

Date: \_\_\_\_\_

## **WETLAND MITIGATION SITE MONITORING REPORT FAP 322 (U.S. 51), Jackson County, IL - 2005**

### **Introduction**

This report details the fourth year of monitoring of the wetland mitigation sites created to compensate for approximately 0.8 ha (2 ac) of wetlands impacted as a result of FAP 322 (U.S. 51) relocation and improvement, in Jackson County, Illinois. For reports detailing the first, second, and third years of monitoring see Busemeyer et al. (2002), Busemeyer et al. (2003), and Busemeyer and Wiesbrook (2004) respectively.

Three areas of wet meadow creation were proposed for the project. Two of these areas (Sites 4 and 5) were actually created. Together these two sites cover approximately 0.52 ha (1.27 ac). Native grasses and cover crops were said to be planted at these sites along with bald cypress (*Taxodium distichum*), swamp white oak (*Quercus bicolor*), and pin oak (*Quercus palustris*) seedlings. A third wet meadow creation area (marked Site 9, Appendix C, Figure 2) was found to be unaltered. Besides the wet meadow creation areas, a backwater high flow channel/floodplain forest enhancement was created (Site 2a). This area covers approximately 0.10 ha (0.25 ac). Native grasses and cover crops were said to be planted in this area with the expectation that native hydrophytic tree species from surrounding areas will colonize the site. A second floodplain forest enhancement was not implemented (Site 7, Appendix C, Figure 2). Streambank restoration was proposed and carried out on an area covering approximately 0.17 ha (0.42 ac) (Site 1). At this site river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), white pine (*Pinus strobus*), swamp white oak (*Quercus bicolor*), pin oak (*Quercus palustris*), and bald cypress (*Taxodium distichum*) seedlings were planted. Two adjacent areas of floodplain forest preservation (Sites 8 and 10) and two areas of upland forest buffer (Sites 3 and 6) are also listed on the schematic diagram (Appendix C, Figure 2) although these areas have had no apparent topographic, hydrologic, or vegetative alterations.

This complex of sites is located along the east side of U.S. Route 51, adjacent to a channelized section of Piles Fork Creek (a tributary of Orchard Creek), alongside the campus of Southern Illinois University south of Carbondale, IL. The legal location is W/2, SE/4, Section 28, T. 9 S., R. 1 W. The project area lies within the United States Geological Survey Mississippi River hydrologic unit 07140106 (Big Muddy River). Details concerning the timing of site construction and tree planting were not provided. It seems likely, however, that the Illinois Department of Transportation (IDOT) completed construction of the site around spring 2002 and that trees were planted on the site around the same time or shortly thereafter. Additional trees were planted on the site between August of 2002 and August of 2003.

This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, monitoring results, and a discussion

and recommendations based on the results. Methods and results are discussed by performance criteria for each goal. Wetland determination forms have been completed for Sites 4 and 5 and for both the altered and unaltered sections of Site 2 [the backwater channel creation (Site 2a) and the mesic floodplain forest (Site 2b)]. These forms are included in Appendix A. Photos of Sites 2a, 2b, 4, and 5 were taken during on-site monitoring on 30 August 2005 are included in Appendix B. An Illinois State Geological Survey figure (from Fucciolo et al. 2005) showing the extent of measured wetland hydrology for 2005 and a second figure showing the boundaries of the wetland creation/enhancement sites is included in Appendix C.

### **Goals, Objectives, and Performance Standards**

Goals, objectives, and performance standards follow those specified in the tasking order (Scott Marlow, IDOT Wetlands Unit, 2002) developed for this site and the wetland compensation plan (Charles Perino, IDOT Wetlands Unit, 1996). Performance criteria are based on those specified in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) 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:** Wet meadow communities (sites 4 and 5) and high flow backwater channel/wetland floodplain forest enhancement areas (sites 2a and 2b) will meet the criteria of jurisdictional wetlands.

**Objective:** The created wetlands should cover approximately 0.8 ha (2.0 ac).

**Performance criteria:**

- a. Predominance of hydrophytic vegetation: More than 50% of the dominant plant species must be hydrophytic in the created wetlands.
- b. Presence of wetland hydrology: The created wetlands must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated within 30 cm (12 in) of the surface for at least 12.5% of the growing season.
- c. Occurrence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist in the created wetlands.

**Project goal 2:** Created wet meadows (Sites 4 and 5) and high flow backwater channel/wetland floodplain forest enhancement areas (sites 2a and 2b) will meet minimum standards of floristic composition.

**Objective:** All mitigation areas should be composed of vegetation characteristic of the stated community type.

**Performance criteria:**

- a. Full vegetative cover of the sites: Mitigation sites must have at least 75% vegetative cover.

- b. Predominance of non-weedy native vegetation: None of the three most dominant species in any stratum at any of the sites may be invasive native or exotic species such as *Typha* spp. (cattails), *Phalaris arundinacea* (reed canary grass), or *Lonicera* spp. (honeysuckles).
- c. Predominance of herbaceous vegetation in wet meadow creations: After five years none of the dominant species may be woody in the wet meadow areas.

**Project goal 3:** Floodplain forest will be established along the Piles Fork Creek streambank restoration (Site 1).

**Objective:** Floodplain forest should cover approximately 0.1 ha (0.2 ac). Native non-invasive herbaceous understory vegetation should colonize the site naturally.

**Performance criteria:**

- a. Establishment of tree seedlings: 50% of planted trees must survive after five years.
- b. Dominance of woody vegetation: Woody vegetation should predominate.

## 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 vegetation in the wetland plant community exists if more than 50% of the dominant species present are hydrophytic.

- b. Presence of wetland hydrology

Illinois State Geological Survey (ISGS) personnel installed 16 ground water monitoring wells, one rain gauge, one global data logger, one RDS data logger, and one staff gauge at the site in 2002 and 2003. Locations for these sites can be found in the ISGS document *Annual Water-level Report for Active IDOT Sites* (Appendix C; Fucciolo et al. 2003; and Fucciolo et al. 2004). Water-level data was collected monthly from May 2002 through 2005. The ISGS has reported on the hydrology of the site in Fucciolo et al. 2003, Fucciolo et al. 2004, and Fucciolo et al. 2005 and is reproduced [for 2005] in Appendix C). Secondary hydrology indicators were also noted during fieldwork on 18 July 2002, 11 September 2003, 18 August 2004, and 30 August 2005.

