TRANSMITTAL

To: Bureau of Design and Environment
Attn: Thomas Brooks
From: Illinois Natural History Survey
Re: Mitigation Monitoring

Route and Location

Project Title: Cahokia Site – Year 4
Route: FAP 999 /New River Crossing
Location: East of IL 3 in Cahokia, IL
County: St. Clair

Conducted By: Allen Plocher (vegetation and hydrology),
Dennis Keene (soils and hydrology),
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Date Conducted: 28 September 2011

Project Summary:

The project area for the multi-use wetland compensation site was examined for the fourth year. Vegetation community composition, soils and hydrology are described. Surrounding land use is addressed. All existing wetlands within the project area have been described and mapped.

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

Date: 9 February 2012

Mitigation Monitoring
Cahokia Site/Multi-Use Wetland Compensation, St. Clair County

Introduction

Year four wetland mitigation monitoring was carried out September 28, 2011 on a 65 acre tract near Cahokia, IL in St. Clair County (Legal location: Sec. 10, W/2 NE/4 & E/2, NW/4, T 1 N, R 10 W). The site occurs on the Mississippi River floodplain and the pre-settlement environment consisted of mesic and wet floodplain forest, wet shrubland, marsh, and backwater ponds and sloughs. The surrounding land use is primarily cropland and developed land. A mitigation site assessment was carried out at this location in March 2000. At that time the northern half of the site was planted in soybeans and the southern half supported various wetlands. The NRCS mapped the agricultural portion of the property as Prior Converted Cropland (PC). The property was purchased for wetland mitigation in November 2000 and agricultural activities ceased at that time. The northern half of the site has been mowed periodically, most recently in 2005. As part of an effort to establish the State and Federally listed *Boltonia decurrens* [Illinois Endangered Species Protection Board (IESPB) 2011], a 4 acre area in the northern part of the site was disked and seeded with *B. decurrens* in August 2003. In September 2004, no *B. decurrens* plants were located. In June 2005, 40 greenhouse reared *B. decurrens* plants were planted at the site. In October 2006, seven of the planted *B. decurrens* remained and one plant, presumably from seed, was located just outside the planted area. By October 2007, no *B. decurrens* individuals survived at this site. Our current feeling is that the site was too wet when first disked, providing an unsuitably rough seedbed for this small seeded species. We also now feel that this site is not environmentally suited for *B. decurrens*, as the sort of severe riverine flooding necessary to scour soil and produce bare areas for establishment of this species does not occur at this location. As of October 2008, the wetland restoration related activities at this site consist of taking cropland, mapped as Prior Converted, out of agriculture, periodic mowing to maintain an herbaceous plant community, and a (so far) unsuccessful attempt to establish State and Federally listed *B. decurrens* (IESPB 2011).

Methods

Wetland Assessment

The entire site was surveyed for wetlands. The following sources were examined while surveying the project area to determine wetland locations and boundaries: United States Geologic Survey topographic map and National Wetland Inventory map (Cahokia 7.5 minute quadrangle); *Soil Survey of St. Clair Co*unty, IL (Indorante and Leeper, 2000)*;* aerial photographs; *National List of Plant Species That Occur in Wetlands* (Reed 1988); the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987)*;* and on-site vegetation, soil, and hydrologic indicators. Seven sites were investigated and five of these met the criteria of wetlands. Results of these determinations are summarized in the results section and are described in more detail on the accompanying forms (Appendix A). Wetland site boundaries were mapped using a

Trimble Global Positioning System. The locations of the sites were overlain on Digital Ortho Quads using ArcGIS 10.0 (ESRI 2010); the resulting map is included as Figure 1 on page 4 of this report.

Hydrology

During the wetland assessments, field indicators of hydrology were noted and recorded. In addition, the Illinois State Geological Survey (ISGS) conducts hydrologic monitoring at this site (Miner et al. 2011). Typically, a wetland occurs when inundation or saturation to land surface is present for greater than 5% of the growing season (11 days at this site), and the soils and vegetation parameters in the *Corps of Engineers Wetlands Delineation Manual* are also satisfied (Environmental Laboratory 1987). However, when inundation and saturation to land surface are present for greater than 12.5% of the growing season (27 days at this site), an area can lack either soils or vegetation and still be considered wetland, according to the *Corps of Engineers Wetlands Delineation Manual* (*ibid.*).

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

Soils

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

Vegetation

The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). It is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is then assigned its wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter, i.e. FAC, FAC+, FACW, or OBL, is considered a hydrophyte. A predominance of wetland vegetation in the plant community exists if more than 50% of the dominant species present are hydrophytic. Since the survival of planted

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Cahokia Mitigation Site Map
St. Clair County

0 Meters 100
1 : 4,800

0 Feet 400
1 inch : 400 feet

12/2011

Figure 1

hydrophytic trees and shrubs on non-wetlands (e.g. yards) is well documented, these species were excluded from calculations of percentage of dominant hydrophytic species.

