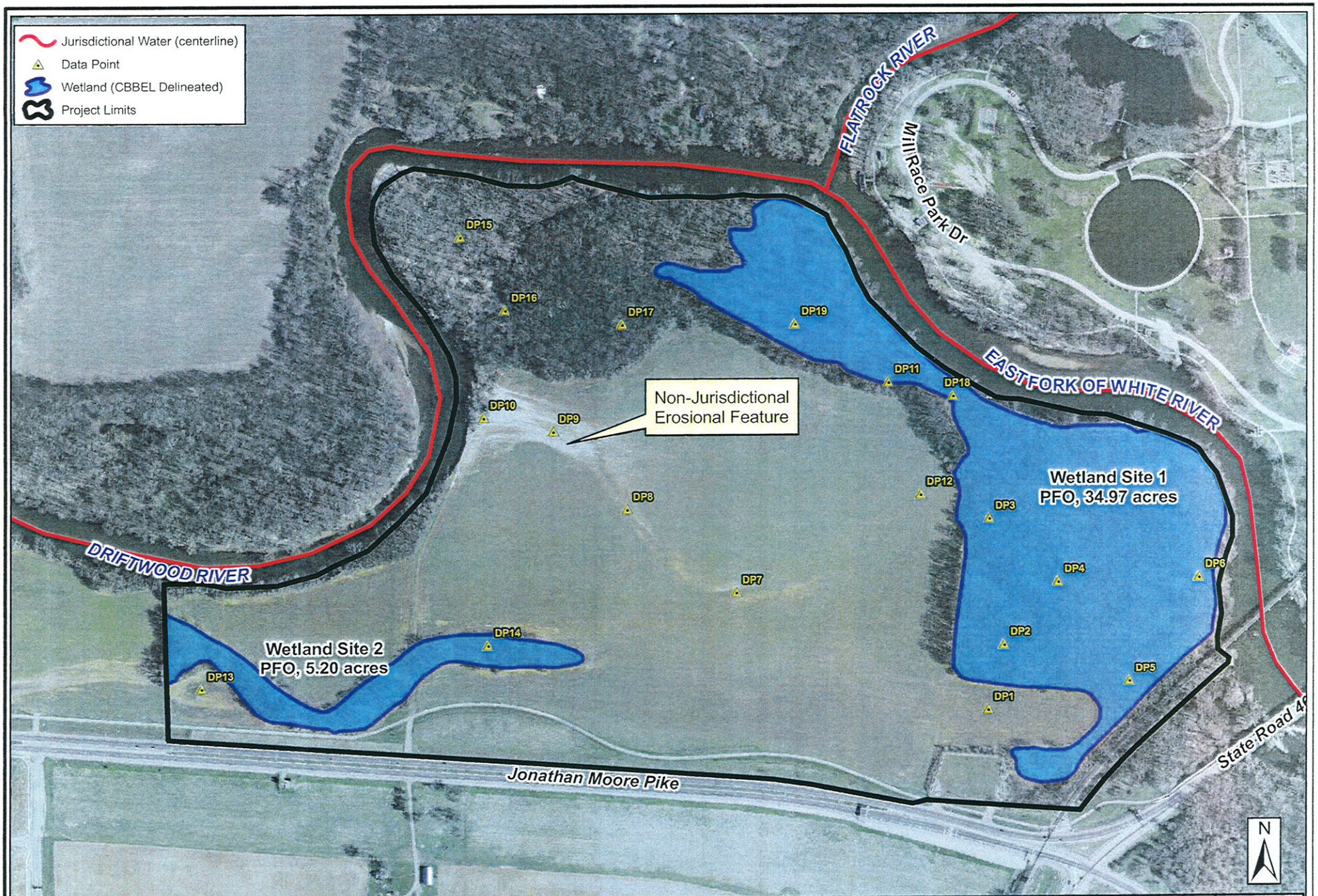
Sources of Data:

1. Independent Land Surveying, Rec'd 07-17-10 (approx.)
2. 1-foot pixel aerial photography, IndianaMap, 2005

Christopher B. Burke Engineering, Ltd.
National City Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 (f) 317.632.3306

PROJECT: COLUMBUS SPORTS COMPLEX BORROW SITE	PROJECT NO. 07-0430	APPROX. SCALE 1 " = 500 '	
TITLE: TOPOGRAPHY MAP		DATE: 09/2010	
		EXHIBIT 4	



Sources of Data:

1. CBBEL Field Investigation, June 2010
2. 1-foot pixel aerial photography, IndianaMap, 2005

Christopher B. Burke Engineering, Ltd.
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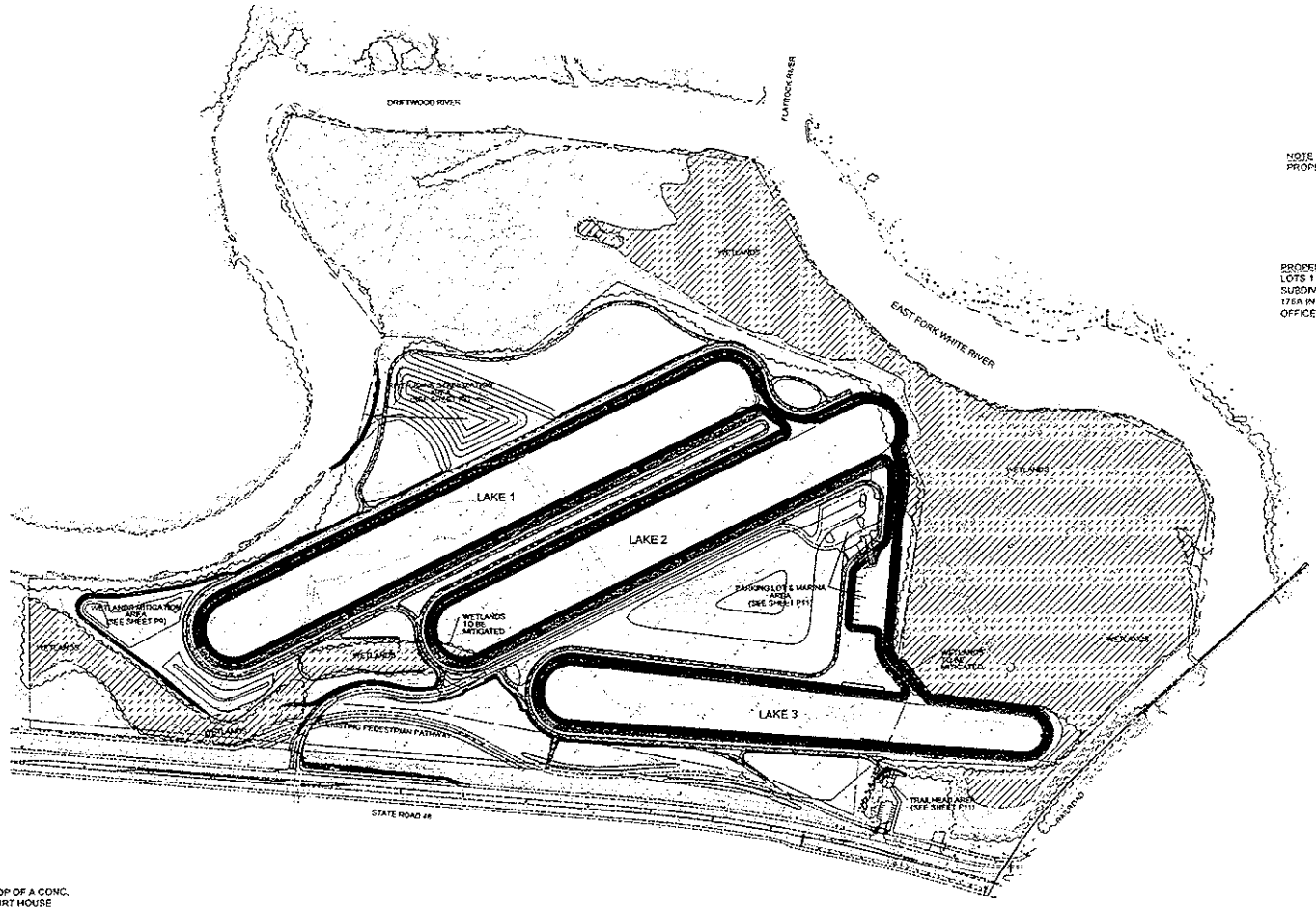
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 (f) 317.632.3306

PROJECT:	COLUMBUS SPORTS COMPLEX BORROW SITE	PROJECT NO. 07-0430	APPROX. SCALE 1" = 500'
TITLE:	WETLANDS, DATA POINTS AND JURISIDCTIONAL WATERS		DATE: 09/2010
			EXHIBIT 6



N

SCALE: 1"=200'

NOTE
PROPERTY IS LOCATED IN FLOOD ZONE "AE"

PROPERTY DESCRIPTION
LOTS 1 AND 2 IN "MEEK FARM ADMINISTRATIVE SUBDIVISION" AS RECORDED IN PLAT BOOK "R", PAGE 175A IN THE BARTHOLOMEW COUNTY RECORDERS OFFICE.

