

## **Wetland Mitigation Monitoring for FAP 331 (IL 13) - 2002**

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### **Introduction**

Road construction for FAP 331 (IL 13) resulted in impacts requiring 9.15 acres of wetland mitigation. A compensation plan was prepared which called for floodplain forest, emergent, and shrub scrub (changed to cypress gum swamp) wetland creation, located in a 20 acre abandoned agricultural field in western Saline Co. Reexamination of the original report (Morris et al., 1994) shows that the field contained approximately 2.02 acres of wetland prior to alteration of the site. Approximately 2.5 acres (the area originally planned for emergent and cypress-gum wetlands) were excavated to a depth of 6 to 12 in. A shallow berm, including water control structure, was established at the southeastern corner of the site in order to retard sheetflow and hold more surface water on-site. The wetland creation site was completed in 1997. Vegetation planting was carried out in 1997 and 1998.

In 2002, field monitoring was conducted on 18, 19 July and 2 August. This report details results of the 2002 monitoring. Project goals, objectives and performance criteria are included, as are monitoring methods, monitoring results, summary information and recommendations. A wetland mitigation site assessment (Morris et al., 1994) and hydrogeologic characterization report (Rorick and Hilchen, 1995) were prepared by the Illinois Natural History Survey and Illinois State Geological Survey. A wetland mitigation plan was prepared by Smith (1995). In September 2001, a close out meeting was held on site in which the U. S. Army Corps of Engineers indicated that, if certain conditions were met, they were prepared to accept the site as mitigation for wetland impacts resulting from IL 13 construction.

### **Project Goals, Objectives and Performance Criteria**

Proposed goals and objectives are based on information contained in the original IDOT project request (Brooks, 1999) and the project Special Provisions (IDOT, no date). Performance criteria are based on those specified in the U. S. C. O. E. Wetland Delineation Manual (Environmental Laboratory, 1987), and Guidelines for Developing Mitigation Proposals (USACOE, 1993). Each goal should be attained by the end of the five year monitoring period. Project goals, objectives and performance criteria are listed below.

#### **Created Wetland Site**

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

**Objective:** The created wetland should compensate for losses of 4.7 acres of forested wetland, emergent wetland, and shrub scrub wetland. A total of 9.15 acres of wetland compensation is required.

**Performance Criteria:** The entire created wetland should satisfy the three criteria of the federal wetland definition: hydrophytic vegetation, hydric soils and wetland hydrology.

- A. Predominance of hydrophytic vegetation - More than 50% of the dominant plant species must be hydrophytic.
- B. Presence of hydric soils - Hydric soil characteristics must be present, or conditions favorable to the formation of hydric soil must persist at the site.
- C. Presence of wetland hydrology - the created wetland must be inundated at an average depth of less than 2 m (6.6 ft) or have soils saturated to the surface for at least 12.5 % of the growing season.

**Project goal 2:** The created wetland should meet minimum standards as to floristic composition.

**Objective:** The created wetland should compensate in-kind for loss of forested, shrub scrub, and emergent wetlands. The wetland compensation should be composed of vegetation characteristic of forested, shrub scrub, and emergent wetlands.

**Performance Criteria:** Planted herbaceous and woody species should have good survivorship and health over the five year monitoring period. At least 50% of the plant species present should be non-weedy, native, perennial species. None of the three most dominant species in any stratum should be nonnative, or weedy species.

## Methods

Monitoring will be performed on the created wetland site. Illinois Natural History Survey personnel monitored the site in 1999, 2000, 2001 and 2002 and will continue yearly monitoring through 2003 (five years) or until the Illinois Department of Transportation requests that monitoring cease. The Illinois State Geological Survey has been tasked to monitor hydrology. Monitoring reports on the status of the wetland creation site will be submitted annually. The likelihood of meeting the proposed goals and performance criteria will be addressed. If evidence is discovered, indicating that the goals/performance criteria will not be met by the end of the five year monitoring period, written management recommendations will be submitted to IDOT in an effort to correct the problems.

### Project Goal 1

Created wetland areas will be measured in the field, plotted on aerial photographs, and acreages determined with digital planimeter.

A. Hydrophytic Vegetation - Within the 2.5 acre excavated area, where planting was carried out, species composition (relative frequency, relative dominance, and Importance Value) will be determined annually through quantitative vegetation sampling of permanent plots. Five parallel transects were established at 15.2 m (50 ft) intervals. Sampling points were established at 15.2 m (50 ft) intervals on each transect. At each sampling point, vegetation was tallied by species and percent cover in 24, 1 m<sup>2</sup> quadrats. Beginning in 2000, with planted trees and shrubs tall enough to be seen in the dense herbaceous vegetation, woody

species composition within the excavated area will be determined through quantitative sampling of permanent plots. Four transects were established at 30.5 m (100 ft) intervals. Sampling points were established at 30.5 m (100 ft) intervals on each transect. At each sampling point, number of shrub layer individuals by species were recorded in 10, 100 m<sup>2</sup> plots. For the remainder of the site, using visual estimation, the dominant species of vegetation in each stratum are determined. Dominance is based on Importance Value, a numerical average of species' relative frequency, density and aerial coverage (or basal area) (Cox 1985). In each stratum dominant species include, starting with the most dominant, those species whose Importance Values, when summed in descending order, immediately exceed 50%, as well as any additional species whose Importance Values are 20% or greater (Federal Interagency Committee for Wetland Delineation, 1989). Dominant species are assigned wetland indicator status ratings (Reed, 1988). Any plant rated facultative or wetter (FAC, FAC+, FACW-, FACW, FACW+ or OBL) is considered hydrophytic. Hydrophytic vegetation is determined to be present if greater than 50% of the dominant species are hydrophytic (Environmental Laboratory 1987).

B. Hydric Soils - Soil cores collected from the mitigation site are examined for the presence of redoximorphic features (Environmental Laboratory 1987). This site includes 2.5 acres of shallow ( $\leq 1$  ft) excavation, and a shallow berm erected in the vicinity of the southeast corner of the site. The excavated area and the area near the berm are expected to display changing soil characteristics as those portions of the site adjust to new hydrologic conditions. The western portion of the site is not expected to experience soil conditions that change over time.

C. Wetland Hydrology - The Illinois State Geological Survey has been tasked to monitor this site. Six stage gauges have been installed, and the number of monitoring wells has been increased from 25 to 32 (Ketterling et al., 2001). Information provided by ISGS concerning hydrology of the site is incorporated into this report. In addition, visual inspection of the site for field indicators of wetland hydrology, such as landscape position, inundation or surface saturation or wetland drainage and debris patterns, will be used to determine the presence of wetland hydrology (Environmental Laboratory 1987).

## **Project Goal 2**

A. Survival of planted species - At this site, complications prohibit the determination of percent survival of planted species. For both woody and herbaceous species, there have been substitutions and omissions of species listed in the planting plan and the number of individuals per species has been altered and is not known. In addition, the woody species have been planted in different areas than what is specified in the mitigation plan and apparently have been placed randomly, with no stakes to mark planting locations. The planting boxes for herbaceous species had been removed before the first year's monitoring fieldwork began, and species have begun to spread beyond their planting cells. Beginning in 2000, quantitative sampling has been used to estimate numbers of live, planted woody species. In 1999, while the outlines of the recently removed planting boxes (pods) were still apparent, aerial extent, percent cover and a qualitative success rating were determined for each cell of herbaceous planting. In subsequent years, as the various species spread or decline, it will be increasingly difficult to assess each planted herbaceous species in relation to its original planting cell. Therefore, for each of the nine original planted species, aerial extent, percent cover and a qualitative success (population health) rating will be determined and related to values given in the 1999 sampling season.

B. Vegetation - Dominant plant species in each stratum in the emergent wetland and wet meadow (oak-hickory wetland) will be determined annually by quantitative sampling.

Dominant plant species for the other created wetland communities within the site will be determined by visual estimation. Lists of dominant species will be examined in an attempt to ensure that, in the created wetlands, none of the three most dominant species are weedy or non-native. A species list will be prepared annually for each community in order to ensure that at least 50% of the plant species are non-weedy, native and perennial. A Floristic Quality Index will be computed annually for each plant community.

## Faunal Surveys

In addition to stated performance criteria, INHS personnel will conduct annual surveys of herpetofauna and avifauna.

### Herpetofauna

The compensation site was visited by INHS personnel on 15 March, 23 and 29 April, 11 July, and 3 October 2002. The main objective was to conduct visual encounter surveys, and limited dipnetting, throughout the site and compile a species list. Because visual encounter surveys may miss certain species, especially snakes, we placed seven snake boards throughout the site. Call surveys were performed on a limited basis. Emphasis was placed on amphibian species and evidence of breeding and recruitment of these species. Fishless, ephemeral wetlands are among the rarest habitat types in Illinois and it is these wetlands that many native amphibian species utilize for reproduction. We surveyed the entire property, but special attention was directed to the emergent wetland, a ditch/pool at the east edge of the property, a forested pond in the eastern portion of the site, and the forested area at the southern boundary. A list has been compiled of all the amphibians and reptiles encountered at the wetland compensation site to date.

### Avifauna

We established four census points 150 m apart and at least 50 m from the edge of the property. Because of the complexity of the habitat, all points encompass several habitat types. We used standard avian point counts (Manley et al., 1993) to subsample the avifauna, recording all individuals heard or seen within a range of 50 m during ten minute count periods. These timed counts provide measures of the structure of bird communities (number of individuals and number of species) in the area. Counts were conducted on 18 May and 28 June 2002.

## Results

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

Additional soil investigations in 2001, and careful remapping of wetland acreage in 2002 is in close agreement with our 2000 estimate of wetland acreage. This site originally supported 0.82 ha (2.02 acres) of wetland. Shallow excavation and berm construction have resulted in creation of 4.53 ha (11.18 acres) of additional wetland (about 6.8 acres of nonwetland remain). All wetland areas are underlain by Bonnie silt loam, poorly drained, which is a hydric soil (Appendix 1). Within the excavated area, a 0.49 ha (1.2 acre) emergent wetland now exists, surrounded by a 0.77 ha (1.9 acre) wet meadow (oak-hickory wetland). The emergent wetland is dominated by *Juncus acuminatus* (OBL), *Polygonum hydropiperoides* (OBL), *Cyperus pseudovegatus* (FACW), *Panicum rigidulum* (FACW),

and *Phyla lanceolata* (OBL). The wet meadow is dominated, in the shrub layer, by *Fraxinus pennsylvanica* (FACW) and *Acer rubrum* (FAC), and by *Juncus interior* (FAC+), *Pycnanthemum tenuifolium* (FAC), *Solidago canadensis* (FACU), *Ulmus americana* (FACW-), and *Rubus pensylvanicus* (FAC-) in the herb layer. The hydrophytic vegetation criterion is thereby satisfied for both of these sites. The construction of a shallow berm at the southeast border of the site has impeded surface flow and resulted in the creation of approximately 1.98 ha (4.9 acres) of shrub scrub wetland (young forest) in the eastern portion of the site. This community is dominated by *Acer rubrum* (FAC), and *Fraxinus pennsylvanica* (FACW) in the sapling layer, thereby satisfying the hydrophytic vegetation criterion (Appendix 1).

In all created wetland areas, field indicators of wetland hydrology were observed. These included wetland drainage patterns, driftlines, water stained leaves and low, level topography. In addition, the Illinois State Geological Survey (ISGS) established four monitoring wells and three stage gauges within the created wetland sites. Based on well and stage gauge data, these sites meet the wetland hydrology criterion (saturation or inundation for at least 12.5% of the growing season) (fig. 1).