- c. Occurrence of hydric soils

At each creation/restoration site the soil was sampled in order to monitor hydric soil development. Soil profile morphology including horizon color, texture, and structure was described. Additionally, the presence, type, size, and abundance of redoximorphic features was 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 soils 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.

**Project goal 2**

a. 75% vegetative cover of the sites

Percent cover for each site was determined by visual estimation. After five years each of the sites should have at least 75% cover.

b. Predominance of non-weedy native vegetation

Species lists were compiled for each site. Dominant species and all weedy or non-native species were noted. After five years no weedy or non-native species should be dominant in any of the sites.

c. Predominance of herbaceous vegetation in wet meadow creations

Any dominant woody plant species for the wet meadow creations have been noted. After five years no woody species should be dominant in the wet meadow creation sites.

**Project goal 3**

a. Establishment of tree seedlings

In order to establish floodplain forest, tree seedlings were planted at Site 1. All planted trees were counted and percent survival was calculated for each species. In the floodplain forest enhancement area (Site 2a) propagules from the surrounding forest are expected to regenerate the high flow backwater channel area naturally.

b. Dominance of woody vegetation

After five years the site should be dominated by hydrophytic woody species.

## Results

### Project goal 1

#### a. Predominance of hydrophytic vegetation

Dominant plant species for the wet meadow creation areas (Sites 4 and 5) and the high flow backwater channel/floodplain forest enhancement areas (Site 2a and 2b) are shown in Table 1 (below). Since 100% of the dominant species at Sites 2a, 4, and 5 and 67% of the dominant species at site 2b are rated OBL, FACW+, FAC+, or FAC, hydrophytic vegetation is present at all wetland creation/ enhancement sites.

Table 1. Dominant plant species by stratum and wetland indicator status

Dominant Plant Species	Stratum	Indicator Status
Site 2a.		
1. <i>Bidens cernua</i>	herb	OBL
2. <i>Bidens frondosa</i>	herb	FACW
3. <i>Leersia oryzoides</i>	herb	OBL
Site 2b.		
1. <i>Fraxinus pennsylvanica</i>	tree	FACW
2. <i>Platanus occidentalis</i>	tree	FACW
3. <i>Asimina triloba</i>	sapling	FAC
4. <i>Rosa multiflora</i> *	shrub	FACU
5. <i>Toxicodendron radicans</i>	shrub	FAC+
6. <i>Lonicera japonica</i> *	herb	FACU
Site 4.		
1. <i>Salix nigra</i>	shrub	OBL
2. <i>Iva annua</i> *	herb	FAC
3. <i>Leersia oryzoides</i>	herb	OBL
Site 5.		
1. <i>Salix nigra</i>	shrub	OBL
2. <i>Iva annua</i> *	herb	FAC
3. <i>Leersia oryzoides</i>	herb	OBL
* Non-native or weedy native species		

#### b. Presence of wetland hydrology

The project area is adjacent to Piles Fork Creek. This creek floods parts of the project area in at least some years during the growing season. A small tributary to Piles Fork Creek also contributes water to Site 4. This year beaver construction activity put additional water on Site 4. The Illinois State Geological Survey (ISGS) found that wetland hydrology was present over parts of Sites 2a, 4, and 5 for sufficient duration during the growing season in 2005 to satisfy the wetland hydrology criterion (Appendix C, Figure 1; Fucciolo et al. 2005). The ISGS estimated the total area that conclusively met the wetland hydrology criterion

(saturated for 12.5% of the growing season) in Sites 2a, 4, and 5 during 2005 to be approximately 0.2 ha (0.5 ac). The ISGS estimated that an additional 0.1 ha (0.1 ac) may meet the wetland hydrology criterion. This latter area was saturated for at least 5% of the growing season.

Secondary indicators of wetland hydrology, particularly matted vegetation and sediment deposits, were also found during field investigation of Sites 2a, 4, and 5. Neither we nor the ISGS found any indication of wetland hydrology at Site 1 (streambank/ floodplain forest restoration), Site 2b (floodplain forest enhancement), or any of the other sites in the project area which were not altered by restoration activities (Sites 3, 6, 7, 8, 9, and 10).

c. Occurrence of hydric soils

Soils examined at both the wet meadow creation sites (Sites 4 and 5) and the backwater high flow channel (Site 2a) were found to be highly disturbed. Much cutting and filling has been done within the top twenty inches and the sites lack a true undisturbed A horizon and part of the B horizon. Even though the soils are disturbed, hydric soil indicators are present. Following is a soil description of a typical pedon at the created wetland sites (Table 2).

Table 2. Description of the soils in the created wetlands

<u>Depth</u>	<u>Matrix Color</u>	<u>Iron Concentrations</u>	<u>Iron Depletions</u>	<u>Texture</u>	<u>Structure</u>
0-13+ in	10YR 4/1, 5/1, 4/3	mmp 7.5YR 4/6 cmp 10YR 4/6	10YR 5/1	SiL	Gr

**Project goal 2**

a. Full vegetative cover of the sites

At the time of the survey all sites had nearly full (> 95%) vegetative cover.

b. Predominance of non-weedy native vegetation

Dominant plant species at each site are listed by strata in Table 1. The quality of vegetation at all of the sites is moderate to good. Floristic quality index (FQI) values range from 13.0 (Site 2b) to 22.1 (Site 4) with mean C values (mCv) ranging from 2.7 (Sites 4 and 5) to 2.8 (Sites 2a and 2b). However, a number of non-native plants as well as several weedy native species are present at each site. In particular one of the dominants (*Iva annua*) in Sites 4 and 5 is a weedy native species. Non-native or weedy native species may need to be controlled in order to lessen their abundance. However, as long as quality native plant species are not crowded out of the creation sites by non-native or weedy native species the quality of the vegetation should stay the same or improve over the next few years. Species lists for each of the creation/enhancement sites (Sites 2a, 2b, 4 and 5) are given in Appendix A.

c. Predominance of herbaceous vegetation in wet meadow creations

Shrub size individuals of several tree species [particularly *Populus deltoides* (cottonwood) and *Salix* spp. (willow)] are present in both of these sites. *Salix nigra* is now a dominant shrub in Sites 4 and 5. Furthermore, both Sites 4 and 5 are surrounded by forest which will

continue to be a source of propagules. Woody vegetation may, therefore, need to be controlled if these sites are to be maintained as wet meadows.