The Floristic Quality Index (FQI), developed by Taft et al. (*Floristic Quality Assessment for Vegetation in Illinois*, 1997), was applied to the vegetation of the sites. This index should not be used as a substitute for quantitative analysis, but it does provide a measure of floristic integrity. The FQI is calculated as follows: $FQI=R/\sqrt{N}$, where R represents the sum of the numerical ratings (C) for all species recorded in the area, and N represents the number of recorded native species. The mean C is calculated as: mean C=R/N. FQI values of less than 10 indicate low natural quality, while sites with values of 20 or more have at least some evidence of native character and may be considered environmental assets. Botanical nomenclature follows *Vascular Flora of Illinois* (Mohlenbrock 2002).

The percentage of non-weedy, native species was also calculated for each plant community. Weedy species were defined as those with a C value of 0 or 1. The number of species with a listed C value of 2 or greater was summed and divided by the total number of species present at the site.

Results

Wetland Assessment (see Figure 1, page 4)

Site 1: This wet forbland occupies most of the northern third of the tract. Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore this site is a wetland. The NRCS classified the site as Prior Converted Cropland (PC). The site occupies 20.5 acres and is coded as U (upland) by the NWI. The FQI is 18.0 and the mean C is 2.7.

Site 2: This marsh occurs in the southern half of the tract. Hydrophytic vegetation, hydric soils and wetland hydrology are present. Therefore the site is a wetland. This site appears to have been excavated in the past. The site occupies 5.8 acres. The NWI codes the site as PEMC (seasonally flooded, emergent, palustrine wetland). The FQI is 21.3 and the mean C is 2.9.

Site 3: This wet floodplain forest occurs in several areas in the southern half of the tract. Hydrophytic vegetation, hydric soils and wetland hydrology are present. Therefore the site is a wetland. This site appears to have been shallowly excavated in the past. The site occupies 3.2 acres. The NWI codes the site as PEMC (seasonally flooded, emergent, palustrine wetland). The FQI is 16.7 and the mean C is 3.1.

Site 4: This young wet floodplain forest occurs in the southern half of the tract. Hydrophytic vegetation, hydric soils and wetland hydrology are present. Therefore the site is a wetland. The site occupies 2.4 acres. The NWI codes the site as PEMC

(seasonally flooded, emergent, palustrine wetland). The FQI is 18.2 and the mean C is 3.1.

Site 5: This wet shrubland occurs in the southern portion of the tract. Hydrophytic vegetation, hydric soils and wetland hydrology are present. Therefore the site is a wetland. This site appears to have been shallowly excavated in the past. The site occupies 3.9 acres. The NWI codes the site as PEMC (seasonally flooded, emergent, palustrine wetland). The FQI is 17.5 and the mean C is 3.4.

Site 6: This forbland is located in the northwestern and northern portions of the tract. This site does not possess dominant hydrophytic vegetation, as not more than 50% of the dominants [*Solidago canadensis* (FACU) and *Iva annua* (FAC)] are hydrophytic. This site occupies 15.0 acres.

Site 7: This shrubland is located in the west-central portion of the tract. This site does not possess dominant hydrophytic vegetation, as not more than 50% of the dominants [*Ulmus pumila* (UPL)*, Lonicera maackii* (UPL)*, Cornus drummondii* (FAC), *Festuca pratensis* (FACU-)*, Solidago canadensis* (FACU), *Setaria faberi* (FACU+), and *Desmodium glutinosum* (UPL)] are hydrophytic. This site occupies 9.2 acres.

Hydrology

This site is located within the USGS Upper Mississippi River hydrologic basin unit code 07140101, Mississippi Tributaries, Hartford to Reily Lake. The Mississippi River has a watershed area greater than 171,500 mi^2 (Ogata 1975). The topography of the site is level to depressional and elevation is approximately 405 ft. The hydrologic inputs at this site are backflow from the Mississippi River, ditch overflow, precipitation, and runoff from adjacent uplands. Water leaves the site by evapotranspiration, sheet flow to the south and ditch flow to Harding Ditch. Backflow from the Mississippi deposits sediment on the site. The following two hydrologic alterations are currently in effect: 1. A ditch/culvert system leads into a large canal to the south (this is now blocked by a beaver dam). 2. Levees separate the site from Harding Ditch and the Mississippi River.

At this site, more acres meet the 12.5% of the growing season wetland hydrology criterion than possess dominant hydrophytic vegetation, so the following discussion references only those reported areas meeting the 12.5% criterion. These are the areas that have demonstrated wetland hydrology regardless of whether hydric soils and/or dominant hydrophytic vegetation are present. Total precipitation at Belleville was 114% of normal for 2011, while total precipitation March through May was 144% of normal; this year approximately 52.9 acres supported wetland hydrology (Miner et al. 2011) (see Figure 2, page 7). In 2010, with precipitation 130% of normal, 51.2 out of 65.3 acres supported wetland hydrology (Miner et al. 2010). In 2009, with precipitation 110% of normal, 50.6 out of 65.3 acres supported wetland hydrology (Fucciolo et al. 2009).