BENCHMARK
"09 1930", USC&GS DISK OFF SITE IN TOP OF A CONC. POST @ THE S.W. CORNER OF THE COURT HOUSE SQUARE, 2 FT. INSIDE OF A CONC. CURB AROUND THE COURT HOUSE.

ELEVATION: 628.217 FEET

PERMIT PLANS
NOT FOR CONSTRUCTION

CHRISTOPHER B. BURKE ENGINEERING, LTD.
50 Washington Street
Suite 2A
Columbus, Indiana 47201
(812) 376-9252 FAX: (812) 376-9260

BROWNING DAY MULLINS DIERDORF LANDSCAPE ARCHITECTS

PROJECT: COLUMBUS SPORTS COMPLEX BORROW SITE
BARTHOLOMEW COUNTY, INDIANA

NO.	DATE	NATURE OF REVISION	CHKD.

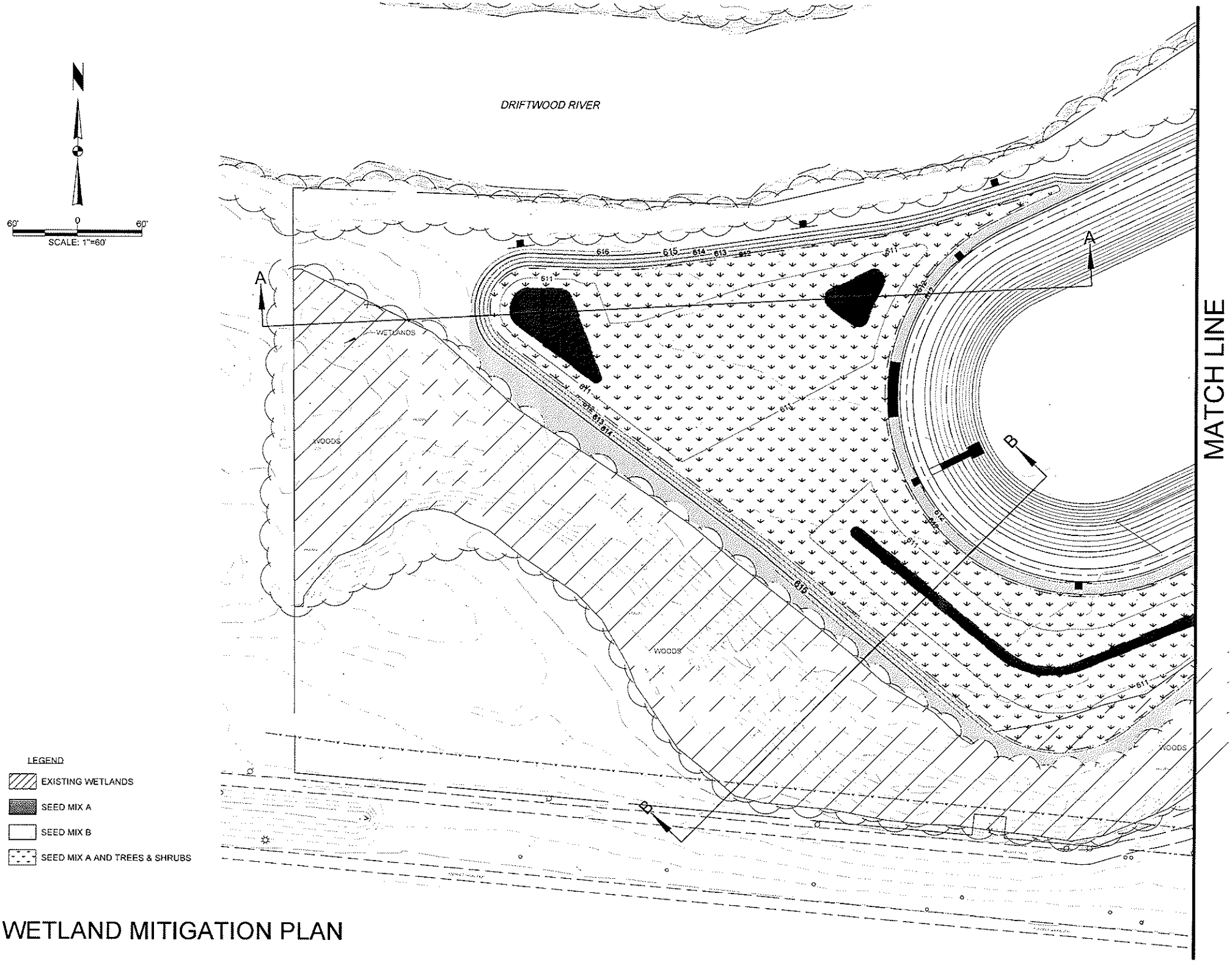
FILE NAME: [illegible]