Along with aggressive woody species which may invade the wet meadow restorations (Sites 4 and 5), a number of seedlings of *Quercus bicolor* (swamp white oak), *Quercus palustris* (pin oak), and *Taxodium distichum* (bald cypress) have been planted within or on the edge of the wet meadow sites (Table 3). As these trees mature they will tend to change the character of these restoration sites from wet meadow to wet shrubland and finally to floodplain forest. This circumstance may need to be addressed in coming years.

Table 3. Tree seedling establishment in the wet meadow restorations (Sites 4 and 5).

Species	Common Name	Present	Planted	Percent Surviving
<i>Quercus bicolor</i>	swamp white oak	10	11	91
<i>Quercus palustris</i>	pin oak	1	1	100
<i>Taxodium distichum</i>	bald cypress	76	76	100
<b>Total</b>		<b>87</b>	<b>88</b>	99

### Project goal 3

#### a. Establishment of tree seedlings

Table 4 shows the planted and surviving trees in Site 1. A total of 202 live planted trees were counted. Survival of the planted trees is 50%; exactly what is required.

Table 4. Tree seedling establishment in the floodplain forest restoration (Site 1).

Species	Common Name	Present	Planted	Percent Surviving
<i>Betula nigra</i>	river birch	10	75	13
<i>Fraxinus pennsylvanica</i>	green ash	29	29	100
<i>Pinus strobus</i>	white pine	35	51	69
<i>Quercus bicolor</i>	swamp white oak	12	25	48
<i>Quercus palustris</i>	pin oak	5	13	38
<i>Taxodium distichum</i>	bald cypress	11	9	122
<b>Total</b>		<b>102</b>	<b>202</b>	50

No tree seedlings have been planted at the backwater high flow channel (Site 2). However the site is bordered by floodplain forest dominated by *Fraxinus pennsylvanica* (green ash) and *Platanus occidentalis* (sycamore). Volunteer individuals of several tree species including *Betula nigra* (river birch), *Fraxinus pennsylvanica* (green ash), *Juglans nigra* (walnut), *Platanus occidentalis* (sycamore), *Populus deltoides* (cottonwood), *Quercus palustris* (pin oak), and *Salix nigra* (black willow) have established as seedlings at the site as a result of propagules from nearby floodplain forest.

#### b. Dominance of woody vegetation

At Site 1 after three years the surviving planted tree seedlings are healthy. Woody dominance at this site will continue to expand as these trees get larger and natural regeneration progresses.

### Discussion

After four years of monitoring, the vegetation in the wetland creation areas (Sites 2a, 4, and 5) is of moderate to good quality and is dominated by hydrophytic species. The vegetation at these sites should stay the same or show improvement in quality and diversity in coming years as long as non-native or weedy native species do not crowd out desirable native species. At the present time Sites 2b, 4, and 5 each have one or two dominant non-native or weedy native species. One weedy native, *Iva annua* (marsh elder), is an annual species which should decrease in abundance over time. Woody vegetation is beginning to dominate the wet meadow creation areas (Sites 4 and 5). If woody species are not controlled these sites will become floodplain forest. The dominance of woody species in the floodplain forest/ high flow channel restoration (Site 2a) is desirable and will probably increase since floodplain forest is nearby.

Soils at all restoration sites have been seriously disturbed. Even so, they do contain hydric soil indicators, and therefore can be characterized as hydric. The primary concern at this time for wetland establishment at these sites is continuing wetland hydrology. Hydrology is being monitored by the ISGS. In the 2005 growing season wetland hydrology was present on a total of 0.3 ha (0.6 ac) among Sites 2a, 4, and 5 during 5% of the growing season and 0.2 ha (0.5 ac) during 12.5% of the growing season (Appendix C, Figure 1; Fucciolo et al. 2005). The ISGS may suggest remedial work in the area to improve hydrology.

It should also be noted that the created backwater channel (Site 2a) has not been constructed in a manner that will bring water to the adjacent mesic floodplain forest (Site 2b). This non-wetland forest cannot be expected to develop hydric soils or wetland hydrology with the current hydrologic and topographic conditions and has shown no indications of wetland hydrology in any year of monitoring (Appendix C, Figure 1; Fucciolo et al. 2003, 2004, and 2005).

Large tree seedlings have been planted in the streambank restoration area (Site 1) and in the wet meadow restorations (Sites 4 and 5). 202 live planted trees were counted in Site 1, 11 in Site 4, and 76 in Site 5. Woody species invasion and maturation of planted trees species in the wet meadow creations (Sites 4 and 5) is changing the character of these areas to wet shrubland and ultimately to floodplain forest. This issue may need to be addressed if credit is specifically needed to mitigate for emergent wetland impacts. Also, in the streambank restoration (Site 1) *Pinus strobus* (white pine) seedlings have been planted. It should be noted that white pine is not native to southern Illinois and is not normally associated with floodplain forests.

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**Appendix A**  
**Wetland Determination Forms**

## ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 1 of 4)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** High flow channel creation/floodplain forest enhancement

**Legal Description:** W/2, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This high flow channel creation/floodplain forest enhancement is located 52 m (171 ft) east of U.S. 51, 390 m (1283 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

Do normal environmental conditions exist at this site?

Yes: X No:

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

### VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Bidens cernua</i>	OBL	herb
2. <i>Bidens frondosa</i>	FACW	herb
2. <i>Leersia oryzoides</i>	OBL	herb

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: Undetermined (soil excavated)

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: 7.5YR 4/6 and 10YR 4/6

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

Matrix color: 10YR 4/1, 5/1, 5/2, over 4/3

Other indicators: This soil was found in a depressional area.