In 2001, the ISGS added wells and revised their estimate of acreage supporting wetland hydrology. Currently the ISGS estimates 18.0 acres of created wetlands onsite (fig. 1), ISGS estimates of created wetland area have ranged from 7.9 acres in 2000 to 18 acres this year (Ketterling et al. 2002, Ketterling et al., 2001, Ketterling et al. 2000). INHS estimates have ranged from 9.1 acres in 1999 to our current estimate of 11.2 acres, based on careful mapping of soils and vegetation this year. The ISGS states that their 2001 and 2002 estimates may be influenced by wetter than normal winter 2000-2001, and winter and spring 2001-2002 (Ketterling et al. 2002, Ketterling et al. 2001). The portions of the site (6.8 acres) mapped by INHS as nonwetland do not support hydrophytic vegetation and, for the most part, lack hydric soils. However, for the last two years, both INHS and ISGS have found that greater than the required 9.15 acres of created wetland exist on site.

**Project goal 2:** The created wetland should meet minimum standards as to floristic composition.

#### A. Survival of Planted Species

**Woody Species** - The wetland mitigation plan called for creation of 7.3 acres of forested wetland and 1.4 acres of shrub scrub wetland. The area designated for forested wetland was not planted, and 0.77 ha (1.9 acres) of forested (oak-hickory) wetland was planted in the area designated for shrub scrub. Cypress – gum wetland has been substituted for shrub scrub, and 0.49 ha (1.2 acres) of this planting type has been superimposed over the emergent wetland planting. Exactly what species were planted, and in what numbers is unknown. In the oak-hickory wetland, the following planted species were observed: *Quercus palustris*, *Quercus lyrata*, *Quercus bicolor*, *Liquidambar styraciflua*, *Nyssa sylvatica*, *Carya illinoensis*, *Carya* sp., *Acer rubrum*, *Fraxinus pennsylvanica*, *Betula nigra*, *Carpinus caroliniana*, *Crateagus phaenopyrum*, and *Cornus obliqua*. In the emergent wetland the following planted woody species were observed: *Taxodium distichum*, *Acer rubrum*, *Fraxinus pennsylvanica*, *Quercus lyrata*, *Quercus palustris*, *Betula nigra*, *Cephalanthus occidentalis*, *Crateagus phaenopyrum*, *Itea virginica*, and *Callicarpa dichotoma*. Both sites support abundant natural regeneration of *Acer rubrum*, *Fraxinus pennsylvanica*, *Betula nigra*, and *Cornus obliqua*, which makes accurate assessment of planted stock impossible for these species.

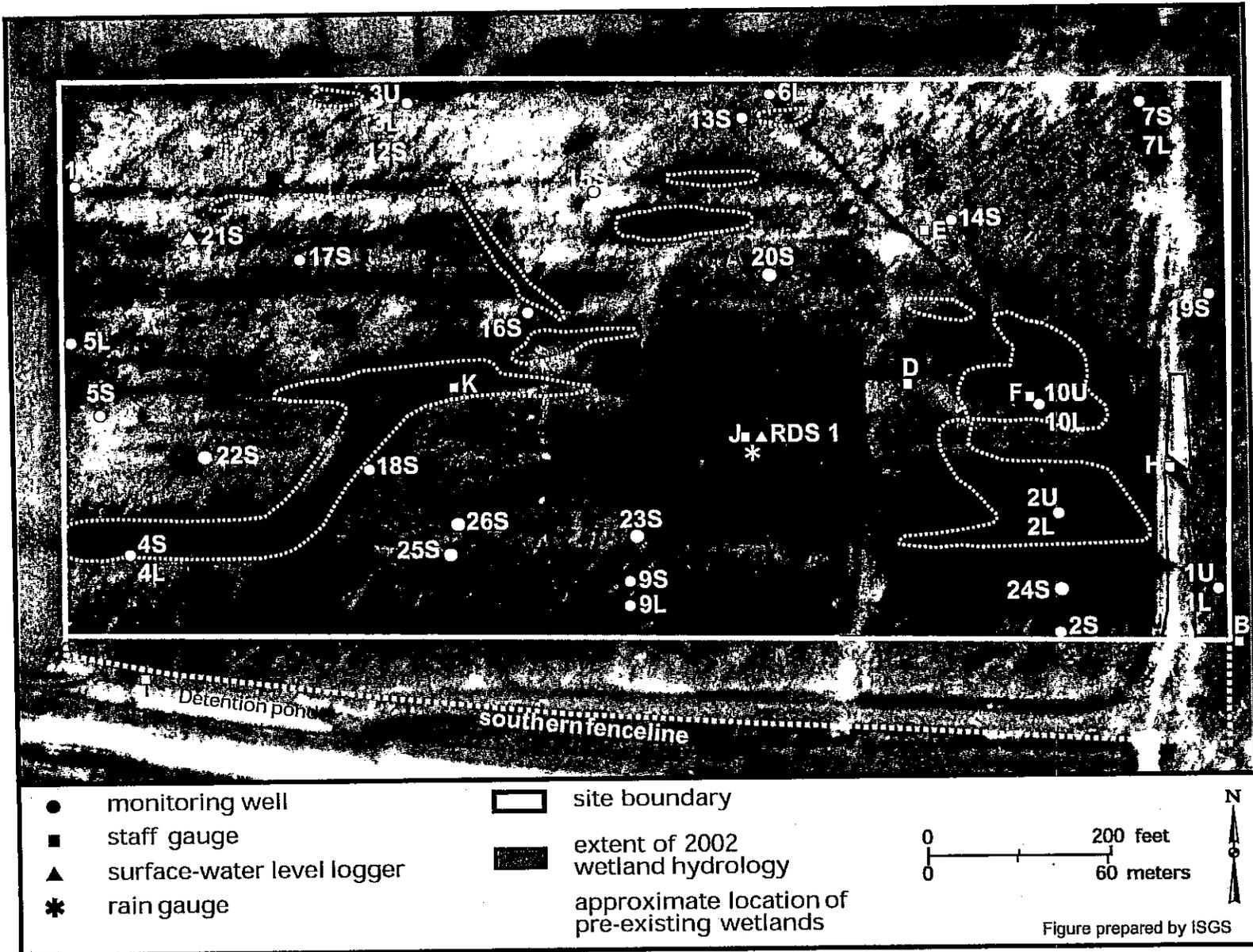


Figure 1. Estimated extent of 2002 wetland hydrology.

In the 1.9 acre oak-hickory wetland (wet meadow) the shrub layer is dominated by *Fraxinus pennsylvanica*, and *Acer rubrum*. In 2002, a large number of natural and planted woody seedlings entered the shrub stage. This resulted in a marked increase in planted and natural shrub stage individuals and, for the first time, a dominant shrub layer. Total shrub layer density increased from 834 indiv./acre to 1869/acre. Planted species occur at a density of 499/acre or 948 total. Plantings were supposed to occur at a rate of 500 indiv./acre for 9.5 acres or 4750 stems total (Table 1, Plocher et al. 2001).

In the 1.2 acre emergent wetland, the shrub layer has also increased in abundance and is dominated by *Salix nigra* and *Acer rubrum*. However, in this community, the shrub stage individuals appeared more clumped in distribution and the community as a whole does not yet support a dominant shrub layer. It is likely, however, that this community will develop a dominant shrub layer within a year or two and, along with the wet meadow, eventually succeed to floodplain forest. Total shrub layer density is 1832 indiv./acre, compared to 931 indiv./acre in 2001. Planted species occur at a density of 172/acre or 206 total. Plantings were supposed to occur at a rate of 1000 indiv./acre for 1.4 acres or 1400 stems total (Table 2, Plocher et al. 2001).

Herbaceous species – Within the excavated portion of the site, a 0.49 ha (1.2 acre) emergent wetland has become established, thus exceeding the planned 0.84 acre. In the emergent wetland area, herbaceous species were planted in five, 20 ft X 50 ft, and one 20 ft X 30 ft, pods, each consisting of a number (two to eight) of smaller cells of varying sizes. The corner stakes of the planting cells had been removed prior to initial sampling, and the planted herbaceous species had begun to spread beyond their cells.

We identified nine planted herbaceous species: *Scirpus americanus*, *Scirpus validus*, *Scirpus atrovirens*, *Sparganium eurycarpum*, *Sagittaria latifolia*, *Alisma plantago aquatica*, *Iris shrevii*, *Pontederia cordata*, and *Eleocharis erythropoda*. *Eleocharis erythropoda* appears to have been substituted for *E. acicularis*, and *P. cordata* for *Sagittaria rigida*. *Sagittaria latifolia* and *Scirpus atrovirens* are naturally occurring and abundant onsite. *Scirpus cyperinus*, *Asclepias incarnata*, *Carex vulpinoidea*, and *Ludwigia polycarpa* are included on the planting list but do not appear to have been planted. They are, however, also naturally occurring and abundant onsite.

This year the planted herbaceous species have spread beyond their planting cells to the point where it is no longer possible to assess the performance of individual cells. The plantings have done very well and coverage is stable at 0.21 acre (compared to the original 0.13 acre planted). All species originally located in 1999 are still represented by healthy individuals. In particular, *Scirpus americanus*, *Scirpus validus*, *Scirpus atrovirens*, *Sparganium eurycarpum*, *Iris shrevii*, and *Eleocharis erythropoda* have done very well (Table 3, Plocher et al. 2001).

Table 1. Shrub layer species composition of Wet Meadow (Site 2). Freq., Rel. Freq., Density (indiv./100 m<sup>2</sup>), Rel. Density, Importance Value (%), N=6.

Species	Freq.	Rel. Freq.	Density	Rel. Dens.	I.V.
<i>Fraxinus pennsylvanica</i>	1.000	0.1000	12.833	0.2780	18.90
<i>Acer rubrum</i>	0.833	0.0833	9.000	0.1949	13.91
<i>Ulmus americana</i>	0.667	0.0667	5.333	0.1155	9.11
* <i>Crateagus phaenopyrum</i>	1.000	0.1000	3.000	0.0650	8.25
<i>Cornus obliqua</i>	0.833	0.0833	3.167	0.0686	7.59
* <i>Quercus palustris</i>	0.667	0.0667	2.667	0.0578	6.23
* <i>Carpinus caroliniana</i>	0.667	0.0667	2.500	0.0542	6.05
* <i>Liquidambar styraciflua</i>	0.667	0.0667	1.833	0.0397	5.32
<i>Platanus occidentalis</i>	0.667	0.0667	1.500	0.0325	4.96
* <i>Quercus lyrata</i>	0.500	0.0500	1.333	0.0289	3.94
* <i>Carya illinoensis</i>	0.500	0.0500	0.667	0.0144	3.22
<i>Betula nigra</i>	0.333	0.0333	0.333	0.0072	2.02
<i>Diospyros virginiana</i>	0.333	0.0333	0.333	0.0072	2.02
<i>Rhus copallina</i>	0.167	0.0167	0.500	0.0108	1.37
* <i>Nyssa sylvatica</i>	0.167	0.0167	0.167	0.0036	1.02
* <i>Quercus bicolor</i>	0.167	0.0167	0.167	0.0291	1.02
<i>Salix nigra</i>	0.167	0.0167	0.167	0.0097	1.02
<i>Quercus imbricaria</i>	0.167	0.0167	0.167	0.0680	1.02
<i>Quercus velutina</i>	0.167	0.0167	0.167	0.0680	1.02
<i>Gleditsia triacanthos</i>	0.167	0.0167	0.167	0.0097	1.02
<i>Populus deltoides</i>	0.167	0.0167	0.167	0.0097	1.02
Total	10.000	1.0000	46.167	0.9999	100.00

Shrub density – 1869.1/acre

\* = planted species

Planted species density – 499.3/acre

Table 2. Shrub layer species composition of Emergent Wetland (Site 1). Freq., Rel. Freq., Density (indiv./100 m<sup>2</sup>), Rel. Density, Importance Value (%), N=4.