Former Tiernan Property
Potential Wetland Mitigation Site
(FAP 14)
Estimated Areal Extent of 2011 Wetland Hydrology
September 1, 2010 through August 31, 2011

Map based on USGS digital orthophotograph, Cahokia SW quarter quadrangle
produced from 04/02/98 aerial photography (ISGS 2000)

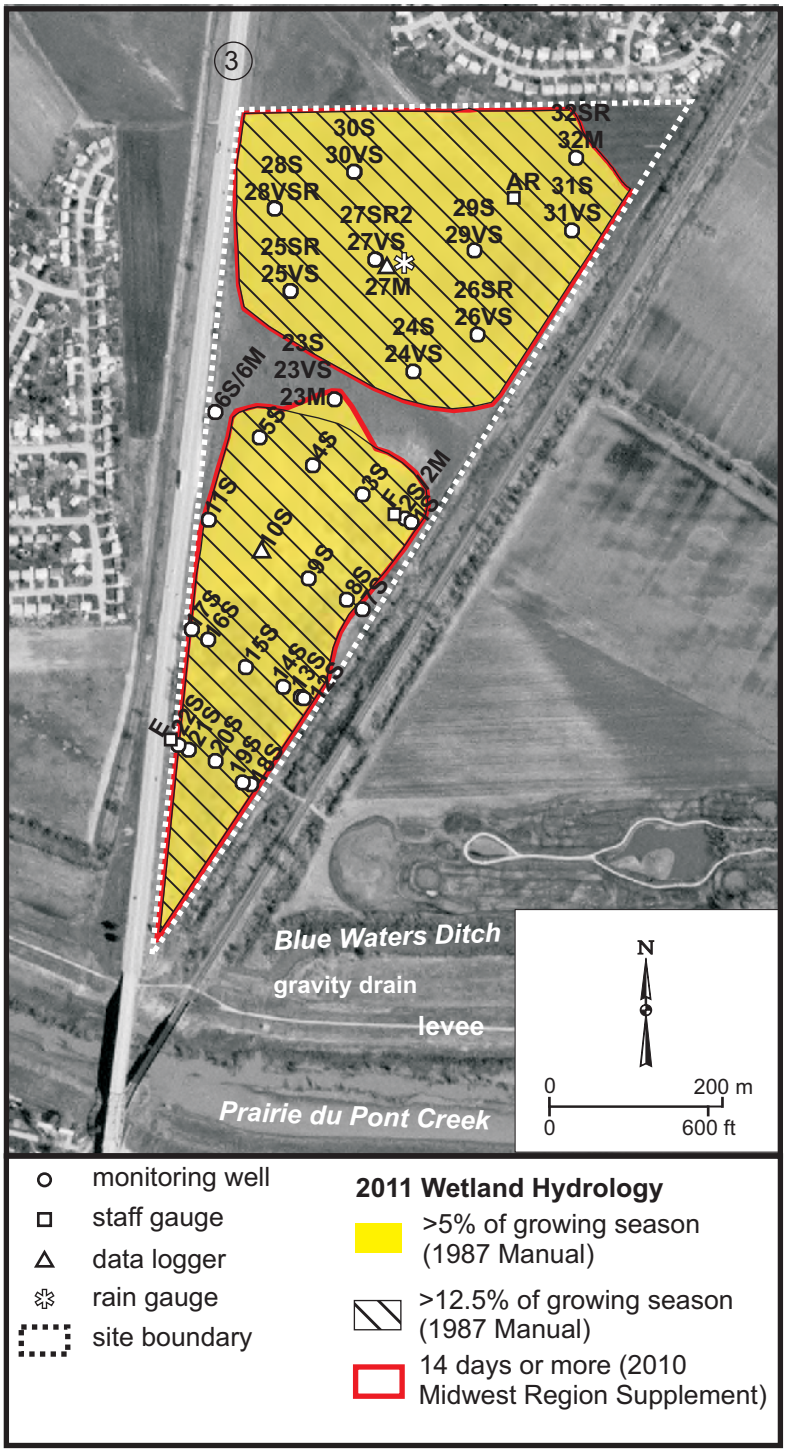

Figure 2. Estimated areal extent of 2011 wetland hydrology (Miner et al. 2011)

Soils

The *Soil Survey of St. Clair County, IL* (Indorante and Leeper, 2000) shows Darwin silty clay, Fluvaquent, and Water mapped at this site. Cores were taken in the project area and the poorly drained Zipp silty clay was determined to be present on most of the site. A portion of the site is underlain by soil disturbed by excavation (probably previously Zipp) for fill material many years ago. Zipp exhibits slow to very slow permeability, and it is likely the soils in the disturbed areas do as well. The potential for occasional flooding exists. Zipp is a floodplain soil formed in silty clay alluvium under forest conditions and is a hydric soil.

Vegetation

In total, dominant hydrophytic vegetation is present on 35.8 acres comprised of five wetland communities (wet forbland, marsh, .wet floodplain forest, young wet floodplain forest, and wet shrubland). For more information about dominant hydrophytic vegetation, see wetland determination forms in Appendix 1.