DSGN.		DLH
DWN.		TD
CHKD.		DLH
SCALE:		AS NOTED
DATE:		[illegible]

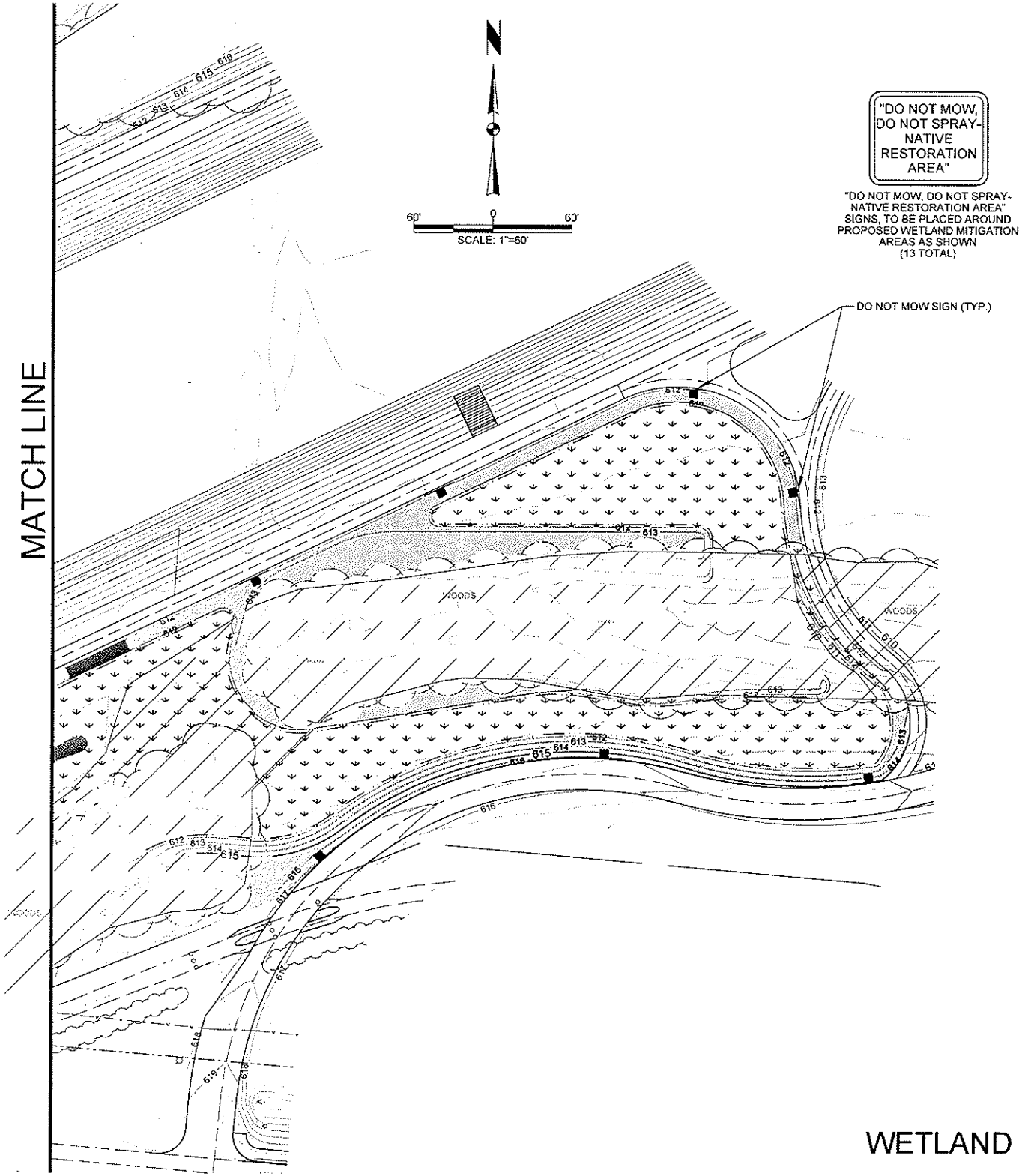
DRAWING:

TITLE: SITE GRADING PLAN

PROJECT NO. 01-0033
SHEET OF
DRAWING NO. P4-1



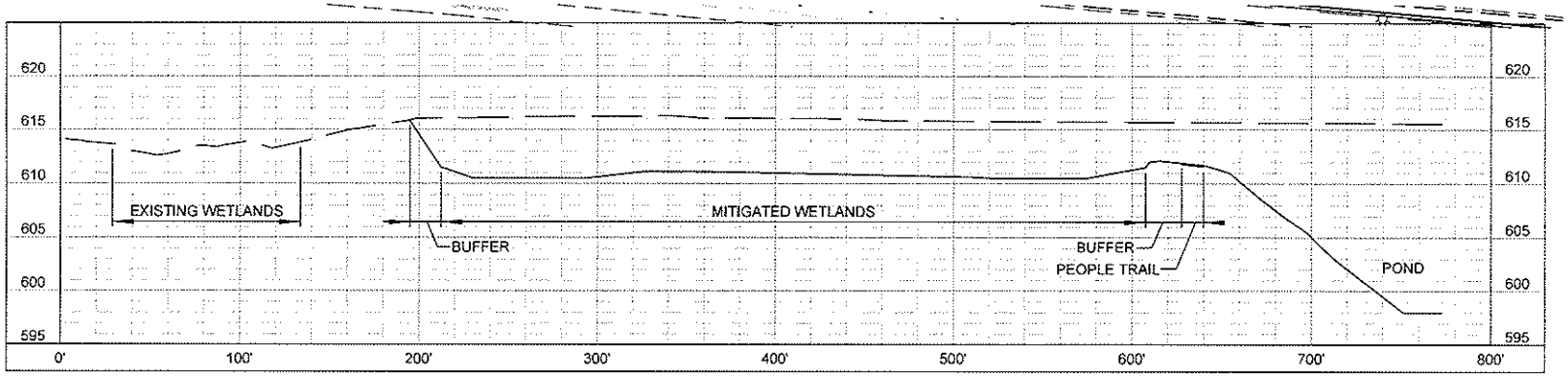
WETLAND MITIGATION PLAN



LEGEND

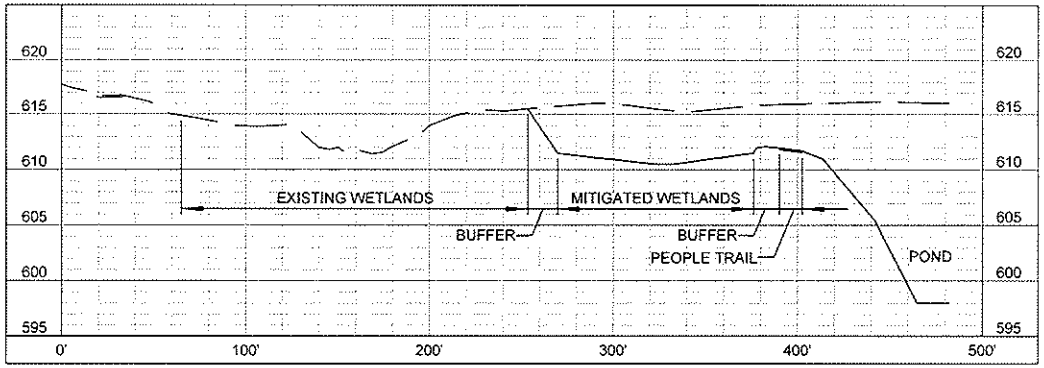
- EXISTING WETLANDS
- SEED MIX A
- SEED MIX B
- SEED MIX A AND TREES & SHRUBS

WETLAND MITIGATION PLAN



CROSS SECTION A-A

SCALE: 1"=60' HORIZ.
1"=10' VERT.



CROSS SECTION B-B

SCALE: 1"=60' HORIZ.
1"=10' VERT.

Compacted Clay Liner for Wetland Mitigation

1. Scope
The work shall consist of compacting clay soil to construct a soil liner to control percolation within the wetland mitigation area.

2. Materials
Unless otherwise specified, the clay soil shall be in-situ materials or clay soil from a designated borrow source. The clay soil shall contain no frozen soil, snow, ice, sod, organic materials such as roots, vegetation, manure, or other perishable materials. Rock particles of a size that would interfere with mixing and compaction shall be removed prior to placement.