Species	Freq.	Rel. Freq.	Density	Rel. Dens.	I.V.
<i>Salix nigra</i>	1.000	0.1481	16.250	0.3591	25.36
<i>Acer rubrum</i>	1.000	0.1481	11.500	0.2541	20.11
<i>Ulmus americana</i>	1.000	0.1481	5.750	0.1271	13.76
<i>Fraxinus pennsylvanica</i>	0.750	0.1111	5.500	0.1215	11.63
* <i>Quercus palustris</i>	0.500	0.0741	1.500	0.0331	5.36
* <i>Taxodium distichum</i>	0.500	0.0741	1.500	0.0331	5.36
<i>Populus deltoides</i>	0.500	0.0741	1.000	0.0221	4.81
* <i>Crateagus phaenopyrum</i>	0.500	0.0741	0.750	0.0166	4.53
<i>Platanus occidentalis</i>	0.250	0.0370	0.750	0.0166	2.68
* <i>Liquidambar styraciflua</i>	0.250	0.0370	0.250	0.0055	2.13
* <i>Quercus lyrata</i>	0.250	0.0370	1.000	0.0055	2.13
<i>Cephalanthus occidentalis</i>	0.250	0.0370	0.500	0.0055	2.13
Total	6.750	0.9998	45.250	0.9998	99.99

Shrub density – 1832.0/acre

\* = planted species

Planted species density – 172.1/acre

Table 3. Status of Planting Pods–2002. Species, aerial extent (ft<sup>2</sup>), rating

Species	Aerial Extent (ft <sup>2</sup> )	Qualitative Rating
<i>Eleocharis erythropoda</i>	216	very good and spreading
<i>Scirpus americanus</i>	2214	very good and spreading
<i>Sparganium eurycarpum</i>	3046	very good and spreading
<i>Scirpus validus</i>	1089	good
<i>Iris shrevii</i>	484	good
<i>Scirpus atrovirens</i>	467	good
<i>Sagittaria latifolia</i>	784	fair
<i>Alisma plantago aquatica</i>	284	poor (present)
<i>Pontederia cordata</i>	382	poor (present)
Total	8966	

## B. Vegetation

In 2002, in both the emergent and oak-hickory wetlands, a large number of woody stems entered the shrub stage. In the oak – hickory wetland, a dominant shrub layer now exists. Species diversity and Floristic Quality (Taft et al. 1997) continue to increase on the site overall. The emergent wetland and oak-hickory wetland have increased in diversity and Floristic Quality in every year of the study and all wetland plant communities now have Floristic Quality Indices of 20.0 or greater, and mean C values greater than 3.0.

The emergent wetland is dominated by *Juncus acuminatus*, *Polygonum hydropiperoides*, *Cyperus pseudovegatus*, *Panicum rigidulum*, and *Phyla lanceolata*. *Ludwigia palustris* and *Eupatorium serotinum* have greatly decreased since last year, while *Cyperus pseudovegatus* and *Polygonum hydropiperoides* greatly increased. The weedy *Phragmites communis* continues to increase in abundance, and the exotic *Typha angustifolia* is still present (Table 4, Appendix 1).

In the wet meadow (oak-hickory wetland) *Lespedeza cuneata*, *Eupatorium serotinum*, and *Fraxinus pennsylvanica* seedlings greatly decreased, while *Rubus pensylvanicus* and *Solidago canadensis* increased. Dominant species in 2002 were *Juncus interior*, *Pycnanthemum tenuifolium*, *Solidago canadensis*, *Ulmus americana* and *Rubus pensylvanicus*. The very uncommon *Rhexia virginica* (CC=10) remains present in this community and the orchid, *Platanthera peramoena* (CC = 5) was noted (Table 5, Appendix 1).

Beyond the excavated area, the weedy *Festuca pratensis* is still among the dominant species in the non-wet shrubland in the western portion of the site and the non-native *Eleagnus angustifolia* and *Rosa multiflora* are fairly abundant here. The wet shrubland in the eastern half of the site is still dominated by *Fraxinus pennsylvanica* and *Acer rubrum* in the sapling layer, while the understory remains sparse. The ditchbank community is dominated by *Leersia oryzoides* and *Phyla lanceolata* (Appendix 1).

Two of the plant communities continue to have dominant species that are weedy or exotic. *Festuca pratensis* remains the most dominant understory species in the shrubland. *Solidago canadensis* is the third most dominant species in the oak-hickory wetland, however, *Lespedeza cuneata* continues to decrease in this community. The *Phyla lanceolata* now dominant in the ditchbank community might be considered weedy, but this native species is typical of open wetlands. The emergent wetland and oak-hickory wetland

again showed increases in number of naturally occurring species and all communities have less than 50% exotic or weedy species (actually less than 25%). In the emergent wetland, Floristic Quality increased (25.7 to 27.8) and percent weedy/exotic decreased from 17.9% to 13.6%. In the oak-hickory wetland, Floristic Quality increased (from 26.7 to 28.9) while percent weedy/exotic increased from 19.8% to 21.3%. Floristic Quality decreased from 20.0 to 18.9 in the shrubland and increased in the ditch community (20.1 to 22.5). The wet shrubland increased slightly in Floristic quality (20.0 to 20.5) (Appendix 1, Plocher et al. 2001). The State listed species, *Eryngium prostratum* (Endangered), continues to thrive at this site. The species has steadily increased in abundance in the emergent wetland (10.5 m<sup>2</sup> in 2000, 41.8 m<sup>2</sup> in 2001, and 69.2 m<sup>2</sup> this year). In the ditchbank community, after decreasing last year, *Eryngium prostratum* has now increased from 4.0 m<sup>2</sup> to 7.1 m<sup>2</sup> of coverage.

Table 4. Understory species composition of Emergent Wetland (Site 1). Freq., Rel. Freq., Dominance ( $m^2/m^2$ ), Rel. Dom., Importance Value (%), N=15.

Species	Freq.	Rel. Freq.	Dom.	Rel. Dom	I.V.
<i>Juncus acuminatus</i>	0.8000	0.1304	0.3633	0.3287	22.95
<i>Polygonum hydropiperoides</i>	0.3333	0.0543	0.0927	0.0839	6.91
<i>Cyperus pseudovegatus</i>	0.4667	0.0761	0.0513	0.0464	6.13
<i>Panicum rigidulum</i>	0.3333	0.0543	0.0680	0.0615	5.79
<i>Phyla lanceolata</i>	0.4000	0.0652	0.0540	0.0489	5.70
<i>Carex normalis</i>	0.3333	0.0543	0.0433	0.0392	4.67
<i>Scirpus atrovirens</i>	0.2667	0.0435	0.0513	0.0464	4.49
<i>Acer rubrum</i>	0.3333	0.0543	0.0273	0.0247	3.95
<i>Juncus interior</i>	0.1333	0.0217	0.0467	0.0423	3.20
* <i>Scirpus americanus</i>	0.0667	0.0109	0.0500	0.0452	2.81
<i>Paspalum laeve</i>	0.2000	0.0326	0.0200	0.0181	2.54
<i>Ulmus americana</i>	0.2000	0.0326	0.0160	0.0145	2.35
<i>Polygonum amphibium</i>	0.0667	0.0109	0.0400	0.0362	2.35
<i>Sagittaria latifolia</i>	0.2000	0.0326	0.0147	0.0133	2.30
<i>Carex vulpinoidea</i>	0.2000	0.0326	0.0100	0.0091	2.08
<i>Mimulus alatus</i>	0.1333	0.0217	0.0200	0.0181	1.99
<i>Juncus marginatus</i>	0.1333	0.0217	0.0187	0.0169	1.93
<i>Leersia oryzoides</i>	0.1333	0.0217	0.0167	0.0151	1.84
* <i>Sparganium eurycarpum</i>	0.0667	0.0109	0.0200	0.0181	1.45
* <i>Carex tribuloides</i>	0.1333	0.0217	0.0047	0.0043	1.30
* <i>Scirpus validus</i>	0.0667	0.0109	0.0167	0.0151	1.30
<i>Polygonum cespitosum</i>	0.1333	0.0217	0.0027	0.0024	1.21
<i>Juncus brachycarpus</i>	0.0667	0.0109	0.0100	0.0091	1.00
<i>Eryngium prostratum</i>	0.0667	0.0109	0.0067	0.0061	0.85
<i>Andropogon virginicus</i>	0.0667	0.0109	0.0067	0.0061	0.85
<i>Cyperus strigosus</i>	0.0667	0.0109	0.0067	0.0061	0.85
* <i>Alisma plantago aquatica</i>	0.0667	0.0109	0.0053	0.0048	0.78
<i>Echinochloa muricata</i>	0.0667	0.0109	0.0053	0.0048	0.78
<i>Asclepias incarnata</i>	0.0667	0.0109	0.0033	0.0030	0.69
<i>Bidens connata</i>	0.0667	0.0109	0.0020	0.0018	0.63
<i>Lycopus americanus</i>	0.0667	0.0109	0.0020	0.0018	0.63
<i>Salix nigra</i>	0.0667	0.0109	0.0020	0.0018	0.63
<i>Pluchea camphorata</i>	0.0667	0.0109	0.0020	0.0018	0.63
<i>Solanum carolinense</i>	0.0667	0.0109	0.0020	0.0018	0.63
<i>Bidens frondosa</i>	0.0667	0.0109	0.0013	0.0012	0.60
<i>Panicum capillare</i>	0.0667	0.0109	0.0013	0.0012	0.60
<i>Erechtites hieracifolia</i>	0.0667	0.0109	0.0007	0.0006	0.57
Total	6.1337	0.9999	1.1054	1.0000	100.00

\* = planted species

Table 5. Understory species composition of Wet Meadow (Site 2). Freq., Rel. Freq., Dominance (m<sup>2</sup>/m<sup>2</sup>), Rel. Dom., Importance Value (%), N=9.

Species	Freq.	Rel. Freq.	Dom.	Rel. Dom.	I.V.
<i>Juncus interior</i>	0.778	0.0729	0.294	0.1954	13.42
<i>Pycnanthemum tenuifolium</i>	0.889	0.0833	0.211	0.1401	11.17
<i>Solidago canadensis</i>	0.667	0.0625	0.219	0.1453	10.39
<i>Ulmus americana</i>	0.778	0.0729	0.097	0.0642	6.86
<i>Rubus pensylvanicus</i>	0.444	0.0417	0.117	0.0775	5.96
<i>Carex normalis</i>	0.667	0.0625	0.060	0.0398	5.12
<i>Panicum acuminatum</i>	0.556	0.0521	0.052	0.0346	4.34
<i>Polygonum cespitosum</i>	0.556	0.0521	0.030	0.0199	3.60
<i>Panicum clandestinum</i>	0.444	0.0417	0.038	0.0251	3.34
<i>Panicum rigidulum</i>	0.333	0.0313	0.047	0.0310	3.11
<i>Leersia oryzoides</i>	0.333	0.0313	0.022	0.0267	2.67
<i>Erechtites hieracifolia</i>	0.333	0.0313	0.023	0.0155	2.34
<i>Acalypha rhomboidea</i>	0.333	0.0313	0.023	0.0155	2.34
<i>Vernonia missurica</i>	0.333	0.0313	0.019	0.0125	2.19
<i>Scirpus atrovirens</i>	0.222	0.0208	0.033	0.0221	2.15
<i>Andropogon virginicus</i>	0.333	0.0313	0.016	0.0103	2.08
<i>Acer rubrum</i>	0.222	0.0208	0.024	0.0162	1.85
<i>Fraxinus pennsylvanica</i>	0.222	0.0208	0.024	0.0162	1.85
<i>Lespedeza cuneata</i>	0.222	0.0208	0.021	0.0140	1.74
<i>Juncus brachycarpus</i>	0.222	0.0208	0.017	0.0111	1.60
<i>Eupatorium serotinum</i>	0.222	0.0208	0.009	0.0059	1.34
<i>Solanum carolinense</i>	0.222	0.0208	0.009	0.0059	1.34
<i>Kummerowia striata</i>	0.222	0.0208	0.008	0.0052	1.30
<i>Cornus obliqua</i>	0.111	0.0104	0.022	0.0147	1.26
<i>Typha angustifolia</i>	0.111	0.0104	0.011	0.0074	0.89
<i>Acer negundo</i>	0.111	0.0104	0.011	0.0074	0.89
<i>Carex vulpinoidea</i>	0.111	0.0104	0.008	0.0052	0.78
<i>Juncus marginatus</i>	0.111	0.0104	0.006	0.0037	0.71
<i>Boehmeria cylindrica</i>	0.111	0.0104	0.006	0.0037	0.71
<i>Euthamia graminifolia</i>	0.111	0.0104	0.006	0.0037	0.71
<i>Lycopus americanus</i>	0.111	0.0104	0.006	0.0037	0.71
<i>Lycopus virginicus</i>	0.111	0.0104	0.004	0.0029	0.67
<i>Toxicodendron radicans</i>	0.111	0.0104	0.003	0.0022	0.63
Total	10.6663	1.0000	1.507	1.0000	100.00

### C. Cover Type Report

Little change since last year.