**Hydric soils?** Yes: X No:

**Rationale:** This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 2 of 4)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

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

**Site Name:** High flow channel creation/floodplain forest enhancement

**Legal Description:** W/2, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This high flow channel creation/floodplain forest enhancement is located 52 m (171 ft) east of U.S. 51, 390 m (1283 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### HYDROLOGY

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

Depth to saturated soil: > 0.33 m (13 in)

Overview of hydrological flow through the system: This site receives water from overflow of Piles Fork Creek, sheet flow from adjacent higher ground, and precipitation. Water leaves the site via evapotranspiration, groundwater recharge, and flow into Piles Fork Creek.

Size of Watershed: Approximately 10 km<sup>2</sup> (3.9 mi<sup>2</sup>)

Other field evidence observed: Matted vegetation and low landscape position

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

**Rationale:** This site has been excavated to create a high flow (overflow) oxbow. There is evidence of saturation in this area during the growing season.

### DETERMINATION AND RATIONALE:

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

**Rationale:** Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, the site is a wetland. The NWI did not code this site as a wetland.

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## ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 3 of 4)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** High flow channel creation/floodplain forest enhancement

**Legal Description:** W/2, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This high flow channel creation/floodplain forest enhancement is located 52 m (171 ft) east of U.S. 51, 390 m (1283 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer negundo</i>	box elder	shrub	FACW-	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Betula nigra</i>	river birch	shrub	FACW	4
<i>Bidens cernua</i>	nodding beggar's ticks	herb	OBL	2
<i>Bidens frondosa</i>	common beggar's ticks	herb	FACW	1
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Campsis radicans</i>	trumpet creeper	shrub	FAC	2
<i>Carex typhina</i>	sedge	herb	OBL	6
<i>Cassia fasciculata</i>	partridge pea	herb	FACU-	1
<i>Cephalanthus occidentalis</i>	buttonbush	shrub	OBL	4
<i>Chasmanthium latifolium</i>	sea oats	herb	FACW	4
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cuscuta gronovii</i>	dodder	vine	FACW	2
<i>Desmodium</i> sp.	tick trefoil	herb	---	-
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Elaeagnus umbellata</i>	autumn olive	shrub	UPL	*
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Eupatorium coelestinum</i>	blue boneset	herb	FAC+	3
<i>Eupatorium perfoliatum</i>	common boneset	herb	FACW+	4
<i>Fraxinus pennsylvanica</i>	green ash	shrub	FACW	2
<i>Geum canadense</i>	white avens	herb	FAC	2
<i>Hibiscus laevis</i>	halberd-leaved rose mallow	herb	OBL	4
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Juncus effuses</i> var. <i>solutus</i>	common rush	herb	OBL	4
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lespedeza stuevei</i>	Stueve's bush clover	herb	UPL	6
<i>Liquidambar styraciflua</i>	sweet gum	shrub	FACW	6
<i>Lobelia siphilitica</i>	blue cardinal-flower	herb	FACW+	4
<i>Lonicera japonica</i>	Japanese honeysuckle	vine	FACU	*

Species list continued on next page.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 4 of 4)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

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

**Site Name:** High flow channel creation/floodplain forest enhancement

**Legal Description:** W/2, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This high flow channel creation/floodplain forest enhancement is located 52 m (171 ft) east of U.S. 51, 390 m (1283 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Lonicera maackii</i>	Amur honeysuckle	shrub	UPL	*
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Oxalis dillenii</i>	yellow wood sorrel	herb	FACU	0
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Parthenocissus quinquefolia</i>	Virginia creeper	vine	FAC-	2
<i>Phleum pratense</i>	timothy	herb	FACU	*
<i>Phragmites australis</i>	common red reed	herb	FACW+	1
<i>Phyla lanceolata</i>	fog-fruit	herb	OBL	1
<i>Polygonum hydropiperoides</i>	water pepper	herb	OBL	4
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Populus deltoides</i>	eastern cottonwood	tree	FAC+	2
<i>Rudbeckia laciniata</i>	cutleaf coneflower	herb	FACW+	3
<i>Salix nigra</i>	black willow	shrub	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Silphium perfoliatum</i>	cup plant	herb	FACW-	4
<i>Smilax hispida</i>	bristly greenbrier	vine	FAC	3
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Spermacoce glabra</i>	smooth buttonweed	herb	FACW+	4
<i>Stachys palustris</i>	woundwort	herb	OBL	5
<i>Toxicodendron radicans</i>	poison ivy	shrub	FAC+	1
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Verbena urticifolia</i>	white vervain	herb	FAC+	3
<i>Verbesina alternifolia</i>	wingstem	herb	FACW	4
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)

$$mCv = \sum C/N = 136/49 = 2.8$$

\* Non-native species

$$FQI = \sum C/(\sqrt{N}) = 136/(\sqrt{49}) = 19.4$$

## ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 1 of 3)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

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

**Site Name:** Mesic floodplain forest (floodplain forest enhancement)

**Legal Description:** W/2, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This mesic floodplain forest (floodplain forest enhancement) is located 50 m (165 ft) east of U.S. 51, 390 m (1283 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

Do normal environmental conditions exist at this site?

Yes: X No:

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

### VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Fraxinus pennsylvanica</i>	FACW	tree
2. <i>Platanus occidentalis</i>	FACW	tree
3. <i>Asimina triloba</i>	FAC	sapling
4. <i>Rosa multiflora</i> *	FACU	shrub
5. <i>Toxicodendron radicans</i>	FAC+	shrub
6. <i>Lonicera japonica</i> *	FACU	herb

\* Non-native species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 67%

**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 Bonnie silt loam;

revised to Belknap silt loam (Fluvaquentic Endoaquept)

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: 7.5YR 4/6 and 10YR 4/6

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

Matrix color: 10YR 4/3 Other indicators: None

**Hydric soils?** Yes: No: X

**Rationale:** The Natural Resources Conservation Service identifies Belknap as a Fluvaquentic Endoaquept that is somewhat poorly drained. This soil possesses redox concentrations and depletions within a high chroma matrix, which indicates saturated or reduced conditions for only brief duration during the growing season. Therefore, the soil at this site does not meet the hydric soil criterion. This soil meets none of the NRCS hydric soil indicators.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 2 of 3)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Mesic floodplain forest (floodplain forest enhancement)

**Legal Description:** W/2, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This mesic floodplain forest (floodplain forest enhancement) is located 50 m (165 ft) east of U.S. 51, 390 m (1283 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### HYDROLOGY

Inundated: Yes:

No: X

Depth of standing water: NA

Depth to saturated soil: > 0.48 m (19 in)

Overview of hydrological flow through the system: This site receives water through precipitation and, rarely, by overflow of Piles Fork Creek in large flood events. Water leaves the site via evapotranspiration, groundwater recharge, and flow into nearby Piles Fork Creek and the recently created backwater channel (Site 2a).