Table 1 below shows both the FQI and mean C values for each wetland community by each year of monitoring. This table helps illustrate some trends among FQI values at this site. FQI values of the marsh and the wet forbland are slightly lower this year than they have been in the past. The young wet floodplain forest has shown a general increasing trend in FQI over the years of monitoring; while the wet floodplain forest and wet shrubland appear to have changed very little since monitoring began at this site.

Table 1. Mean C and FQI values in wetland communities, 2008-2011.

	2008		2009		2010		2011	
Wetland Community	Mean C	FQI	Mean C	FQI	Mean C	FQI	Mean C	FQI
Wet forbland	2.2	12.7	2.3	19.6	2.8	20.1	2.7	18.0
Marsh	3.0	23.8	3.0	25.2	3.1	25.3	2.9	21.3
Wet floodplain forest	3.0	15.5	3.0	15.5	3.0	17.2	3.1	16.7
Young wet floodplain forest	2.9	14.6	2.9	14.6	2.9	15.3	3.1	18.2
Wet shrubland	3.3	15.6	3.4	17.4	3.4	17.4	3.4	17.5

The southwestern and northeastern portions of the northern area are dominated by *Iva annua* and *Solidago canadensis* and are not wetland. A sizable area in the center of the site has not been mowed, is at higher elevation, and is rapidly developing into non-wetland mesic forest.

The percent non-weedy, native species in each wetland community was calculated and is presented in Table 2 below. These values are extremely similar to what they were when this site was first monitored in 2008 (Plocher et al. 2008).

Table 2. Percent non-weedy, native species

Wet Forbland	Marsh	Wet Floodplain Forest	Young floodplain forest	Wet Shrubland
64.6%	69.5%	77.4%	80.0%	78.6%

Discussion

In the ten years since agricultural activity ceased, it appears as if about half of the area previously cropped has developed into wetland. Part of the area periodically mowed is an herbaceous community (wet forbland). Part of the unmowed area is young wet floodplain forest while the wettest part is a marsh. Natural quality of these communities is fair to good (FQI range from 16.7 to 21.3). Percent non-weedy, native species ranges from 69.5%-80.0%. In the unmowed areas percent non-weedy, native species is 64.6%. A number of undesirable species are fairly abundant, however – *Lonicera maackii, Eleagnus umbellata,* and *Sorghum halapense* in the non-wetland shrubland, and *Typha angustifolia* and *Phragmites australis* in the marsh. It seems clear that without periodic mowing, almost all of the site that was previously affected by agriculture will become either mesic or wet floodplain forest (approximately 4 acres of the wettest previously cropped area will likely remain marsh).

Currently, at least 50.6 out of 65.3 acres has met the 12.5% of the growing season wetland hydrology criterion for each of the past three years and may be considered wetland, even though a significant portion of this area does not support dominant hydrophytic vegetation.

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Appendix A

Wetland Determinations and Species Lists

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

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet forbland
Legal Description: T 1 N, R 10 W, Sect.10, NW/4 NE/4
Location: northern third of tract

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. *Persicaria amphibium*	herb	OBL
2. *Bidens aristosa*	herb	FACW

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: Zipp silty clay loam
On St. Clair 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: No: X
Matrix color: N 5/
Other indicators: This soil is found in a low area.

Hydric soils: Yes: X No:
Rationale: The Natural Resources Conservation Service classifies Zipp silty clay loam as having aquic conditions. This soil has iron masses and a gleyed matrix. Furthermore, this soil meets the NRCS hydric soil indicator F2 (loamy gleyed matrix). These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1 (page 2 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet forbland
Legal Description: T 1 N, R 10 W, Sect.10, NW/4 NE/4
Location: northern third of tract

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 1 m (> 3.3 ft)
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 sheet flow are the major outputs.
Size of watershed: < 2.59 km^2 (< 1 mi^2)
Other field evidence observed: Level landscape position on floodplain
Wetland hydrology: Yes: X No:
Rationale: Field evidence indicates that this site is inundated or saturated for a sufficient duration to support 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 as wetland by the NWI. The NRCS coded the site PC (prior converted).

Determined by: Allen Plocher (vegetation and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION
Site 1 (page 3 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet forbland
Legal Description: T 1 N, R 10 W, Sect.10, NW/4 NE/4
Location: northern third of tract

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C^
Acer saccharinum	silver maple	sapling	FACW	1
Alisma subcordatum	water plantain	herb	OBL	2
Ammannia coccinea	ammannia	herb	OBL	5
Apocynum sibiricum	Indian hemp	herb	FAC+	2
Asclepias incarnata	swamp milkweed	herb	OBL	4
Aster pilosus	hairy aster	herb	FACU+	0
Aster lanceolatus	panicled aster	herb	FACW	3
Bidens aristosa	swamp marigold	herb	FACW	1
Bidens frondosa	beggar's ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Bolbochoenus fluviatilis	river bulrush	herb	OBL	3
Boltonia asteroides	false aster	herb	FACW	5
Cardiospermum halicacabum	balloon vine	herb	FAC	*
Carex annectans	sedge	herb	FACW	3
Carex frankii	sedge	herb	OBL	4
Carex hyalinolepis	sedge	herb	OBL	4
Carex tribuloides	sedge	herb	FACW+	3
Carya illinoensis	pecan	sapling	FACW	6
Cephalanthus occidentalis	buttonbush	shrub	OBL	4
Cornus drummondii	rough leaf dogwood	shrub	FAC	2
Cyperus strigosus	straw colored flatsedge	herb	FACW	0
Desmanthus illinoensis	Illinois bundleflower	herb	FAC-	4
Diospyros virginiana	persimmon	herb	FAC	2
Echinochloa muricata	barnyard grass	herb	OBL	0
Eleocharis erythropoda	red rooted spikerush	herb	OBL	3
Eupatorium serotinum	late flowering thoroughwort	herb	FAC+	1