Shrubland – This community is located in the western and north-central parts of the site. *Acer rubrum* dominates the sapling layer, and *Rubus pensylvanicus* the shrub layer, while *Festuca pratensis* and *Vernonia missurica* dominate the understory. Trees appear to be about twelve years old.

Wet Shrubland – This community is located in the eastern portion of the site. *Acer rubrum* and *Fraxinus pennsylvanica* dominate the sapling layer. Due to heavy shade, the understory is sparse. Species diversity remains stable since last year. Trees appear to be about seventeen years old.

Wet Meadow – This community is now reduced to small, isolated patches scattered throughout the site, and will eventually succeed to forest. The herb layer is dominated by *Echinochloa muricata*, *Festuca pratensis*, *Lysimachia nummularia*, and *Panicum rigidulum*.

Floodplain Forest – Several areas in the southern portion of the site support floodplain forest. The majority of the trees are 40 to 60 years old, with scattered individuals aged about 90 years. *Fraxinus pennsylvanica*, *Quercus palustris*, and *Betula nigra* dominate the overstory, while *Fraxinus pennsylvanica* dominates the sapling layer. The understory is dominated by *Elymus virginicus*, *Festuca pratensis* and *Impatiens capensis*.

Emergent Wetland – In the central portion of the site, within an excavated area, an emergent wetland has become established. The dominant species are *Juncus acuminatus*, *Polygonum hydropiperoides*, *Cyperus pseudovegatus*, *Panicum rigidulum*, and *Phyla lanceolata*. This community is of good natural quality and harbors a population of the State Endangered *Eryngium prostratum*.

Wet Meadow (oak-hickory wetland) – Within the excavated area, adjacent to the emergent wetland, a wet meadow has become established. The dominant species are *Juncus interior*, *Pycnanthemum tenuifolium*, *Solidago canadensis*, *Ulmus americana* and *Rubus pensylvanicus*. The site is of good natural quality, and in 2002 the very uncommon plant species *Rhexia virginica* (CC=10) was again observed. In 2002, the woody component has increased to the point where a dominant shrub layer of *Fraxinus pennsylvanica* and *Acer rubrum* is present.

Ditch/Wet Meadow – This community has been recently created (1996) at the southeast border of the site. We mention this somewhat artificial community here because it has good natural quality and harbors several very uncommon species, including *Rhexia virginica* (CC=10), *Pluchea camphorata* (CC = 8), and the State Endangered *Eryngium prostratum*. The dominant species are *Leersia oryzoides* and *Phyla lanceolata* (Table 6).

Table 6. Plant Communities Present

A. Emergent Wetland

Understory – dominant – *Juncus acuminatus*, *Polygonum hydropiperoides*,  
*Cyperus pseudoveegatus*, *Panicum rigidulum*, *Phyla lanceolata*

Understory – occasional – *Eleocharis obtusa*, *Eupatorium serotinum*, *Lycopus americanus*,  
*Pluchea camphorata*, *Ludwigia alternifolia*, *Eryngium prostratum*

B. Wet Meadow (oak-hickory wetland)

Shrub – dominant – *Fraxinus pennsylvanica*, *Acer rubrum*

Understory – dominant – *Juncus interior*, *Pycnanthemum tenuifolium*,  
*Solidago canadensis*, *Ulmus americana*, *Rubus pensylvanicus*

Shrub – occasional – *Quercus palustris*, *Cornus obliqua*, *Crateagus phaenopyrum*

Understory – occasional – *Lycopus americanus*, *Panicum rigidulum*, *Carex normalis*  
*Lespedeza cuneata*, *Andropogon virginicus*, *Rhexia virginica*

C. Floodplain Forest

Overstory – dominant – *Quercus palustris*, *Betula nigra*, *Fraxinus pennsylvanica*

Sapling/Shrub – dominant – *Fraxinus pennsylvanica*

Understory – dominant – *Elymus virginicus*, *Festuca pratensis*, *Impatiens capensis*

Overstory – occasional – *Acer rubrum*, *Ulmus americana*, *Gleditsia triacanthos*

Sapling/Shrub – occasional – *Quercus palustris*, *Acer negundo*, *Symphoricarpos orbiculatus*

Understory – occasional – *Cinna arundinacea*, *Glyceria striata*, *Lysimachia nummularia*

D. Wet Shrubland

Sapling – dominant – *Acer rubrum*, *Fraxinus pennsylvanica*

Sapling – occasional – *Betula nigra*, *Ulmus americana*, *Diospyros virginiana*,

Shrub – occasional – *Ulmus americana*, *Rubus occidentalis*, *Rosa multiflora*

Understory – occasional – *Festuca pratensis*, *Lysimachia nummularia*, *Geum canadense*

E. Shrubland

Sapling – dominant – *Acer rubrum*

Shrub – dominant – *Rubus pensylvanicus*

Understory – dominant – *Festuca pratensis*, *Vernonia missurica*

Sapling – occasional – *Fraxinus pennsylvanica*, *Gleditsia triacanthos*, *Acer negundo*

Shrub – occasional – *Rosa multiflora*, *Symphoricarpos orbiculatus*, *Eleagnus angustifolia*

Understory – occasional – *Juncus interior*, *Euthamia graminifolia*, *Solidago canadensis*

F. Ditch/Wet Meadow

Understory – dominant – *Leersia oryzoides*, *Phyla lanceolata*

Understory – occasional – *Lobelia cardinalis*, *Eryngium prostratum*, *Rhexia virginica*

## Faunal Surveys

### Amphibians and Reptiles

#### Amphibians:

1. Blanchard's Cricket Frog (*Acris crepitans blanchardi*) - 1999, 2000, 2001, 2002
2. Cope's Gray Treefrog (*Hyla chrysoscelis*) - 1999, 2000, 2001, 2002
3. Spring Peeper (*Pseudacris crucifer*) - 1999, 2000, 2002
4. Western Chorus Frog (*Pseudacris triseriata*) - 1999, 2000, 2001, 2002
5. Southern Leopard Frog (*Rana sphenocephala*) - 1999, 2000, 2001, 2002
6. Northern Crawfish Frog (*Rana areolata circumosa*) - 2002
7. Smallmouth Salamander (*Ambystoma texanum*) - 2000, 2001, 2002
8. Spotted Salamander (*Ambystoma maculatum*) - 2001
9. Tiger Salamander (*Ambystoma tigrinum*) - 2001
10. Central Newt (*Notophthalmus viridescens louisianensis*) - 2002

#### Reptiles:

1. Eastern Box Turtle (*Terrepena carolina*) - 2000, 2001, 2002
2. Common Snapping Turtle (*Chelydra serpentina*) - 2001, 2002
3. Painted turtle (*Chrysemys picta*) - 2002
4. Five Lined Skink (*Eumeces fasciatus*) - 2002

#### Species Observations

##### Blanchard's Cricket Frog

One Blanchard's cricket frog was collected in the Wet Forbland on 23 April.

##### Cope's Gray Treefrog

On 29 April, one Cope's gray treefrog was observed under bark of a dead tree by the Ephemeral Pond.

##### Spring Peeper

Male spring peepers were heard calling in the emergent wetland on 15 March. On 3 October, four male spring peepers were heard calling.

##### Western Chorus Frog

On 15 March, male western chorus frogs were heard calling, and two adult western chorus frogs were collected from the forested area. Three metamorph western chorus frogs were observed, and two collected near a pool at the south side of the site on 29 April. On 11 July, western chorus frog metamorphs were observed at the site, particularly in wooded areas.

##### Southern Leopard Frog

On 15 March, one dead southern leopard frog was observed at the east edge of the Wet Forbland and approximately 100 ranid egg masses were observed. Southern leopard frog tadpoles were observed in the Wet Forbland and in the Emergent Wetland. Five southern leopard frog egg masses were observed in the ephemeral pond on 15 March. On 23 April, numerous large southern leopard frog tadpoles were observed in the Wet Forbland and Emergent Wetland and large southern leopard frog tadpoles were collected on 29 April to raise in the laboratory. Numerous metamorphic individuals of southern leopard frog were observed in the Wet Forbland and in the Emergent Wetland on 11 July.

##### Northern Crawfish Frog

One injured northern crawfish frog was observed at the east edge of the Wet Forbland on 15 March. On 11 July, ten metamorphic individuals of northern crawfish frog were observed and collected among vegetation in the emergent wetland basin.

#### Smallmouth Salamander

On 15 March, one dead adult smallmouth salamander was observed at the east edge of the Wet Forbland, and egg masses were observed in the Ephemeral Pond. Hundreds of smallmouth salamander larvae were observed, and several dipnetted, in the ephemeral pond on 23 April.

#### Central Newt

One female central newt was dipnetted from the Emergent Wetland and two male central newts were collected from the east side of the Wet Forbland on 15 March.

#### Eastern Box Turtle

On 23 April, One male eastern box turtle was found at the east border between the Wet Forbland and the forest and a second male was observed in an intermittent stream between the Ephemeral Pond and the East Ditch. A juvenile eastern box turtle was observed in the South Forest Strip on 3 October.

#### Common Snapping Turtle

On 23 April, a common snapping turtle was observed in the Emergent Wetland. A dead common snapping turtle was observed on IL 13 (eastbound lane, north shoulder) immediately south of the wetland compensation site on 29 April.

#### Painted Turtle

One painted turtle was observed in a ditch at the southwest corner of the site on 29 April.

#### Five Lined Skink

An 29 April, a five lined skink was observed on a dead tree in the South Forest Strip. On 3 October, A five-lined skink was collected along the south edge of the South Forest Strip.

Eight species of amphibians were observed during the 2002 field season. The central newt is a new record for the county. The crawfish frog, an uncommon anuran, is a new species for the site and only the second record for the county. Blanchard's cricket frog, Cope's grey treefrog, western chorus frog, and southern leopard frog have now been observed in all four years (1999-2002) of the survey. Eggs of leopard frogs and smallmouth salamanders have been observed in each of the last three years. Larvae/tadpoles of smallmouth salamanders, western chorus frogs, Cope's gray treefrogs, and southern leopard frogs have been positively identified in at least three of the last four years. It is clear that this site is an important habitat for amphibian reproduction. Over the last four years, evidence of recruitment (eggs, larvae/tadpoles, metamorphs) has been observed for eight species: Blanchard's cricket frog, western chorus frog, spring peeper, Cope's grey tree frog, southern leopard frog, crawfish frog, smallmouth salamander, and spotted salamander. Fowler's toad and bullfrog, although common locally, have never been observed at this site.