Size of Watershed: Approximately 10 km<sup>2</sup> (3.9 mi<sup>2</sup>)

Other field evidence observed: None

**Wetland hydrology:** Yes:

No: X

**Rationale:** This site is considerably higher than the adjacent constructed high flow channel (Site 2a) and Piles Fork Creek and is sloping down toward these areas.

### DETERMINATION AND RATIONALE:

**Is the site a wetland?** Yes:

No: X

**Rationale:** Although dominant hydrophytic vegetation is present at the site, hydric soils and wetland hydrology are lacking; therefore, the site is not a wetland. The NWI did not code this site as a wetland.

Determined by: Dan Busemeyer (vegetation and hydrology)  
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## ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 3 of 3)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Mesic floodplain forest (floodplain forest enhancement)

**Legal Description:** W/2, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This mesic floodplain forest (floodplain forest enhancement) is located 50 m (165 ft) east of U.S. 51, 390 m (1283 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Acer negundo</i>	box elder	tree	FACW-	1
<i>Acer saccharinum</i>	silver maple	tree	FACW	1
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Bromus inermis</i>	awnless brome grass	herb	UPL	*
<i>Campsis radicans</i>	trumpet creeper	shrub	FAC	2
<i>Carduus nutans</i>	musk bristle thistle	herb	UPL	*
<i>Carya cordiformis</i>	bitternut hickory	tree	FAC	4
<i>Cassia fasciculata</i>	partridge pea	herb	FACU-	1
<i>Desmodium sp.</i>	tick trefoil	herb	---	-
<i>Fraxinus pennsylvanica</i>	green ash	tree	FACW	2
<i>Gleditsia triacanthos</i>	honey locust	tree	FAC	2
<i>Juglans nigra</i>	black walnut	tree	FACU	4
<i>Lespedeza cuneata</i>	sericea lespedeza	herb	NI	*
<i>Lonicera japonica</i>	Japanese honeysuckle	vine	FACU	*
<i>Lonicera maackii</i>	Amur honeysuckle	shrub	UPL	*
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Phlox paniculata</i>	garden phlox	herb	FACU	3
<i>Platanus occidentalis</i>	sycamore	tree	FACW	3
<i>Polygonum virginianum</i>	Virginia knotweed	herb	FAC	3
<i>Quercus palustris</i>	pin oak	tree	FACW	4
<i>Rosa multiflora</i>	multiflora rose	shrub	FACU	*
<i>Rudbeckia hirta</i>	black-eyed susan	herb	FACU	2
<i>Smilax hispida</i>	bristly greenbrier	vine	FAC	3
<i>Toxicodendron radicans</i>	poison ivy	shrub	FAC+	1
<i>Ulmus americana</i>	American elm	tree	FACW-	5
<i>Verbesina alternifolia</i>	wingstem	herb	FACW	4
<i>Vitis riparia</i>	riverbank grape	vine	FACW-	2

† Coefficient of Conservatism (Taft et al. 1997)       $mCv = \sum C/N = 61/22 = 2.8$

\* Non-native species

$$FQI = \sum C/\sqrt{N} = 61/\sqrt{22} = 13.0$$

## ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 1 of 6)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Wet meadow creation

**Legal Description:** NW/4, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 550 m (1810 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

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

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

### VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Salix nigra</i>	OBL	shrub
2. <i>Iva annua</i> *	FAC	herb
3. <i>Leersia oryzoides</i>	OBL	herb

\* Weedy native species

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: Undetermined (soil excavated)

On county hydric soils list? Yes:  No:

Is the soil a histosol? Yes:  No:

Histic epipedon present? Yes:  No:

Redox Concentrations? Yes:  No:  Color: 7.5YR 4/6 and 10YR4/6

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

Matrix color: 10YR 4/1, 5/1, 5/2, and 4/3

Other indicators: This soil was found in a depressional area.

**Hydric soils?** Yes:  No:

**Rationale:** This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 2 of 6)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Wet meadow creation

**Legal Description:** NW/4, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 550 m (1810 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### HYDROLOGY

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

Depth to saturated soil: > 0.33 m (13 in)

Overview of hydrological flow through the system: This site receives water from overflow of Piles Fork Creek, inflow from a small upland tributary of Piles Fork Creek, sheet flow from adjacent higher ground, and by precipitation. Water leaves the site via evapotranspiration, groundwater recharge, and flow into Piles Fork Creek.

Size of Watershed: Approximately 10 km<sup>2</sup> (3.9 mi<sup>2</sup>)

Other field evidence observed: Matted vegetation and sediment deposits

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

**Rationale:** The site has evidence of significant saturation during the growing season.

### DETERMINATION AND RATIONALE:

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

**Rationale:** Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, it is a wetland. The NWI codes a portion of this site as **PFO1A (temporarily flooded, broad-leaved deciduous, forested, palustrine wetland)**.

Determined by: Dan Busemeyer (vegetation and hydrology)  
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## ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 3 of 6)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Wet meadow creation

**Legal Description:** NW/4, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 550 m (1810 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer negundo</i>	box elder	shrub	FACW-	1
<i>Acer saccharinum</i>	silver maple	shrub	FACW	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Amorpha fruticosa</i>	false indigo bush	shrub	FACW+	6
<i>Andropogon gerardii</i>	big bluestem	herb	FAC-	5
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Betula nigra</i>	river birch	tree	FACW	4
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens cernua</i>	nodding beggar's ticks	herb	OBL	2
<i>Bidens frondosa</i>	common beggar's ticks	herb	FACW	1
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Carex communis</i>	sedge	herb	UPL	9
<i>Carex stipata</i>	prickly sedge	herb	OBL	2
<i>Carex typhina</i>	sedge	herb	OBL	6
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Cassia fasciculata</i>	partridge pea	herb	FACU-	1
<i>Chasmanthium latifolium</i>	sea oats	herb	FACW	4
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	*
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cyperus strigosus</i>	straw-colored flatsedge	herb	FACW	0
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Desmanthus illinoensis</i>	Illinois mimosa	herb	FAC-	4
<i>Desmodium paniculatum</i>	panicked tick trefoil	herb	FACU	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Eupatorium coelestinum</i>	blue boneset	herb	FAC+	3
<i>Eupatorium perfoliatum</i>	common boneset	herb	FACW+	4
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1