Continued on following page.

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

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet forbland
Legal Description: T 1 N, R 10 W, Sect.10, NW/4 NE/4
Location: northern third of tract

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	C^
Fraxinus lanceolata	green ash	sapling	FACW	2
Helianthus grosseserratus	sawtooth sunflower	herb	FACW-	2
Ipomoea hederacea	ivy leaved morning glory	herb	FAC	*
Iva annua	sumpweed	herb	FAC	0
Juglans nigra	black walnut	sapling	FACU	4
Ludwigia palustris	marsh seedbox	herb	OBL	4
Ludwigia alternifolia	seedbox	herb	OBL	5
Lycopus americanus	water horehound	herb	OBL	3
Persicaria amphibium	water smartweed	herb	OBL	3
Persicaria pensylvanica	giant smartweed	herb	FACW+	1
Phalaris arundinacea	reed canarygrass	herb	FACW+	*
Quercus palustris	pin oak	sapling	FACW	4
Rumex crispus	curly dock	herb	FAC+	*
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Setaria faberi	giant foxtail	herb	FACU+	*
Solidago canadensis	Canada goldenrod	herb	FACU	1
Strophostyles umbellata	wild bean	herb	FACU	5
Toxicodensron radicans	poison ivy	herb	FAC+	1
Typha latifolia	common cattail	herb	OBL	1
Ulmus americana	American elm	shrub	FACW-	5
Vernonia fasciculata	common ironweed	herb	FACW	5
Vitis riparia	riverbank grape	herb	FACW-	2

^^ Coefficient of Conservatism (Taft et al. 1997) mCv = 2.7
* Non-native species FQI = 18.0
Percent native and non-weedy (C value>1): 31/48 = 64.6%

ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 1 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Marsh
Legal Description: T 1 N, R 10 W, Sect.10, SE/4 NW/4
Location: southern half of tract

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. *Typha angustifolia*	herb	OBL
3. *Persicaria amphibium*	herb	OBL
4. *Carex hyalinolepis*	herb	OBL
5. *Leersia lenticularis*	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: Zipp silty clay loam
On St. Clair 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: No: X
Matrix color: N 5/
Other hydric soil indicators: This soil is located in a low area.

Hydric soils: Yes: X No:
Rationale: The Natural Resources Conservation Service classifies Zipp silty clay loam as having aquic conditions. This soil has iron masses and a gleyed matrix. Furthermore, this soil meets the NRCS indicator F2 (loamy gleyed matrix). These characteristics are evidence of a hydric soil.

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

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Marsh
Legal Description: T 1 N, R 10 W, Sect.10, SE/4 NW/4
Location: southern half of tract

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: 0.25 – 0.91 m (10 – 12 in)
Depth to saturated soil: at surface
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and ditch overflow. Evapotranspiration is the major output.
Size of watershed: < 2.59 km^2 (< 1 mi^2)
Other field evidence observed: This site is depressional. Driftlines and bare ground were observed.
Wetland hydrology: Yes: X No:
Rationale: Field evidence sited above indicates that the 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 coded by the NWI as PEMC (palustrine, emergent, seasonally flooded).

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

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Sequence No.: **Project Name:** Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Marsh
Legal Description: T 1 N, R 10 W, Sect.10, SE/4 NW/4
Location: southern half of tract

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C^
Acer negundo	box elder	shrub	FACW-	1
Acer saccharinum	silver maple	shrub	FACW	1
Alisma subcordatum	water plantain	herb	OBL	2
Apocynum sibiricum	Indian hemp	herb	FAC+	2
Asclepias incarnata	swamp milkweed	herb	OBL	4
Bidens aristosa	swamp marigold	herb	FACW	1
Bidens frondosa	beggar's ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Bolboschoenus fluviatilis	river bulrush	herb	OBL	3
Boltonia asteroides	false aster	herb	FACW	5
Campsis radicans	trumpet creeper	herb	FAC	2
Cardiospermum halicacabum	balloon vine	herb	FAC	*
Carex annectans	sedge	herb	FACW	3
Carex hyalinolepis	sedge	herb	OBL	4
Carex tribuloides	sedge	herb	FACW+	3
Cephalanthus occidentalis	buttonbush	shrub	OBL	4
Cornus drummondii	rough leaf dogwood	shrub	FAC	2
Cyperus strigosus	straw colored flatsedge	herb	FACW	0
Desmanthus illinoensis	Illinois bundleflower	herb	FAC-	4
Echinochloa muricata	barnyard grass	herb	OBL	0
Eleocharis erythropoda	red rooted spikerush	herb	OBL	3
Equisetum arvense	horsetail	herb	FAC	0
Eupatorium serotinum	late flowering thoroughwort	herb	FAC+	1
Fraxinus lanceolata	green ash	sapling	FACW	2
Heliannthus tuberosus	Jerusulem artichoke	herb	FAC	3
Hibiscus laevis	halberd leaf rose mallow	herb	OBL	4
Hibiscus lasiocarpus	hairy rose mallow	herb	FACW+	5
Leersia lenticularis	catchfly grass	herb	OBL	5
Lemna minor	duckweed	herb	OBL	3
Liquidambar styraciflua	sweet gum	sapling	FACW	6
Ludwigia palustris	marsh seedbox	herb	OBL	4