Four reptile species were observed during the 2002 field season. Eastern box turtles have now been observed in each of the last three years, and a juvenile was observed this year. Snapping turtles were observed in 2001 and 2002. A lizard species (five lined skink) was witnessed for the first time this year. No snakes were observed for the fourth consecutive year, although suitable habitat exists for several species.

#### Avifauna

The avian composition of the site has not noticeably changed during the monitoring period. This year a total of 302 individuals of 47 species, including four migrant species, were detected during our censuses (Table 7). In the four year period, the number of species observed ranged from 44 to 49. In the three years in which spring sampling was done, the number of migrant species ranged from four to seven. No Illinois endangered, threatened or watch list species were observed. In all years, a good number of common forest, grassland and scrub habitat birds were observed at the site. Consistent with the small size of habitat fragments present, no resident area sensitive species were found.

Table 7. Breeding bird census results. Values represent sum of two censuses. Pt 1= wet forest, pond; Pt 2= wet meadow; Pt 3 = wet shrubland, emergent; Pt 4= scrub. M = migrant.

Species	pt 1	pt 2	pt 3	pt 4	Total
green heron	1	0	0	0	1
wood duck	1	0	0	0	1
turkey vulture	2	0	3	1	6
red tailed hawk	1	0	2	0	3
American kestrel	0	0	0	1	1
northern bobwhite	0	0	1	0	1
killdeer	0	0	0	4	4
mourning dove	2	3	3	6	14
ruby throated hummingbird	0	2	0	0	2
red bellied woodpecker	4	0	3	0	7
eastern wood pewee	2	0	3	1	6
great crested flycatcher	2	3	0	1	6
tree swallow	3	0	0	0	3
blue jay	2	3	1	4	10
American crow	7	0	4	2	13
Carolina chickadee	4	5	6	3	18
house wren	0	0	2	0	2
Carolina wren	0	0	0	4	4
blue grey gnatcatcher	1	0	1	0	2
eastern bluebird	0	0	5	0	5
American robin	4	6	4	5	19
grey catbird	1	0	2	6	9
northern mockingbird	0	0	3	0	3
brown thrasher	3	2	5	1	11
European starling	4	0	0	6	10
white eyed vireo	0	0	2	0	2
red eyed vireo	0	0	0	1	1
yellow throated vireo	0	0	0	2	2
blue winged warbler	0	0	2	0	2
yellow rumped warbler <sup>M</sup>	3	2	4	2	11
black throated green warbler <sup>M</sup>	0	0	1	0	1
magnolia warbler <sup>M</sup>	0	0	1	0	1
American redstart <sup>M</sup>	1	1	3	1	6
common yellowthroat	0	4	0	0	4
northern cardinal	3	2	5	2	12
indigo bunting	1	1	2	1	5
rufous sided towhee	1	0	0	1	2
field sparrow	1	0	0	3	4
vesper sparrow	0	0	0	1	1
song sparrow	2	1	3	4	10
red winged blackbird	3	5	4	16	28
common grackle	12	2	3	5	22
brown headed cowbird	3	0	4	3	10
orchard oriole	0	1	0	0	1
Baltimore oriole	0	1	0	0	1
American goldfinch	3	4	2	1	10
house sparrow	2	0	0	3	5
<b>Number of individuals</b>	<b>79</b>	<b>48</b>	<b>84</b>	<b>91</b>	<b>302</b>
<b>Number of species</b>	<b>29</b>	<b>18</b>	<b>29</b>	<b>29</b>	<b>47</b>

## Summary and Recommendations

In September 2001, A close out meeting was held on site. In attendance were representatives from Illinois Department of Transportation, U. S. Army Corps of Engineers, U. S. Fish and Wildlife Service, Illinois Department of Natural Resources, Illinois State Geological Survey, and Illinois Natural History Survey. At this meeting the Corps indicated that, after three years of monitoring, this site would be considered to be a successful wetland creation suitable for mitigation of wetland impacts due to IL 13 highway construction. However, the following two conditions need to be met: 1) The exotic, planted Chinese beauty berry (*Callicarpa dichotoma*) and 2) the invasive giant reed (*Phragmites communis*) needed to be removed from the emergent wetland. In summer 2002, INHS personnel were able to locate 28 individuals of *Callicarpa dichotoma*. All located stems were pruned and treated with the herbicide Rodeo. We attempted to apply the same treatment to *Phragmites communis*, however this species has now increased in abundance to the point where removal will require professional services.

Overall, this site has developed quite well. Shallow excavation and berm construction have resulted in at least 4.53 ha (11.2 acres) of wetland creation. Planted herbaceous and woody species are doing well. In the emergent wetland, nine planted species are present and healthy and most are reproducing and spreading well beyond their original planting cells. In the oak-hickory and cypress-gum plantings, 13 planted species are present and nine of these are relatively abundant. Although planted woody species have experienced mortality, the plantings still remain abundant and healthy enough to represent a significant component of the developing forest. Diversity of naturally occurring plant species has steadily increased, and all wetland plant communities on site currently have Floristic Quality Indices (FQI's) of 20.0 or above. The emergent wetland and wet meadow (oak-hickory wetland) currently occupying the excavated area support especially high natural quality (FQI = 33.3 and 33.7, including planted species). In these two communities, healthy populations of the State Endangered *Eryngium prostratum*, and other very uncommon plants (*Pluchea camphorata*, *Rhexia virginica*) occur. All communities have much less than 50% exotic or weedy species. Although two communities, wet meadow and shrubland, have weedy species among the three most dominant (*Solidago canadensis* in the wet meadow and *Festuca pratensis* in the shrubland), these species will certainly decrease as forest cover increases. We estimate that without management the entire site will succeed to forest. The wet meadow (oak- hickory wetland), along with most of the site, should develop into bottomland or floodplain forest dominated by green ash, red maple, river birch and possibly pin oak. The emergent wetland with cypress-gum wetland superimposed appears to be developing into open forest dominated by black willow and red maple, with marsh vegetation interspersed. This site will continue to support a considerable area of ephemeral, fish free ponds and be very valuable for amphibian reproduction.

As long as establishment of forested systems (with limited areas of open marsh) is considered acceptable for this site, and as long as the presence of *Phragmites communis* and *Typha angustifolia* can be tolerated (both are quite abundant in the general area and would likely reinvade if extirpated), this can now be considered a successful and ecologically valuable wetland creation.

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Fig. 3. Photo location 1. Wet Meadow and Emergent Wetland

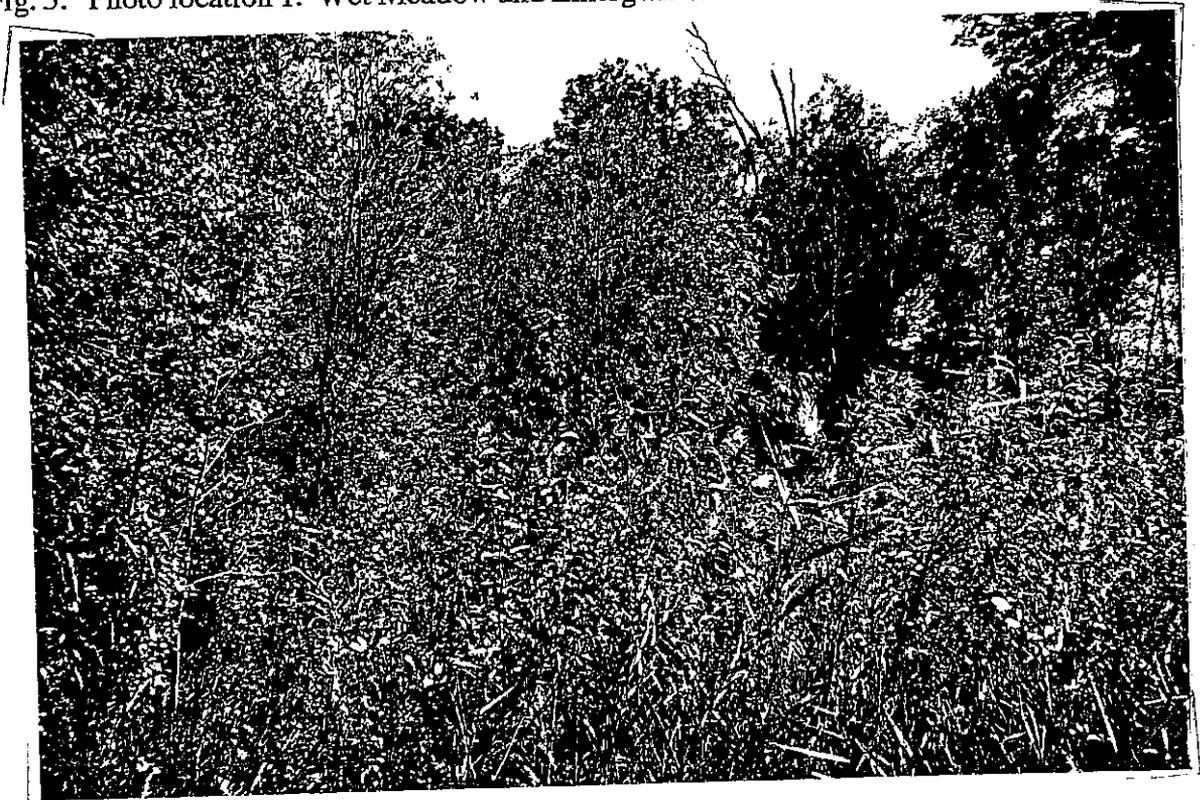


Fig. 4. Photo location 2. Emergent Wetland



Fig. 5. Photo location 3. Emergent Wetland



Fig. 6 Photo location 4. Emergent Wetland and Wet Meadow



Fig. 3. Photo location 1. Wet Meadow and Emergent Wetland



Fig. 4. Photo location 2. Emergent Wetland



Fig. 5. Photo location 3. Emergent Wetland



Fig. 6 Photo location 4. Emergent Wetland and Wet Meadow



Fig. 3. Photo location 1. Wet Meadow and Emergent Wetland



Fig. 4. Photo location 2. Emergent Wetland



Fig. 5. Photo location 3. Emergent Wetland



Fig. 6 Photo location 4. Emergent Wetland and Wet Meadow

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

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**ROUTINE ON-SITE WETLAND DETERMINATION**

Site 1 (page 1 of 5)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 2 August 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Emergent Wetland  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** eastern part of the central portion of the site (adjacent to Site 2)

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

**VEGETATION**

<b>Dominant Plant Species</b>	<b>Stratum</b>	<b>Indicator Status</b>
1. <i>Juncus acuminatus</i>	herb	OBL
2. <i>Polygonum hydropiperoides</i>	herb	OBL
3. <i>Cyperus pseudovegatus</i>	herb	FACW
4. <i>Panicum rigidulum</i>	herb	FACW
5. <i>Phyla lanceolata</i>	herb	OBL

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

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

**SOILS**

Series and phase: Bonnie silt loam  
On Saline 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:      Redox depletions:      Yes: X      No:  
Matrix color: 5Y 7/1  
Other indicators: This soil is found in a level to depressional area on a floodplain.