Species list continued on next page.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 4 of 6)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Wet meadow creation

**Legal Description:** NW/4, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 550 m (1810 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Festuca pratensis</i>	meadow fescue	herb	FACU-	*
<i>Fraxinus pennsylvanica</i>	green ash	shrub, herb	FACW	2
<i>Helianthus hirsutus</i>	bristly sunflower	herb	UPL	5
<i>Hibiscus laevis</i>	halberd-leaved rose mallow	herb	OBL	4
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Ipomoea lacunosa</i>	small white morning-glory	herb	FACW	1
<i>Iva annua</i>	marsh elder	herb	FAC	0
<i>Juncus effuses</i> var. <i>solutus</i>	common rush	herb	OBL	4
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lespedeza cuneata</i>	sericea lespedeza	herb	NI	*
<i>Ludwigia alternifolia</i>	seedbox	herb	OBL	5
<i>Ludwigia peploides glabrescens</i>	creeping primrose willow	herb	OBL	5
<i>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Melilotus officinalis</i>	yellow sweet clover	herb	FACU	*
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Oxalis dillenii</i>	yellow wood sorrel	herb	FACU	0
<i>Panicum clandestinum</i>	deer-tongue grass	herb	FACW	4
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Phleum pratense</i>	timothy	herb	FACU	*
<i>Phyla lanceolata</i>	fog-fruit	herb	OBL	1
<i>Pilea pumila</i>	Canada clearweed	herb	FACW	3
<i>Platanus occidentalis</i>	sycamore	shrub	FACW	3
<i>Polygonum hydropiperoides</i>	water pepper	herb	OBL	4
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum persicaria</i>	spotted lady's thumb	herb	FACW	*
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Populus deltoides</i>	eastern cottonwood	shrub	FAC+	2
<i>Rudbeckia laciniata</i>	cutleaf coneflower	herb	FACW+	3
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Salix exigua</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 ONSITE WETLAND DETERMINATION

Site 4 (page 5 of 6)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

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

**Site Name:** Wet meadow creation

**Legal Description:** NW/4, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 550 m (1810 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Toxicodendron radicans</i>	poison ivy	shrub	FAC+	1
<i>Tridens flavus</i>	common purple top	herb	UPL	1
<i>Verbena urticifolia</i>	white vervain	herb	FAC+	3
<i>Verbesina alternifolia</i>	wingstem	herb	FACW	4
<i>Vitis riparia</i>	riverbank grape	vine	FACW-	2
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)

$$mCv = \sum C/N = 171/65 = 2.6$$

\* Non-native species

$$FQI = \sum C/(\sqrt{N}) = 171/(\sqrt{65}) = 21.2$$

\*\*Planted species on next page.

**ROUTINE ONSITE WETLAND DETERMINATION**

Site 4 (page 6 of 6)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Wet meadow creation

**Legal Description:** NW/4, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 550 m (1810 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

**PLANTED TREES**

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Quercus bicolor</i>	swamp white oak	shrub	FACW+	7

† Coefficient of Conservatism (Taft et al. 1997)

$$mCv = \sum C/N = 178/66 = 2.7^{**}$$

\* Non-native species

$$FQI = \sum C/(\sqrt{N}) = 178/(\sqrt{66}) = 21.9^{**}$$

\*\*These calculations include native plants from the complete species list above together with the planted trees.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 5 (page 1 of 5)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Wet meadow creation

**Legal Description:** NW/4, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 607 m (1997 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

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

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

### VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Salix nigra</i>	OBL	shrub
2. <i>Iva annua</i> *	FAC	herb
3. <i>Leersia oryzoides</i>	OBL	herb

\* Weedy native species

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: Undetermined (soil excavated)

On county hydric soils list? Yes:  No:

Is the soil a histosol? Yes:  No:

Histic epipedon present? Yes:  No:

Redox Concentrations? Yes:  No:  Color: 7.5YR 4/6 and 10YR4/6

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

Matrix color: 10YR 4/1, 5/1, 5/2, and 4/3

Other indicators: This soil was found in a depressional area.

**Hydric soils?** Yes:  No:

**Rationale:** This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 5 (page 2 of 5)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

**State:** Illinois

**County:** Jackson

**Applicant:** IDOT District 9

**Site Name:** Wet meadow creation

**Legal Description:** NW/4, SE/4, Section 28, T. 9 S., R. 1 W.

**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 607 m (1997 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

### HYDROLOGY

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

Depth to saturated soil: > 0.33 m (13 in)

Overview of hydrological flow through the system: This site receives water from overflow of Piles Fork Creek, sheet flow from adjacent higher ground, and precipitation. Water leaves the site via evapotranspiration, groundwater recharge, and flow into nearby Piles Fork Creek.

Size of Watershed: Approximately 10 km<sup>2</sup> (3.9 mi<sup>2</sup>)

Other field evidence observed: Depressional landscape position and matted vegetation

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

**Rationale:** The site has evidence of significant saturation during the growing season.

### DETERMINATION AND RATIONALE:

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

**Rationale:** Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, the site is a wetland. The NWI codes a portion of this site as [PFO1A \(temporarily flooded, broad-leaved deciduous, forested, palustrine wetland\)](#).

Determined by: Dan Busemeyer (vegetation and hydrology)  
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**ROUTINE ONSITE WETLAND DETERMINATION**

Site 5 (page 3 of 5)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

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**Location:** This wet meadow creation is located 60 m (197 ft) east of U.S. 51, 607 m (1997 ft) north of the intersection of U.S. 51 and Pleasant Hill Rd.