Continued on following page

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

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Marsh
Legal Description: T 1 N, R 10 W, Sect.10, SE/4 NW/4
Location: southern half of tract

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	C^
Lycopus americanus	water horehound	herb	OBL	3
Lycopus virginicus	bugleweed	herb	OBL	5
Lythrum alatum	winged loosestrife	herb	OBL	5
Mimulus alatus	winged monkey flower	herb	OBL	6
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Persicaria amphibium	water smartweed	herb	OBL	2
Persicaria hydropiperoides	water pepper	herb	OBL	4
Persicaria lapathifolia	nodding smartweed	herb	FACW+	0
Persicaria pensylvanica	giant smartweed	herb	FACW+	1
Lycopus americanus	water horehound	herb	OBL	3
Lythrum alatum	winged loosestrife	herb	OBL	5
Morus alba	white mulberry	shrub	FAC	*
Phalaris arundinacea	reed canarygrass	herb	FACW+	*
Phragmites australis	common reed	herb	FACW+	1
Platanus occidentalis	sycamore	shrub	FACW	3
Populus deltoides	cottonwood	tree	FAC+	2
Quercus palustris	pin oak	shrub	FACW	4
Rumex verticillatus	swamp dock	herb	OBL	5
Sagittaria latifolia	arrow head	herb	OBL	4
Salix amygdaloides	peach leaf willow	tree/sapling	FACW	4
Salix interior	sandbar willow	sapling	OBL	1
Salix nigra	black willow	tree/sapling	OBL	3
Sium suave	water parsnip	herb	OBL	5
Toxicodendron radicans	poison ivy	herb/woody vine	FAC+	1
Typha angustifolia	narrowleaf cattail	herb	OBL	*
Typha latifolia	common cattail	herb	OBL	1
Ulmus americana	American elm	tree/shrub	FACW-	5
Vitis riparia	riverbank grape	herb/woody vine	FACW-	2

^ Coefficient of Conservatism (Taft et al. 1997) mCv = 2.9
* Non-native species FQI = 21.3
Percent native and non-weedy (C value>1): 41/59 = 69.5%

ROUTINE ON-SITE WETLAND DETERMINATION
Site 3 (page 1 of 3)

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet floodplain forest
Legal Description: T 1 N, R 10 W, Sect.10, SW/4 NE/4, SE/4 NW/4
Location: southern half of tract

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. *Populus deltoides*	tree	FAC+
2. *Ulmus americana*	sapling	FACW-
3. *Carex hyalinolepis*	herb	OBL
4. *Aster lanceolatus*	herb	FACW
5. *Equisetum arvense*	herb	FAC

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: Fluvaquent
On St. Clair County hydric soils list? Yes: No: Undet: X
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No:
Redox depletions: Yes: No: X
Matrix color: N 5/ and N 6/
Other indicators: This soil is found in a low area.

Hydric soils: Yes: X No:
Rationale: This soil has iron masses and a gleyed matrix. Furthermore, this soil meets the NRCS hydric soil indicator F2 (loamy gleyed matrix). These characteristics are evidence of a hydric soil.

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

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet floodplain forest
Legal Description: T 1 N, R 10 W, Sect.10, SW/4 NE/4, SE/4 NW/4
Location: southern half of tract

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: 0.20 – 0.76 m (8 – 30 in)
Depth to saturated soil: 0 - 0.51 m (0 - 20 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, sheet flow and ditch flow are the major outputs.
Size of watershed: < 2.59 km^2 (< 1 mi^2)
Other field evidence observed: This site is depressional. Bare areas were observed.
Wetland hydrology: Yes: X No:
Rationale: Field evidence sited above indicates that the 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 coded by the NWI as PEMC (seasonally flooded, emergent, palustrine wetland).