3. Equipment
All equipment necessary for the proper construction of the work shall be on the work site prior to the start of the clay liner installation operations. If addition of water is anticipated to achieve the specified moisture content and liner density, a water truck or other suitable methods for applying water shall be available prior to beginning work.

4. Subgrade Preparation
If in-situ soils are to be used for the compacted liner, the subgrade shall be excavated to the elevation of the surface of the lowest compacted layer. (about 6 inches above the planned liner bottom).

If the compacted liner is to be constructed of hauled-in clay, the subgrade shall be excavated to the bottom elevation of the planned liner.

The subgrade surface shall be smoothed to eliminate ridges and depressions in order to facilitate construction of a smooth compacted liner of uniform thickness. If the liner is to be constructed of hauled-in material, the subgrade shall be lightly disked to facilitate bonding of the two materials and lightly moistened if necessary. Free surface water shall not be present prior to placing the first layer of fill.

5. Placement
If in-situ material is to be used for the liner, the bottom layer shall be thoroughly disked to a depth of 6 inches, resulting in a loose layer thickness of approximately 9 inches. Water shall be applied to the loose soil, if necessary, to bring the soil moisture to the specified content. If the soil moisture is too high then it shall be disked and allowed to dry until the moisture content is lowered sufficiently to allow compaction.

If the liner is to be constructed of hauled-in material, the first layer shall be placed and spread to a loose thickness that can be effectively compacted to the specified density by the available equipment. In no case shall the loose layer thickness exceed 9 inches. The moisture content of the loose soil layer shall be adjusted as described in the above paragraph.

6. Compaction
Each compacted lift shall be uniformly dense and relatively free of large depressions or dimples. Where a smooth wheel roller or other type of non-penetrating compaction equipment is used, the surface of each layer shall be lightly disked to achieve bonding with the subsequent overlying layer.

Each layer of the clay liner shall be compacted to the minimum density and moisture content specified for this job.

The thickness of the finished compacted liner shall be 12-inches. Approximately 6 inches of topsoil shall be placed upon the finished compacted liner prior to wetland seeding and planting. The topsoil layer should not be compacted.

WETLAND MITIGATION PLAN

PLANTING NOTES:

Part I General

1.02 Bidder Qualifications
A. The submitting bidders shall be, and have been, actively and directly engaged in prairie seed installation for a period of two (2) or more year. Provide proof of five (5) or more successful wetland seed and tree installations

B. The submitting bidder must have access to and experience with a no-till seed drill designed for prairie seed installations. Such drills are manufactured by Truax, Great Plains, and John Deer, Inc. Hydro-seeding may not be substituted for drill seeding.

1.03 Environmental Requirements
A. Installations shall be performed between September 20 and December 20 or April 1 and June 1.
Under no circumstances shall this site be stabilized with winter rye, grain rye, or winter wheat. These plants produce toxins that inhibit prairie seed germination.

B. Site shall have a firm seedbed. If walking compacts soil over ½ inch, the site shall be culti-packed

1.04 Seed Materials
A. All native seed shall be refrigerated for at least 90 days prior to installation. All native seed must be of wild ecotype. No hybrids or cultivars may be included

Local genotype seed shall be used whenever possible due to its adaptation to local soil and climate. These specifications do not apply to the temporary matrix

Part II Seed Products

2.01
Seed Mix A

Common Name	Scientific Name	Ounces/Acre
Graminoids		
[illegible] Sedge	*Carex [illegible]*	2
Bur Sedge	*Carex grayi*	2
Common Wood Sedge	*Carex blanda*	2
Palm Sedge	*Carex muskingumensis*	2
Spreading Oval Sedge	*Carex normalis*	2
[illegible] Oval Sedge	*Carex tribuloides*	2
Fox Sedge	*Carex vulpinoidea*	2
Riverbank Wild Rye	*Elymus riparius*	16
Virginia Wild Rye	*Elymus virginicus*	64
Fowl Manna Grass	*Glyceria striata*	2
Bottlebrush Grass	*Hystrix patula*	5
Forbs		
Wingstem	*Actinomeris alternifolia*	2
Side Flowering Aster	*Aster lateriflorus*	2
Swamp Aster	*Aster puniceus*	2
Panicled Aster	*Aster simplex*	2
Hairy Wood Mint	*Blephilia hirsuta*	0.5
Autumn Sneezeweed	*Helenium autumnale*	2
False Sunflower	*Heliopsis helianthoides*	2
Great Blue Lobelia	*Lobelia siphilitica*	0.5
Monkey Flower	*Mimulus ringens*	0.5
Smooth Penstemon	*Penstemon calycosus*	2
Green Headed Coneflower	*Rudbeckia laciniata*	2
Cup Plant	*Silphium perfoliatum*	2
Late Goldenrod	*Solidago gigantea*	1.5
Culver's Root	*Veronicastrum virginicum*	0.5
Golden Alexanders	*Zizia aurea*	2
Temporary Cover		Pounds/Acre
Seed Oats	*Avena sativa*	60
Annual Rye Grass	*Lolium perenne*	60
		120