**SPECIES LIST**

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer rubrum</i>	red maple	shrub, herb	FAC	5
<i>Acer saccharinum</i>	silver maple	shrub	FACW	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Betula nigra</i>	river birch	shrub	FACW	4
<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</i> sp.	sedge	herb	----	--
<i>Carex typhina</i>	sedge	herb	OBL	6
<i>Cassia fasciculata</i>	partridge pea	herb	FACU-	1
<i>Catalpa speciosa</i>	cigar tree	shrub	FACU	5
<i>Cephalanthus occidentalis</i>	buttonbush	shrub	OBL	4
<i>Chamaesyce humistrata</i>	milk spurge	herb	FACW	1
<i>Chasmanthium latifolium</i>	sea oats	herb	FACW	4
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cyperus strigosus</i>	straw-colored flatsedge	herb	FACW	0
<i>Desmanthus illinoensis</i>	Illinois mimosa	herb	FAC-	4
<i>Desmodium paniculatum</i>	panicled tick trefoil	herb	FACU	2
<i>Diodia virginiana</i>	large buttonweed	herb	FACW	4
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Eupatorium coelestinum</i>	blue boneset	herb	FAC+	3
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Fraxinus pennsylvanica</i>	green ash	tree	FACW	2
<i>Hibiscus laevis</i>	halberd-leaved rose mallow	herb	OBL	4
<i>Ipomoea lacunosa</i>	small white morning-glory	herb	FACW	1
<i>Iva annua</i>	marsh elder	herb	FAC	0

Species list continued on next page.

## ROUTINE ONSITE WETLAND DETERMINATION

Site 5 (page 4 of 5)

**Field Investigators:** Busemeyer and Wiesbrook

**Date:** 30 August 2005

**Project Name:** FAP 322 (US 51)

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

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### SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Juncus effuses</i> var. <i>solutus</i>	common rush	herb	OBL	4
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Leucospora multifida</i>		herb	FACW+	3
<i>Lycopus virginicus</i>	bugle weed	herb	OBL	5
<i>Lysimachia nummularia</i>	moneywort	herb	FACW+	*
<i>Melilotus officinalis</i>	yellow sweet clover	herb	FACU	*
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Paspalum laeve</i>	smooth lens grass	herb	UPL	2
<i>Phyla lanceolata</i>	fog-fruit	herb	OBL	1
<i>Physalis heterophylla</i>	ground cherry	herb	UPL	2
<i>Platanus occidentalis</i>	sycamore	shrub	FACW	3
<i>Polygonum lapathifolium</i>	curttop lady's thumb	herb	FACW+	0
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Quercus palustris</i>	pin oak	tree	FACW	4
<i>Rotala ramosior</i>	tooth-cup	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Salix nigra</i>	black willow	shrub	OBL	3
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<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>Verbesina alternifolia</i>	wingstem	herb	FACW	4
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)

$$mCv = \sum C/N = 133/51 = 2.6$$

\* Non-native species

$$FQI = \sum C/(\sqrt{N}) = 133/(\sqrt{51}) = 18.6$$

\*\*Planted species on next page.

**ROUTINE ONSITE WETLAND DETERMINATION**

Site 5 (page 5 of 5)

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**PLANTED TREES**

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
<i>Taxodium distichum</i>	bald cypress	shrub	OBL	7

† Coefficient of Conservatism (Taft et al. 1997)

$$mCv = \sum C/N = 140/52 = 2.7^{**}$$

\* Non-native species

$$FQI = \sum C/(\sqrt{N}) = 140/(\sqrt{52}) = 19.4^{**}$$

\*\*These calculations include native plants from the complete species list above together with the planted trees.

**Appendix B**  
**Photographs of Sites 2a, 2b, 4, and 5**

Photo 1. Site 2a, facing south.



Photo 2. Site 2b, facing west.



Photo 3. Site 4, facing south.



Photo 4. Site 5, facing north.

