge	herb	----	--
<i>Daucus carota</i>	Queen-Anne's-lace	herb	FACU-	*
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<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>Fraxinus pennsylvanica</i>	green ash	shrub, herb	FACW	2
<i>Hordeum jubatum</i>	fox-tail barley	herb	FAC+	*
<i>Juniperus virginiana</i>	eastern red cedar	shrub, herb	FACU	1
<i>Lepidium virginicum</i>	common peppergrass	herb	FACU-	0
<i>Lolium perenne</i>	crested rye grass	herb	FACU	*

*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, Ketzner, and Zylka **Date:** July 6, 2006
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>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Medicago lupulina</i>	black medic	herb	FAC-	*
<i>Melilotus alba</i>	white sweet clover	herb	FACU	*
<i>Melilotus officinalis</i>	yellow sweet clover	herb	FACU	*
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0
<i>Plantago lanceolata</i>	buckhorn	herb	FAC	*
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum lapathifolium</i>	currtop 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>Populus deltoides</i>	eastern cottonwood	tree, sapl, shr, herb	FAC+	2
<i>Ratibida pinnata</i>	drooping coneflower	herb	UPL	4
<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>Secale cereale</i>	rye	herb	UPL	*
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Sonchus arvensis</i>	field sowthistle	herb	FAC-	*
<i>Sonchus asper</i>	prickly sowthistle	herb	FAC	*
<i>Taraxacum officinale</i>	common dandelion	herb	FACU	*
<i>Thlaspi arvense</i>	field penny cress	herb	UPL	*
<i>Trifolium hybridum</i>	alsike clover	herb	FAC-	*
<i>Trifolium pratense</i>	red clover	herb	FACU+	*
<i>Ulmus pumila</i>	Siberian elm	tree, herb	UPL	*
<i>Verbascum thapsus</i>	woolly mullein	herb	UPL	*
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2

*Species not native to Illinois

$$FQI = R/\sqrt{N} = 43/\sqrt{33} = 7.49$$

$$\text{mean } C = R/N = 43/33 = 1.30$$

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

Field Investigators: Wilm, Wiesbrook, Ketzner, and Zylka **Date:** July 6, 2006
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

Planted Saplings
 SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism
<i>Carya illinoensis</i>	pecan	sapling	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

$FQI = R/\sqrt{N} = 65/\sqrt{38} = 10.54$

$mean\ C = R/N = 65/38 = 1.71$

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

Appendix B. Photographs of Wetland Mitigation Sites



Figure 1. Photo station 1, facing west.



Figure 2. Photo station 2, facing west.



Figure 3. Photo station 3, facing west.



Figure 4. Photo station 4, facing east.



Figure 5. Photo station 5, facing east.



Figure 6. Photo station 5, facing north.



Figure 7. Photo station 6, facing east.