Seed Mix B

Common Name	Scientific Name	Ounces/Acre
Graminoids		
[illegible]	[illegible]	[illegible]
Temporary Cover		Pounds/Acre
Seed Oats	*Avena sativa*	40
Annual Rye Grass	*Lolium perenne*	40
		120

Seed Mix C

Common Name	Scientific Name	Ounces/Acre
Graminoids		
[illegible]	[illegible]	[illegible]
Temporary Cover		Pounds/Acre
Seed Oats	*Avena sativa*	[illegible]
Annual Rye Grass	*Lolium perenne*	[illegible]
		120

Seed Mix D

Common Name	Scientific Name	Ounces/Acre
Graminoids		
[illegible]	[illegible]	[illegible]
Temporary Cover		Pounds/Acre
Seed Oats	*Avena sativa*	60
Annual Rye Grass	*Lolium perenne*	60
		120

Part III Seed Execution

3.01 Examination
A. Verify that seedbed is sufficiently firm

B. Verify that the site is clean and free of debris

3.02 Preparation and Installation

Seeded Areas
A. If vegetation exists on site, apply a glyphosate herbicide at least three days prior to installation on all actively growing vegetation. Do not herbicide in existing tree plantings. Never apply fertilizer to the site

B. Install seed when soil is sufficiently dry so that soil does not stick to the packer wheels on the drill

C. Ensure the drill is properly calibrated to sow the specified amount of seed over the specified area. Ensure complete coverage of the specified area

3.03 Maintenance
A. Mow at a height of 4-6 inches when the oats set seed heads. Mow at a height of 4-6 inches once a month or whenever weed growth reaches 10 inches for the remainder of the first season

B. If cool season weed growth is heavy in the spring of the second season, mow once in late May

C. Following the second season of growth, native seeded areas may be maintained by annual mowing, prescribed burning, herbicide application, or a combination of the three

3.04 Acceptance
For acceptance of the system at the beginning of the second fall growing season, the following conditions shall be met

A. Coverage- 75% of each seeded community shall be covered with vegetation

B. Presence- 50% of the seeded species planted should be alive and present

B. Abundance- 25% of the seeded vegetation should be native species of the permanent matrix

Part IV Trees and Shrubs

4.01 Tree and Shrub Materials
A. All trees and shrubs must be obtained from the closest available source

B. Planting shall be performed in the fall during the months of September through November, or in the spring before leaves are present

C. The above ground portions of each plant shall be healthy and vigorous, and free of disease, discoloration, infestation or deformity

D. Containers or burlap shall be free of any plant species not specified below, specifically weedy, noxious, invasive, and/or non-native species

Part V Trees and Shrubs Products

5.01

Common Name	Scientific Name	Type	Size	Spacing
Ohio Buckeye	*Aesculus glabra*	T	3 gal	10-ft. O.C.
Black Chokeberry	*Aronia melanocarpa*	S	3 gal	10-ft. O.C.
Shellbark Hickory	*Carya laciniosa*	T	3 gal	10-ft. O.C.
Gray Dogwood	*Cornus racemosa*	S	3 gal	10-ft. O.C.
Winterberry	*Ilex verticillata*	S	3 gal	10-ft. O.C.
Common Ninebark	*Physocarpus opulifolius*	S	3 gal	10-ft. O.C.
Sycamore	*Platanus occidentalis*	T	3 gal	10-ft. O.C.
Swamp White Oak	*Quercus bicolor*	T	3 gal	10-ft. O.C.
Bur Oak	*Quercus macrocarpa*	T	3 gal	10-ft. O.C.
Pin Oak	*Quercus palustris*	T	3 gal	10-ft. O.C.
Shumard Oak	*Quercus shumardii*	T	3 gal	10-ft. O.C.
Elderberry	*Sambucus canadensis*	S	3 gal	10-ft. O.C.