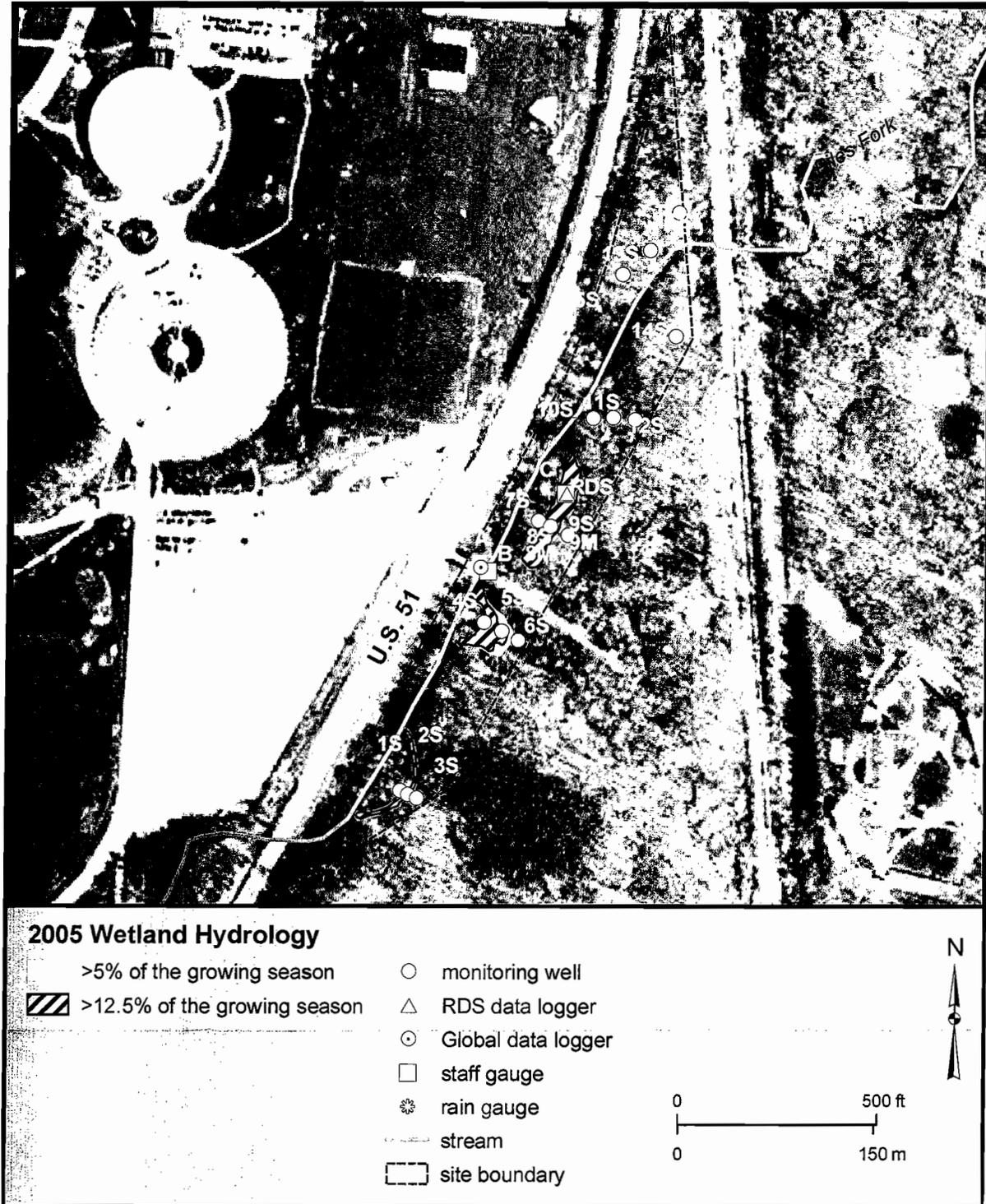


**Appendix C**  
**Wetland Hydrology (Figure 1) & Project Area (Figure 2)**

# Carbondale Wetland Compensation Site (FAP 322)

## Estimated Areal Extent of 2005 Wetland Hydrology

based on data collected between September 1, 2004 and September 1, 2005  
 Map based on IDOT mitigation design plan rectified to USGS digital orthophotograph  
 Carbondale NW quarter quadrangle from 04/06/1998 aerial photography (ISGS 2002)



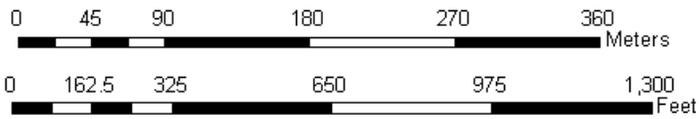
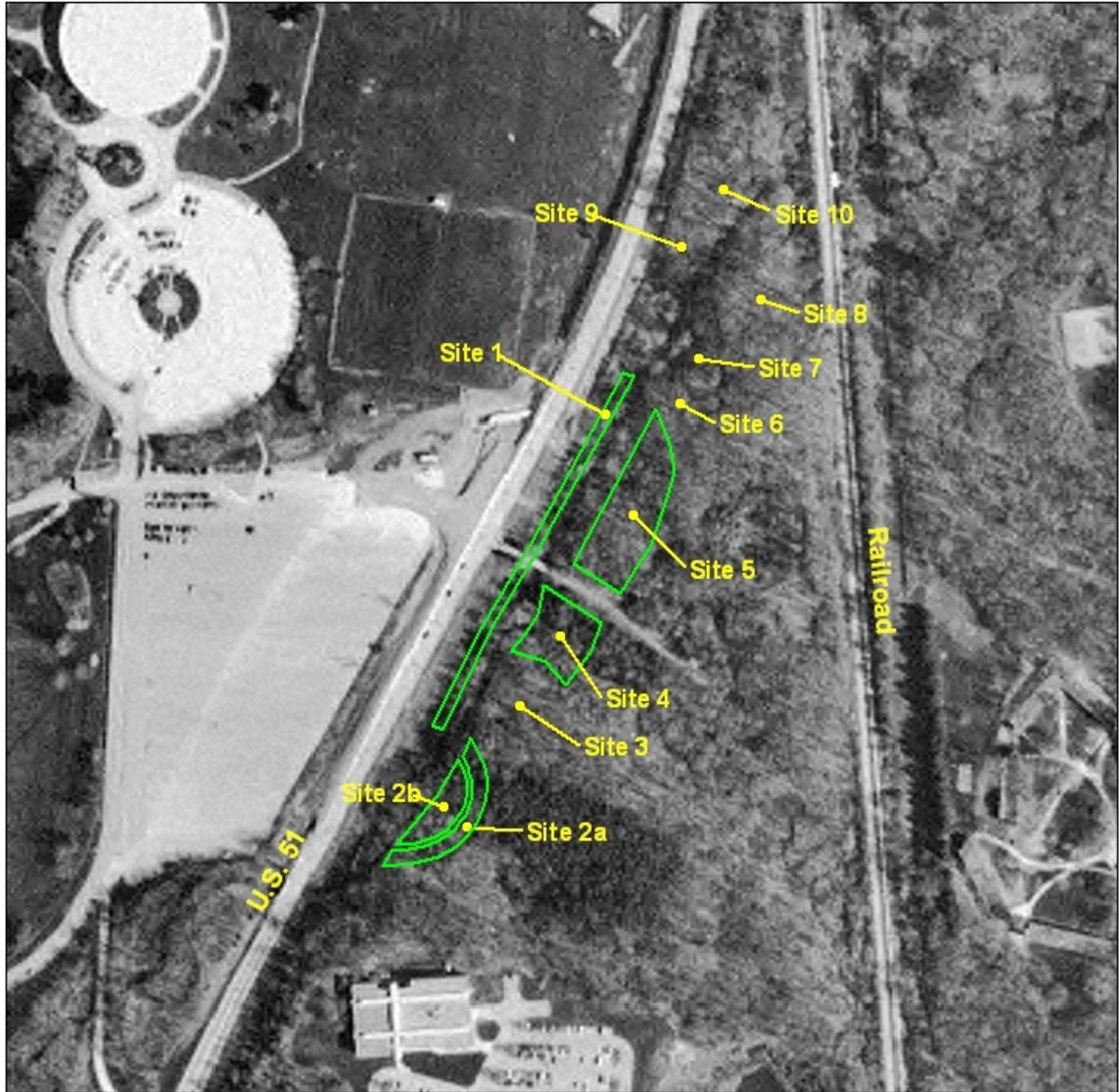


Figure 2. Sites 1-10  
 FAP 332 (U.S. 51) Mitigation Site Monitoring  
 18 August 2004, Carbondale, Illinois



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