**Hydric soils:** Yes: X      No:  
**Rationale:** Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.







## ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 5 of 5)

**Field Investigators:** Plocher, Larimore, Keene **Date:** 2 August 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13)

Wetland Mitigation

**State:** Illinois **County:** Saline **Applicant:** IDOT District 9  
**Site Name:** Emergent Wetland  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4  
**Location:** eastern part of the central portion of the site (adjacent to Site 2)

### SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI***
* <i>Phragmites communis</i>	common reed	herb	FACW+	1
** <i>Phyla lanceolata</i>	fog fruit	herb	OBL	1
<i>Platanus occidentalis</i>	sycamore	shrub	FACW	3
<i>Pluchea camphorata</i>	camphorweed	herb	FACW	8
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
* <i>Polygonum cespitosum</i>	creeping smartweed	herb	UPL	
<i>Polygonum hydropiperoides</i>	mild water pepper	herb	OBL	4
<i>Pontederiacordata</i>	pickerelweed	herb	(planted)	8
<i>Populus deltoides</i>	cottonwood	shrub/seedl	FAC+	2
<i>Pycnanthemum tenuifolium</i>	slender mountain mint	herb	FAC	4
<i>Quercus lyrata</i>	overcup oak	shrub	(planted)	7
<i>Quercus palustris</i>	pin oak	shrub	(planted)	4
<i>Rumex altissimus</i>	pale dock	herb	FACW-	2
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix amygdaloides</i>	peach leaf willow	shrub	FACW	4
<i>Salix nigra</i>	black willow	shrub/seedl	OBL	3
<i>Scirpus americanus</i>	American bulrush	herb	(planted)	3
<i>Scirpus atrovirens</i>	green bulrush	herb	OBL	4
<i>Scirpus cyperinus</i>	wool grass	herb	OBL	5
<i>Scirpus validus</i>	great bulrush	herb	(planted)	4
<i>Scutellaria lateriflora</i>	mad dog scullcap	herb	OBL	4
<i>Sium suave</i>	water parsnip	herb	OBL	5
* <i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
<i>Sparganium eurycarpum</i>	burreed	herb	(planted)	5
<i>Taxodium distichum</i>	bald cypress	shrub	(planted)	7
* <i>Toxicodendron radicans</i>	poison ivy	herb	FAC+	1
* <i>Typha angustifolia</i>	narrow leaf cattail	herb	OBL	
* <i>Typha latifolia</i>	common cattail	herb	OBL	1
<i>Ulmus americana</i>	American elm	shrub/seedl	FACW-	5
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3

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

\*=non-native or weedy (13.6%), \*\*=annual, but desirable

FQI =  $R/\sqrt{N} = 236/\sqrt{72} = 27.8$ , mean  $C = R/N = 236/72 = 3.3$

FQI (including planted species) =  $305/\sqrt{84} = 33.3$ , mean  $C = R/N = 305/84 = 3.6$







**ROUTINE ON-SITE WETLAND DETERMINATION**  
Site 2 (page 4 of 5)

**Field Investigators:** Plocher, Larimore, Keene **Date:** 2 August 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois **County:** Saline **Applicant:** IDOT District 9  
**Site Name:** Wet Meadow (oak – hickory wetland)  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4  
**Location:** central portion of the site (adjacent to Site1)

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI***
<i>Gleditsia triacanthos</i>	honey locust	shrub/seedl	FAC	2
<i>Helenium autumnale</i>	sneezeweed	herb	FACW+	3
<i>Hypericum mutilum</i>	dwarf St. John's wort	herb	FACW	5
<i>Hypericum prolificum</i>	shrub St. John's wort	herb	FACU	6
<i>Itea virginica</i>	sweet spires	shrub/seedl	(planted)	10
<i>Juncus brachycarpus</i>	rush	herb	FACW	5
<i>Juncus effusus</i>	rush	herb	OBL	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juncus marginatus</i>	grass leaved rush	herb	FACW	5
* <i>Kummerowia striata</i>	Japanese lespedeza	herb	FACU	
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
* <i>Lespedeza cuneata</i>	Chinese bush clover	herb	NI	
<i>Linum medium</i>	small yellow flax	herb	FACU	7
<i>Liquidambar styraciflua</i>	sweet gum	shrub	(planted)	6
* <i>Lonicera japonica</i>	Japanese honeysuckle	herb	FACU	
<i>Ludwigia alternifolia</i>	seedbox	herb	OBL	5
<i>Ludwigia polycarpa</i>	many fruited seedbox	herb	OBL	5
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugleweed	herb	OBL	5
<i>Mimulus ringens</i>	monkey flower	herb	OBL	5
<i>Nyssa sylvatica</i>	black gum	shrub	(planted)	7
<i>Onoclea sensibilis</i>	sensitive fern	herb	FACW	5
<i>Panicum acuminatum</i>	panic grass	herb	FAC	2
<i>Panicum anceps</i>	panic grass	herb	FACW	3
<i>Panicum clandestinum</i>	deer tongue grass	herb	FACW	4
<i>Panicum rigidulum</i>	Munro grass	herb	FACW	6
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
* <i>Phragmites communis</i>	common reed	herb	FACW+	1

\*\*\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

(continued on following page)

**ROUTINE ON-SITE WETLAND DETERMINATION**  
Site 2 (page 5 of 5)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 2 August 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)

Wetland Mitigation

**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Wet Meadow (oak – hickory wetland)  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4  
**Location:** central portion of the site (adjacent to Site 1)

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI***
<i>Platantheraperamoena</i>	purple fringeless orchid	herb	FACW	5
<i>Platanus occidentalis</i>	sycamore	shrub/seedl	FACW	3
<i>Pluchea camphorata</i>	camphor weed	herb	FACW	8
* <i>Polygonum cespitosum</i>	creeping smartweed	herb	UPL	
** <i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Populus deltoides</i>	cottonwood	shrub/seedl	FAC+	2
* <i>Prunella vulgaris elongata</i>	self heal	herb	FAC	1
<i>Pycnanthemum tenuifolium</i>	mountain mint	herb	FAC	4
<i>Quercus bicolor</i>	swamp white oak	shrub	(planted)	7
<i>Quercus imbricaria</i>	shingle oak	shrub	FAC-	2
<i>Quercus lyrata</i>	overcup oak	shrub/seedl	(planted)	7
<i>Quercus palustris</i>	pin oak	shrub/seedl	(planted)	4
<i>Quercus velutina</i>	black oak	shrub	UPL	5
<i>Rhexia virginica</i>	meadow beauty	herb	OBL	10
<i>Rhus coppalina</i>	winged sumac	shrub	UPL	2
* <i>Rosa multiflora</i>	multiflora rose	shrub	FACU	
<i>Rosa setigera</i>	Illinois rose	shrub	FACU+	5
<i>Rubus pensylvanicus</i>	black berry	shrub	FAC-	2
* <i>Rumex crispus</i>	curly dock	herb	FAC+	
<i>Salix amygdaloides</i>	peach leaf willow	shrub/seedl	FACW	4
<i>Salix nigra</i>	black willow	shrub/seedl	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scirpus cyperinus</i>	wool grass	herb	OBL	5
<i>Scutellaria lateriflora</i>	mad dog scullcap	herb	OBL	4
* <i>Setaria glauca</i>	yellow foxtail	herb	FAC	
* <i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
* <i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
* <i>Toxicodendron radicans</i>	poison ivy	herb	FAC+	1
* <i>Typha angustifolia</i>	narrowleaf cattail	herb	OBL	
* <i>Typha latifolia</i>	common cattail	herb	OBL	1
<i>Ulmus americana</i>	American elm	shrub/seedl	FACW-	5
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vernonia missurica</i>	Missouri ironweed	herb	FAC+	5

\*\*\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

\*=non-native or weedy (21.3%), \*\*=annual, but desirable  
FQI= $R/\sqrt{N}=249/\sqrt{74}=28.9$ , mean  $C=R/N=249/74=3.4$   
FQI (including planted species)= $307/\sqrt{83}=33.7$ , mean  $C=307/83=3.7$



**ROUTINE ON-SITE WETLAND DETERMINATION**  
Site 3 (page 2 of 4)

**Field Investigators:** Plocher, Larimore, Keene **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13)  
**State:** Illinois **County:** Saline **Applicant:** IDOT District 9  
**Site Name:** Shrubland  
**Legal Description:** T.9S., R.5 E., Sect. 18, NE/4 SW/4

**Location:** western portion of the site

**HYDROLOGY**

Inundated? Yes: No: X Depth of standing water: NA  
Depth to saturated soil: > 1.2 m (48 in)  
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands. Evapotranspiration and sheetflow are the major outputs.  
Size of watershed: 2.59 km<sup>2</sup> (1 mi<sup>2</sup>)  
Other field evidence observed: none

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

**Rationale:** Field evidence suggests that this site is not saturated or inundated for a sufficient duration during the growing season to meet the wetland hydrology criterion.

**WETLAND DETERMINATION AND RATIONALE:**

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

**Rationale:** Hydrophytic vegetation, hydric soils and wetland hydrology are all absent. Therefore the site is not a wetland. The site is not coded by the NWI.

Determined by: Allen Plocher (vegetation and hydrology)  
Rick Larimore (vegetation and hydrology)  
Dennis Keene (soils and hydrology)  
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## ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 3 of 4)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Shrubland  
**Legal Description:** T.9S., R.5 E., Sect. 18, NE/4 SW/4  
**Location:** western portion of the site

### SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI***
* <i>Acalypha rhomboidea</i>	three seeded Mercury	herb	FACU	0
<i>Acer negundo</i>	box elder	sapling, shrub, seedl	FACW-	1
<i>Acer rubrum</i>	red maple	sapling, shrub, seedl	FAC	5
* <i>Andropogon virginicus</i>	broomsedge	herb	FAC-	1
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
* <i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Betula nigra</i>	river birch	shrub/sapl	FACW	4
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carex pensylvanica</i>	Pennsylvania sedge	herb	UPL	5
<i>Catalpa speciosa</i>	catalpa	sapling	FACU	-
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Corylus americana</i>	hazel	shrub	FACU-	4
<i>Crateagus mollis</i>	red haw	sapling, shrub	FACW-	2
<i>Desmodium paniculatum</i>	panicked tick trefoil	herb	FACU	2
<i>Diospyros virginiana</i>	persimmon	sapling, shrub, seedl	FAC	2
* <i>Eleagnus angustifolia</i>	Russian olive	sapling, shrub	FACU-	
** <i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Eupatorium coelestinum</i>	mistflower	herb	FAC+	3
* <i>Eupatorium serotinum</i>	late flowering thoroughwort	herb	FAC+	1
<i>Euthamia graminifolia</i>	grass leaved goldenrod	herb	FACW-	3
* <i>Festuca pratensis</i>	English bluegrass	herb	FACU-	
<i>Fraxinus pennsylvanica</i>	green ash	sapling, shrub, seedl	FACW	2
<i>Gleditsia triacanthos</i>	honey locust	sapling, shrub, seedl	FAC	2
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juniperus virginiana</i>	eastern red cedar	shrub/sapl	FACU	1
<i>Lactuca floridana</i>	blue lettuce	herb	FAC-	4
<i>Liquidambar styraciflua</i>	sweetgum	shrub	FACW	6

\*\*\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

(Species list continued on next page)

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 4 of 4)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Shrubland  
**Legal Description:** T.9S., R.5 E., Sect. 18, NE/4 SW/4  
**Location:** western portion of the site

### SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI***
* <i>Lonicera japonica</i>	Japanese honeysuckle	herb	FACU	
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
* <i>Morus alba</i>	white mulberry	shrub	FAC	
<i>Panicum acuminatum</i>	panic grass	herb	FAC	2
<i>Panicum clandestinum</i>	deer tongue grass	herb	FACW	4
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
* <i>Phytolacca americana</i>	pokeweed	herb	FAC-	1
<i>Platanus occidentalis</i>	sycamore	shrub	FACW	3
<i>Prunus serotina</i>	black cherry	shrub	FACU	1
<i>Pycnanthemum tenuifolium</i>	mountain mint	herb	FAC	4
<i>Quercus imbricaria</i>	shingle oak	herb	FAC-	2
<i>Quercus palustris</i>	pin oak	herb	FACW	4
<i>Rhus copallina</i>	winged sumac	herb	UPL	2
* <i>Rosa multiflora</i>	multiflora rose	shrub	FACU	
<i>Rosa setigera</i>	Illinois rose	shrub	FACU+	5
<i>Rubus occidentalis</i>	black raspberry	shrub	UPL	2
<i>Rubus pensylvanicus</i>	common blackberry	shrub	FAC-	2
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
* <i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
* <i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago ulmifolia</i>	elm leaf goldenrod	herb	UPL	5
* <i>Symphoricarpos orbiculatus</i>	coralberry	herb	FACU	1
* <i>Toxicodendron radicans</i>	poison ivy	herb	FAC+	1
<i>Ulmus americana</i>	American elm	sapling, shrub, seedl	FACW-	5
<i>Vernonia missurica</i>	Missouri ironweed	herb	FAC+	5
<i>Vitis cinerea</i>	winter grape	woody vine/herb	FACW-	4
<i>Vitis riparia</i>	riverbank grape	woody vine/herb	FACW-	2

\*\*\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

\*=non-native or weedy (24.6%), \*\*=annual, but desirable  
 $FQI = R/\sqrt{N} = 135/\sqrt{51} = 18.9$ , mean  $C = R/N = 135/51 = 2.6$

# ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 1 of 4)

**Field Investigators:** Plocher, Larimore, Keene **Date:** 18 July 2002

**Sect. No.:** (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13)

Wetland Mitigation

**State:** Illinois **County:** Saline

**Applicant:** IDOT District 9

**Site Name:** Wet Shrubland

**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** eastern portion of the site

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

## VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. <i>Acer rubrum</i>	sapling	FAC
2. <i>Fraxinus pennsylvanica</i>	sapling	FACW

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

**Hydrophytic vegetation:** Yes:  No:

**Rationale:** Greater than 50% of the dominant species are OBL, FACW, FAC+, or FAC.

## SOILS

Series and phase: Bonnie silt loam

On Saline County hydric soils list? Yes:  No:

Is the soil a histosol? Yes:  No:  Histic epipedon present? Yes:  No:

Redox concentrations: Yes:  No:  Redox depletions: Yes:  No:

Matrix color: 2.5Y 6/2 and 7/1

Other indicators: This soil is found in a level to depressional area on a floodplain.

**Hydric soils:** Yes:  No:

**Rationale:** Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

**ROUTINE ON-SITE WETLAND DETERMINATION**

Site 4 (page 2 of 4)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Wet Shrubland  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** eastern portion of the site

**HYDROLOGY**

Inundated? Yes: No:       Depth of standing water: NA  
Depth to saturated soil: 0.5 m (20 in)  
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands. Evapotranspiration and sheetflow are the major outputs.  
Size of watershed: 2.59 km<sup>2</sup> (1 mi<sup>2</sup>)  
Other field evidence observed: The site is low-lying and level. Wetland drainage patterns and water stained leaves were observed.

**Wetland hydrology:** Yes:  No:

**Rationale:** Field evidence suggests that this site is saturated or inundated for a sufficient duration during the growing season to meet the wetland hydrology criterion.

**WETLAND DETERMINATION AND RATIONALE:**

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

**Rationale:** Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland.  
The site is not coded by the NWI.

Determined by: Allen Plocher (vegetation and hydrology)  
Rick Larimore (vegetation and hydrology)  
Dennis Keene (soils and hydrology)  
Illinois Natural History Survey  
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607 East Peabody Drive  
Champaign, Illinois 61820  
(217) 333-6292

**ROUTINE ON-SITE WETLAND DETERMINATION**  
Site 4 (page 3 of 4)

**Field Investigators:** Plocher, Larimore, Keene **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois **County:** Saline **Applicant:** IDOT District 9  
**Site Name:** Wet Shrubland  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4  
**Location:** eastern portion of site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI***
* <i>Acalypha rhomboidea</i>	three seeded Mercury	herb	FACU	0
<i>Acer rubrum</i>	red maple	sapling/shrub	FAC	5
<i>Asplenium platyneuron</i>	ebony spleenwort	herb	FACU	4
<i>Betula nigra</i>	river birch	sapling/shrub	FACW	4
** <i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Campsis radicans</i>	trumpet creeper	herb/woody vine	FAC	2
<i>Carex normalis</i>	sedge	herb	FACW	4
<i>Carex squarrosa</i>	sedge	herb	OBL	5
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Celtis occidentalis</i>	hackberry	sapling/shrub	FAC-	3
<i>Cinna arundinacea</i>	stout woodreed	herb	FACW	5
<i>Diospyros virginiana</i>	persimmon	sapling/shrub	FAC	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
** <i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
* <i>Festuca pratensis</i>	English blue grass	herb	FACU-	
<i>Fraxinus pennsylvanica</i>	green ash	sapling/shrub	FACW	2
<i>Geum canadense</i>	white avens	herb	FAC	2
<i>Gleditsia triacanthos</i>	honeylocust	shrub/seedl	FAC	2
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Ilex decidua</i>	swamp holly	shrub	FACW	6

\*\*\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

(Continued on following page)

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 4 of 4)

**Field Investigators:** Plocher, Larimore, Keene **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois **County:** Saline **Applicant:** IDOT District 9  
**Site Name:** Wet Shrubland  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4  
**Location:** eastern portion of site

### SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI***
<i>Impatiens capensis</i>	jewel weed	herb	FACW	2
<i>Lactucafloridana</i>	blue lettuce	herb	FAC-	4
<i>Leersia virginica</i>	white grass	herb	FACW	4
* <i>Lonicera japonica</i>	Japanese honeysuckle	herb/woody vine	FACU	
<i>Lycopus virginicus</i>	bugle weed	herb	OBL	5
* <i>Lysimachia nummularia</i>	moneywort	herb	FACW+	
* <i>Microstegium vimineum</i>	eulalia	herb	FAC	
<i>Onoclea sensibilis</i>	sensitive fern	herb	FACW	5
<i>Panicum clandestinum</i>	deer tongue grass	herb	FACW	4
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb/woody vine	FAC-	2
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	4
<i>Pycnanthemum tenuifolium</i>	mountain mint	herb	FAC	4
<i>Quercus palustris</i>	pin oak	sapling/shrub	FACW	4
* <i>Rosa multiflora</i>	multiflora rose	shrub	FACU	
<i>Rubus occidentalis</i>	black raspberry	shrub	UPL	2
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scutellaria lateriflora</i>	mad dog skullcap	herb	OBL	4
* <i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
* <i>Symphoricarpos orbiculatus</i>	coralberry	shrub	FACU	1
* <i>Toxicodendron radicans</i>	poison ivy	herb/woody vine	FAC+	1
<i>Ulmus americana</i>	American elm	sapling/shrub/seedl	FACW-	5
<i>Vernonia missurica</i>	Missouri ironweed	herb	FAC+	5
* <i>Viola pratincola</i>	common blue violet	herb	FAC	1
<i>Vitis riparia</i>	riverbank grape	herb/woody vine	FACW-	2

\*\*\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

\*=non-native or weedy (21.7%), \*\*=annual, but desirable  
 $FQI = R/\sqrt{N} = 131/\sqrt{41} = 20.5$ , mean  $C = R/N = 131/41 = 3.2$

**ROUTINE ON-SITE WETLAND DETERMINATION**

Site 5 (page 1 of 3)

**Field Investigators:** Plocher, Larimore, Keene **Date:** 2 August 2002

**Sect. No.:** (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13)

Wetland Mitigation

**State:** Illinois **County:** Saline

**Applicant:** IDOT District 9

**Site Name:** Wet Meadow/Ditch Bank

**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** eastern edge of the site

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

**VEGETATION**

Dominant Plant Species	Stratum	Indicator Status
1. <i>Leersia oryzoides</i>	herb	OBL
2. <i>Phyla lanceolata</i>	herb	OBL

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

**Hydrophytic vegetation:** Yes: X No:

**Rationale:** Greater than 50% of the dominant species are OBL, FACW, FAC+, or FAC.

**SOILS**

Series and phase: Bonnie silt loam

On Saline 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: Redox depletions: Yes: X No:

Matrix color: 2.5Y 6/2 and 7/1

Other indicators: This soil is found in a level to depressional area on a floodplain.

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

**Rationale:** Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 5 (page 2 of 3)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 2 August 2002

**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)

Wetland Mitigation

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

**Site Name:** Wet Meadow/Ditch Bank

**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** eastern edge of the site

### HYDROLOGY

Inundated? Yes: No: X

Depth of standing water: NA

Depth to saturated soil: at surface

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands and ditch overflow.

Evapotranspiration and sheetflow are the major outputs.

Size of watershed: 2.59 km<sup>2</sup> (1 mi<sup>2</sup>)

Other field evidence observed: The site is level to depressional. Wetland drainage patterns and water stained leaves were observed.

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

**Rationale:** Field evidence suggests that this site is saturated or inundated for a sufficient duration during the growing season to meet the wetland hydrology criterion.

### WETLAND DETERMINATION AND RATIONALE:

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

**Rationale:** Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland.  
The site is not coded by the NWI.

Determined by: Allen Plocher (vegetation and hydrology)  
Rick Larimore (vegetation and hydrology)  
Dennis Keene (soils and hydrology)  
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## ROUTINE ON-SITE WETLAND DETERMINATION

Site 5 (page 3 of 3)

**Field Investigators:** Plocher, Larimore, Keene **Date:** 2 August 2002

**Sect. No.:** (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13)

Wetland Mitigation

**State:** Illinois **County:** Saline

**Applicant:** IDOT District 9

**Site Name:** Wet Meadow/Ditch Bank

**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** eastern edge of site

### SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI***
** <i>Ammannia coccinea</i>	ammannia	herb	OBL	5
<i>Aster ericoides</i>	heath aster	herb	FACU-	4
<i>Betula nigra</i>	river birch	seedl	FACW	4
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Boltonia diffusa</i>	false aster	herb	FACW	4
<i>Carex lupulina</i>	hop sedge	herb	OBL	5
<i>Carex normalis</i>	sedge	herb	FACW	4
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Cyperus pseudovegatus</i>	flat sedge	herb	FACW	5
* <i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
** <i>Eleocharis obtusa</i>	spikerush	herb	OBL	2
<i>Eryngium prostratum</i>	eryngo	herb	OBL	5
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Helenium autumnale</i>	sneezeweed	herb	FACW+	3
<i>Juncus acuminatus</i>	knotty leaved rush	herb	OBL	4
<i>Juncus effusus</i>	rush	herb	OBL	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lobelia cardinalis</i>	cardinal flower	herb	OBL	6
<i>Ludwigia palustris</i>	marsh seedbox	herb	OBL	4
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugleweed	herb	OBL	5
* <i>Lysimachia nummularia</i>	moneywort	herb	FACW+	
<i>Mimulus alatus</i>	winged monkeyflower	herb	OBL	6
<i>Panicum anceps</i>	panic grass	herb	FACW	6
<i>Panicum rigidulum</i>	Munro grass	herb	FACW	2
<i>Paspalum laeve</i>	smooth bead grass	herb	FACW-	2
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
* <i>Phragmites communis</i>	giant reed	herb	FACW+	1
** <i>Phyla lanceolata</i>	fog fruit	herb	OBL	1
<i>Pluchea camphorata</i>	camphorweed	herb	FACW	8
<i>Populus deltoides</i>	cottonwood	seedl	FAC+	2
* <i>Prunella vulgaris elongata</i>	self heal	herb	FAC	1
<i>Rhexia virginica</i>	meadow beauty	herb	OBL	10
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix nigra</i>	black willow	seedl	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4

\*\*\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

\*=non-native or weedy (10.8%), \*\*=annual, but desirable

$$FQI = R/\sqrt{N} = 135/\sqrt{36} = 22.5, \text{ mean } C = R/N = 135/36 = 3.7$$

**ROUTINE ON-SITE WETLAND DETERMINATION**  
Site 6 (page 1 of 4)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Floodplain Forest  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** various locations in the southern part of the site

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

**VEGETATION**

<b>Dominant Plant Species</b>	<b>Stratum</b>	<b>Indicator Status</b>
1. <i>Quercus palustris</i>	tree	FACW
2. <i>Fraxinus pennsylvanica</i>	tree	FACW
3. <i>Betula nigra</i>	tree	FACW
4. <i>Fraxinus pennsylvanica</i>	sapling	FACW
5. <i>Elymus virginicus</i>	herb	FACW-
6. <i>Festuca pratensis</i>	herb	FACU-
7. <i>Impatiens capensis</i>	herb	FACW

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 85.7%

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

**SOILS**

Series and phase: Bonnie silt loam  
On Saline 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:      Redox depletions:      Yes: X      No:  
Matrix color: 10YR 6/2  
Other indicators: This soil is found in a level to depressional area on a floodplain.