Acceptable Substitutes

Common Name	Scientific Name	Type
Red Maple	*Acer rubrum*	T
Common Hackberry	*Celtis occidentalis*	T
Red Osier Dogwood	*Cornus stolonifera*	S
Spicebush	*Lindera benzoin*	S
[illegible] Oak	*Quercus [illegible]*	T
American Elm	*Ulmus americana*	T

**Final plant list must contain at least four (4) Oak species and a total of seven (7) tree and five (5) shrub species

Part VI Tree and Shrub Execution

6.02 Preparation and Installation
A. Dig a shallow, broad planting hole. Make the hole as wide as two to three times the diameter of the root ball, but only as deep as the root ball. It is important to make the hole wide because the tree roots must push through the surrounding soil to become established

B. Remove the tree from the container by gently squeezing or tapping it while slipping the root ball out

C. Inspect for circling roots

1. Fluff out circling roots by scraping around the root ball to free the roots

2. If you encounter a root too large to straighten with your fingers, remove the root by cutting it out. Make the cut prior to where the root circles, yet as far away from the trunk as possible. Always use a sharp knife or pruners in order to make a clean cut. Refrain from tearing the roots

3. You have corrected all circling roots once all root tips are headed outward towards the surrounding soils instead

D. Inspect root flare depth

1. If your tree has a widening trunk base above the root ball, then its root flare is the correct location. No visible root flare will necessitate the following steps to locate and correct this issue

2. Locate the root flare by digging along the trunk of the tree. Look and feel for the widening portion of the trunk

3. The root flare depth has been corrected once the widening part of the trunk is above the soil line

E. Ensure the base of the hole is compacted and free of loose soil

1. Place the tree in the whole and check the root flare depth to the natural terrain. The flare should be no lower than ground level. Slightly above ground level is ok

2. Back fill the whole with the same soil from the hole

3. Water in the back filled soil to accelerate settling soil and eliminate air pockets

6.03 Maintenance
A. Keep mowing equipment at least 1 foot from trees

B. Staking may be necessary especially in high wind conditions. Never support the tree higher than half way up the trunk. Use large belt-like straps attached to stakes positioned two feet away from the tree. Allow the tree to have flexibility and move with the wind

6.04 Acceptance
For acceptance of the system at the beginning of the second fall growing season, the following conditions shall be met

A. 95% of the planted tree and shrub species should be alive and present

Part VII Live Plugs

7.01 Plug Materials
A. Plugs shall be container grown in a minimum 2-inch container, and shall be well rooted and established in the container in which they were grown. They shall have grown in the container for a sufficient length of time for the root system to hold the potting material when taken from the container, but not long enough to become pot bound

B. The above ground portions of each plant shall be healthy and vigorous, and free of disease, discoloration, infestation or deformity

C. All emergent wetland plugs will be local genotype and will be from the closest available source

D. Containers shall be free of any plant species not specified below, specifically weedy, noxious, invasive, and/or non-native species

Part VIII Live Plug Materials

8.01 Lake Shoreline Plugs

Common Name	Scientific Name	Spacing
Graminoids		
Bottlebrush Tussock Sedge	*Carex comosa*	2.5' O.C.
Lake Sedge	*Carex lacustris*	2.5' O.C.
Creeping Spikerush	*Eleocharis erythropoda*	2.5' O.C.
Three-Square Bulrush	*Scirpus pungens*	2.5' O.C.
*Forbs**		
Wild Iris	*Iris virginica*	2.5' O.C.
Water Willow	*Justicia americana*	2.5' O.C.
Pickerel Weed	*Pontederia cordata*	2.5' O.C.
* Plant in [illegible] locations only		

8.02 Wetland Treatment Plugs

Common Name	Scientific Name	Planting Zone	Spacing	Quantity
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Part IX Live Plug Execution

9.01 Preparation and Installation
A. Use an auger or appropriate tool to excavate planting holes at specified distances in a staggered pattern

B. Plant plugs level with existing soil grade, be certain that the soil placed around the plugs is firmed into place

C. If area is not wet, thoroughly soak plugged area until soil is moist to a depth of 4 inches

9.02 Maintenance
A. Pull weeds or apply a glyphosate herbicide of the following species deemed detrimental to emergent wetland plantings.

Purple Loosestrife (*Lythrum salicaria*)
Common Reed (*Phragmites australis*)
Cattail (*Typha spp*)

B. Subsequent watering shall be the responsibility of the owner. Watering and rainfall shall supply a minimum of 1 inch of water per week.

9.03 Acceptance
A. Plugs shall exhibit vigorous growth and be thoroughly rooted by the end of first growing season

B. A minimum of 95% of plugs shall be alive and growing at the end of the second growing season.

WETLAND MITIGATION PLAN