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

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet floodplain forest
Legal Description: T 1 N, R 10 W, Sect.10, SW/4 NE/4, SE/4 NW/4
Location: southern half of tract

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C^
Acer negundo	box elder	tree	FACW-	1
Acer rubrum	red maple	shrub	FAC	5
Acer saccharinum	silver maple	tree/sapling	FACW	1
Aster lanceolatus	panicled aster	herb	FACW	3
Boehmeria cylindrica	false nettle	herb	OBL	3
Boltonia asteroides	false aster	herb	FACW	5
Campsis radicans	trumpet creeper	herb/woody vine	FAC	2
Carex hyalinolepis	sedge	herb	OBL	4
Celtis occidentalis	hackberry	tree/sapling	FAC-	3
Cephalanthus occidentalis	buttonbush	shrub	OBL	4
Cornus drummondii	rough leaf dogwood	shrub	FAC	2
Desmanthus illinoensis	Illinois bundleflower	herb	FAC-	4
Diospyros virginiana	persimmon	tree/sapling	FAC	2
Equisetum arvense	horsetail	herb	FAC	0
Eupatorium serotinum	late flowering thoroughwort	herb	FAC+	1
Hibiscus laevis	halberd leaf rose mallow	herb	OBL	4
Liquidambar styraciflua	sweet gum	sapling	FACW	6
Morus alba	white mulberry	tree	FAC	*
Persicaria punctata	dotted smartweed	herb	OBL	3
Phalaris arundinacea	reed canarygrass	herb	FACW+	*
Platanus occidentalis	sycamore	tree	FACW	3
Populus deltoides	cottonwood	tree	FAC+	2
Quercus palustris	pin oak	tree/sapling	FACW	4
Rumex verticillatus	swamp dock	herb	OBL	5
Sagittaria latifolia	arrowhead	herb	OBL	4
Salix nigra	black willow	sapling	OBL	3
Smilax tamnoides hispida	bristly greenbriar	herb/woody vine	FAC	3
Stachys tenuifolia	slenderleaf betony	herb	OBL	5
Toxicodendron radicans	poison ivy	herb/woody vine	FAC+	1
Ulmus americana	American elm	tree/sapling	FACW-	5
Vitis riparia	riverbank grape	woody vine	FACW-	2

^ Coefficient of Conservatism (Taft et al. 1997) mCv = 3.1
* Non-native species FQI = 16.7
Percent native and non-weedy (C value>1): 24/31 = 77.4%

ROUTINE ON-SITE WETLAND DETERMINATION
Site 4 (page 1 of 3)

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Young wet floodplain forest
Legal Description: T 1 N, R 10 W, Sect.10, SW/4 NE/4, SE/4 NW/4
Location: southern half of tract

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. *Acer negundo*	tree	FACW-
3. *Acer saccharinum*	tree	FACW
4. *Salix interior*	sapling	OBL
5. *Carex hyalinolepis*	herb	OBL
6. *Typha angustifolia*	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: Fluvaquent
On St. Clair County hydric soils list? Yes: No: Undet: X
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No:
Redox depletions: Yes: No: X
Matrix color: N 5/
Other indicators: This soil is found in a low area.

Hydric soils: Yes: X No:
Rationale: This soil has iron masses and a gleyed matrix. Furthermore, this soil meets the NRCS hydric soil indicator F2 (loamy gleyed matrix). These characteristics are evidence of a hydric soil.

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

Field Investigators: Plocher, Keene, Ketzner, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Young wet floodplain forest
Legal Description: T 1 N, R 10 W, Sect.10, SW/4 NE/4, SE/4 NW/4
Location: southern half of tract

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: 0.51 m (20 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 sheet flow are the major outputs.
Size of watershed: < 2.59 km^2 (< 1 mi^2)
Other field evidence observed: This site is depressional. Bare areas were observed.
Wetland hydrology: Yes: X No:
Rationale: Field evidence sited above indicates that the 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 this site is a wetland. The site is coded by the NWI as PEMC (seasonally flooded, emergent, palustrine wetland).

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

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Young wet floodplain forest
Legal Description: T 1 N, R 10 W, Sect.10, SW/4 NE/4, SE/4 NW/4
Location: southern half of tract

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C^
Acer negundo	box elder	tree	FACW-	1
Acer saccharinum	silver maple	tree/sapling	FACW	1
Alisma subcordatum	water plantain	herb	OBL	2
Ammannia coccinea	ammannia	herb	OBL	5
Apocynum sibiricum	Indian hemp	herb	FAC+	2
Asclepias incarnata	swamp milkweed	herb	OBL	4
Aster lanceolatus	panicled aster	herb	FACW	3
Bidens aristosa	swamp marigold	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Boltonia asteroides	false aster	herb	FACW	5
Campsis radicans	trumpet creeper	herb/woody vine	FAC	2
Carex crus corvi	sedge	herb	OBL	6
Carex hyalinolepis	sedge	herb	OBL	4
Desmanthus illinoensis	Illinois bundleflower	herb	FAC-	4
Equisetum arvense	horsetail	herb	FAC	0
Fraxinus lanceolata	green ash	sapling	FACW	2
Hibiscus laevis	halberd leaved rose mallow	herb	OBL	4
Lemna minor	duckweed	herb	OBL	3
Liquidambar styraciflua	sweet gum	shrub	FACW	6
Ludwigia palustris	marsh seedbox	herb	OBL	4
Hibiscus laevis	halberd leaved rose mallow	herb	OBL	4
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Persicaria amphibium	water smartweed	herb	OBL	3
Persicaria punctata	dotted smartweed	herb	OBL	3
Platanus occidentalis	sycamore	tree	FACW	3
Populus deltoides	cottonwood	sapling	FAC+	2
Sagittaria latifolia	arrowhead	herb	OBL	4
Salix amygdaloides	peach leaf willow	sapling	FACW	4
Salix interior	sandbar willow	sapling	OBL	1
Sium suave	water parsnip	herb	OBL	5
Stachys tenuifolia	slenderleaf betony	herb	OBL	5
Toxicodendron radicans	poison ivy	herb/woody vine	FAC+	1
Typha angustifolia	narrowleaf cattail	herb	OBL	*
Ulmus americana	American elm	sapling	FACW-	5
Vitis riparia	riverbank grape	herb	FACW-	2