**Hydric soils:** Yes: X      No:  
**Rationale:** Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

**ROUTINE ON-SITE WETLAND DETERMINATION**  
Site 6 (page 2 of 4)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Floodplain Forest  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** various locations in the southern part of the site

**HYDROLOGY**

Inundated? Yes:      No: X      Depth of standing water: NA  
Depth to saturated soil: greater than 1.2 m (48 in)  
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and ditch overflow.  
Evapotranspiration and sheetflow are the major outputs.  
Size of watershed: 2.59 km<sup>2</sup> (1 mi<sup>2</sup>)  
Other field evidence observed: low landscape position, wetland drainage patterns, water stained leaves

**Wetland hydrology:** Yes: X      No:  
**Rationale:** Evidence cited above indicates that this site is flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

**WETLAND DETERMINATION AND RATIONALE:**

**Is the site a wetland?:** Yes: X      No:  
**Rationale:** Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. The site is not coded by the NWI.

Determined by: Allen Plocher (vegetation and hydrology)  
Rick Larimore (vegetation and hydrology)  
Dennis Keene (soils and hydrology)  
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**ROUTINE ON-SITE WETLAND DETERMINATION**  
Site 6 (page 3 of 4)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)  
Wetland Mitigation  
**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Floodplain Forest  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4

**Location:** various locations in the southern portion of the site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
* <i>Acalypha rhomboidea</i>	three seeded Mercury	herb	FACU	0
<i>Acer negundo</i>	box elder	tree/sapl	FACW-	1
<i>Acer rubrum</i>	red maple	tree/sapl/shrub/seedl	FAC	5
<i>Aster ericoides</i>	heath aster	herb	FACU-	4
<i>Aster lateriflorus</i>	side flowered aster	herb	FACW-	2
<i>Betula nigra</i>	river birch	tree/sapl/shrub	FACW	4
<i>Boehmeria cylindrica</i>	false nettle	herb	OBL	3
<i>Campsis radicans</i>	trumpet creeper	woody vine/herb	FAC	2
<i>Carex blanda</i>	woodland sedge	herb	FAC	2
<i>Carex grayi</i>	Gray's sedge	herb	FACW+	6
<i>Carex muskingumensis</i>	sedge	herb	OBL	6
<i>Carex normalis</i>	sedge	herb	FACW	4
<i>Carex squarrosa</i>	sedge	herb	OBL	5
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Carya laciniosa</i>	shellbark hickory	tree	FACW	7
<i>Cephalanthus occidentalis</i>	buttonbush	shrub/herb	OBL	4
<i>Cicuta maculata</i>	water hemlock	herb	OBL	4
<i>Cinna arundinacea</i>	stout wood reed	herb	FACW	5
<i>Cornus obliqua</i>	pale dogwood	shrub	FACW+	4
<i>Cornus florida</i>	flowering dogwood	shrub	FACU-	5
<i>Desmodium paniculatum</i>	panicked tick trefoil	herb	FACU	2
<i>Diospyros virginiana</i>	persimmon	tree/sapl	FAC	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Eupatorium perfoliatum</i>	boneset	herb	FACW+	4
<i>Eupatorium rugosum</i>	white snakeroot	herb	FACU	2
* <i>Festuca pratensis</i>	English bluegrass	herb	FACU-	
<i>Fraxinus pennsylvanica</i>	green ash	tree/sapl/shrub	FACW	2
<i>Geum canadense</i>	white avens	herb	FAC	2
<i>Gleditsia triacanthois</i>	honey locust	tree/shrub	FAC	2

\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

(Species list continued on next page)

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 6 (page 4 of 4)

**Field Investigators:** Plocher, Larimore, Keene      **Date:** 18 July 2002  
**Sect. No.:** (7-3, 8-1-1) A, 8-1 B      **Project Name:** FAP 331 (IL 13)  
**Wetland Mitigation**  
**State:** Illinois      **County:** Saline      **Applicant:** IDOT District 9  
**Site Name:** Floodplain Forest  
**Legal Description:** T.9S., R.5 E., Sect. 18, NW/4 SE/4  
**Location:** various locations in the southern portion of the site

### SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Impatiens capensis</i>	jewel weed	herb	FACW	2
* <i>Lonicera japonica</i>	Japanese honeysuckle	woody vine/herb	FACU	
<i>Lycopus virginicus</i>	bugleweed	herb		5
* <i>Lysimachia nummularia</i>	moneywort	herb	FACW+	
<i>Mimulus ringens</i>	monkey flower	herb	OBL	5
<i>Parthenocissus quinquefolia</i>	Virginia creeper	woody vine,/herb	FAC-	2
<i>Phyla lanceolata</i>	fog fruit	herb	OBL	1
* <i>Phytolacca americana</i>	pokeweed	herb	FAC-	1
<i>Platanus occidentalis</i>	sycamore	tree	FACW	3
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	4
<i>Polygonum setaceum</i>	bristly smartweed	herb	OBL	7
<i>Populus deltoides</i>	cottonwood	tree/sapl	FAC+	2
<i>Prunus serotina</i>	black cherry	sapling	FACU	1
<i>Quercus bicolor</i>	swamp white oak	tree/sapl/seedl	FACW+	7
<i>Quercus palustris</i>	pin oak	tree/sapl/ shrub	FACW	4
* <i>Rosa multiflora</i>	multiflora rose	shrub	FACU	
<i>Rubus occidentalis</i>	black raspberry	shrub/herb	UPL	2
<i>Rubus pensylvanicus</i>	common blackberry	shrub	FAC-	2
<i>Sambucus canadensis</i>	elderberry	shrub/herb	FACW-	2
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scutellaria lateriflora</i>	mad dog skullcap	herb	OBL	4
* <i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
* <i>Symphoricarpos orbiculatus</i>	coralberry	shrub/herb	FACU	1
* <i>Toxicodendron radicans</i>	poison ivy	woody vine/herb	FAC+	1
<i>Ulmus americana</i>	American elm	tree/sapl/shrub/seedl	FACW-	5
<i>Vernonia missurica</i>	Missouri ironweed	herb	FAC+	5
* <i>Viola pratensis</i>	common blue violet	herb	FAC	1
<i>Vitis cinerea</i>	winter grape	woody vine/herb	FACW-	4
<i>Vitis riparia</i>	riverbank grape	woody vine/herb	FACW-	2

\*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

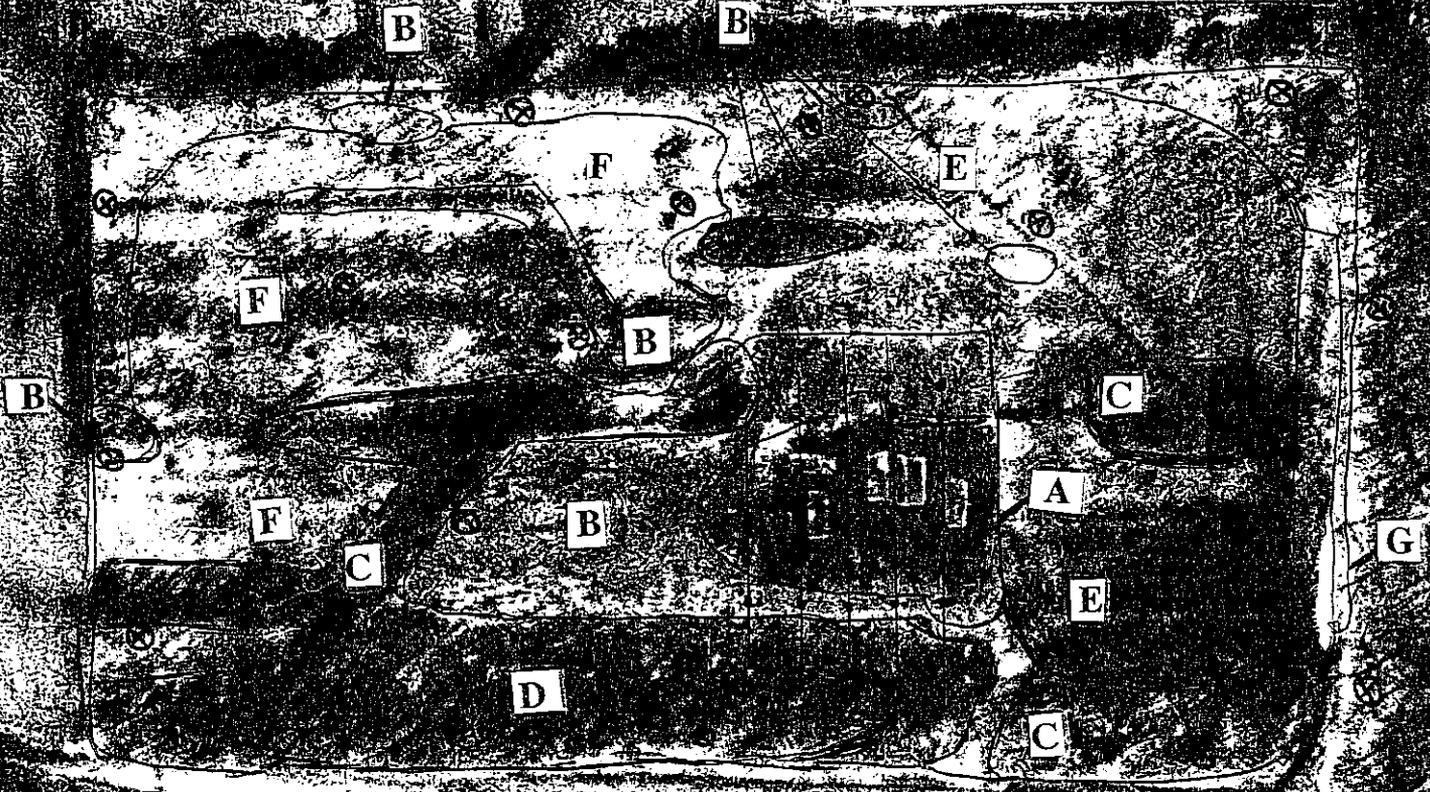
\*=non-native or weedy (16.9%)

$FQI = R/\sqrt{N} = 178/\sqrt{55} = 24.0$ , mean  $C = R/N = 178/55 = 3.2$

FAP 331 (IL 13)  
Wetland Mitigation Monitoring – 2002  
Saline Co.

Cover Types

- A. Emergent Wetland
- B. Wet Meadow
- C. Floodplain Forest
- D. Mesic Forest
- E. Wet Shrubland
- F. Shrubland
- G. Ditch/Wet Meadow



Legend  
Scale  
1" = 200'

- ⊗ - Monitoring Well or Stage Gauge
- ⊘ - Photo Stations

N  
↑

IL 13