^ Coefficient of Conservatism (Taft et al. 1997) mCv = 3.1
* Non-native species FQI = 18.2
Percent native and non-weedy (C value>1): 28/35 = 80.0%

ROUTINE ON-SITE WETLAND DETERMINATION
Site 5 (page 1 of 3)

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet shrubland
Legal Description: T 1 N, R 10 W, Sect.10, SE/4 NW/4, NE/4 SW/4
Location: southern portion of tract

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. *Populus deltoides*	tree	FAC+
2. *Salix interior*	sapling	OBL
3. *Cephalanthus occidentalis*	shrub	OBL
4. *Typha angustifolia*	herb	OBL
5. *Carex hyalinolepis*	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: Zipp silty clay loam
On St. Clair 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: No: X
Matrix color: N 5/
Other hydric soil indicators: This soil is located in a low area.

Hydric soils: Yes: X No:
Rationale: The Natural Resources Conservation Service classifies Zipp silty clay loam as having aquic conditions. Furthermore, this soil meets the NRCS hydric soil indicator F2 (loamy gleyed matrix). These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 5 (page 2 of 3)

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet shrubland
Legal Description: T 1 N, R 10 W, Sect.10, SE/4 NW/4, NE/4 SW/4
Location: southern portion of tract

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: 10 in
Depth to saturated soil: at surface
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and ditch overflow. Evapotranspiration is the major output.
Size of watershed: < 2.59 km^2 (< 1 mi^2)
Other field evidence observed: This site is depressional. Bare areas were observed.
Wetland hydrology: Yes: X No:
Rationale: Field evidence sited above indicates that the 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 this site is a wetland. The site is coded by the NWI as PEMC (palustrine, emergent, seasonally flooded).

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ROUTINE ON-SITE WETLAND DETERMINATION
Site 5 (page 3 of 3)

Field Investigators: Plocher, Keene, Zercher **Date:** 28 September 2011
Project Name: Cahokia Compensation Site
State: Illinois **County:** St. Clair **Applicant:** IDOT District 8
Site Name: Wet shrubland
Legal Description: T 1 N, R 10 W, Sect.10, SE/4 NW/4, NE/4 SW/4
Location: southern portion of tract

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C^
Acer negundo	box elder	tree/sapling	FACW-	1
Acer saccharinum	silver maple	sapling	FACW	1
Aster lanceolatus	panicled aster	herb	FACW	3
Bidens frondosa	beggar's ticks	herb	FACW	1
Boltonia asteroides	false aster	herb	FACW	5
Carex hyalinolepis	sedge	herb	OBL	4
Carya illinoensis	pecan	shrub	FACW	6
Cephalanthus occidentalis	buttonbush	shrub	OBL	4
Diospyros virginiana	persimmon	shrub	FAC	2
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Forestiera acuminata	swamp privet	shrub	OBL	6
Fraxinus lanceolata	green ash	tree/sapling	FACW	2
Hibiscus laevis	halberd leaf rose mallow	herb	OBL	4
Leersia oryzoides	rice cutgrass	herb	OBL	3
Liqidambar styraciflua	sweet gum	shrub	FACW	6
Lycopus americanus	water horehound	herb	OBL	3
Persicaria amphibium	water smartweed	herb	OBL	3
Phalaris arundinacea	reed canarygrass	herb	FACW+	*
Ranunculus sceleratus	cursed crowfoot	herb	OBL	3
Rubus flagellaris	dewberry	herb	FACU-	2
Rumex verticillatus	swamp dock	herb	OBL	5
Salix amygdaloides	peach leaf willow	sapling	FACW	4
Salix interior	sandbar willow	sapling	OBL	1
Salix nigra	black willow	tree/sapling	OBL	3
Scirpus fluviatilis	river bulrush	herb	OBL	3
Sium suave	water parsnip	herb	OBL	5
Sparganium eurycarpum	bur reed	herb	OBL	5
Typha angustifolia	narrow leaf cattail	herb	OBL	*

^ Coefficient of Conservatism (Taft et al. 1997) mCv = 3.4
* Non-native species FQI = 17.5
Percent native and non-weedy (C value>1): 22/28 = 78.6%