# Agreement
# between
# Lake County Forest Preserve District
# and
# Continental Beeson Corner LLC
# regarding
# Wetland Mitigation and Restoration Project
# (Prairie Wolf Forest Preserve)

**This Agreement** ("**Agreement**") is entered into as of the ____ day of _____ 2016 (the "**Effective Date**"), by and between the **Lake County Forest Preserve District**, a body politic and corporate organized and existing under the Downstate Forest Preserve District Act, 70 ILCS 805/.001 *et seq.* (the "**District**"), and **Continental Beeson Corner LLC**, a Wisconsin limited liability company ("**Continental**") (the District and Continental are sometimes referred to, collectively, as the "**Parties**" or individually as a "**Party**"). In consideration of the recitals and the mutual covenants and agreements set forth in this Agreement, the Parties agree as follows:

**Section 1. Recitals.**

**A.** The District owns certain property in Lake County, Illinois, commonly known as "Prairie Wolf Forest Preserve" (the "**Forest Preserve Property**").

**B.** Continental has entered into a contract to purchase an approximately 9.36-acre, parcel of land (the "**Continental Property**") located near the northeast intersection of Illinois Route 43 (Waukegan Road) and Illinois Route 22 (Half Day Road) within the Village of Bannockburn, Illinois (the "**Village**") [in or to be annexed to?]. The Continental Property is adjacent to the Forest Preserve Property. A portion of the Forest Preserve Property and the Continental Property are generally depicted on **Exhibit A**.

**C.** Continental has obtained certain conditional approvals from the Village that would allow Continental to develop a grocery store, with approximately 75,000 square feet, and ancillary improvements, such as parking areas, drive aisles, utilities, and stormwater improvements (collectively, the "**Development**"). If the Development is constructed, stormwater from the Development will have certain direct or indirect impacts on wetlands located on the Forest Preserve Property.

**D.** Pursuant to the United States Clean Water Act, it is unlawful to fill, discharge into, or cause certain other impacts to wetlands, unless such impacts are authorized by a permit issued by the United States Army Corps of Engineers (the "**USACE**"), pursuant to Section 404 of the Clean Water Act (a "**Section 404 Permit**"). The USACE may issue a Section 404 Permit if it determines that the applicant for the permit will adequately mitigate the impacts that will be caused to wetlands.

**E.** So that it may proceed with the Development, Continental has filed an application to the ACOE for a Section 404 Permit to allow impacts to the wetlands on the Forest Preserve Property (the "**Application**"). In support of such Application, Continental has proposed to mitigate the wetland impacts to the Forest Preserve Property, in part, by causing to be performed the mitigation work described in Section VI (the "**Mitigation Work**") of the "Project Mitigation Document" attached hereto as **Exhibit B** (the "**Mitigation Plan**") and the

maintenance, monitoring, and management work described in Section VII of the Mitigation Plan (the "**Maintenance Work**"). The Mitigation Work and the Maintenance Work would include the removal of invasive trees and shrubs, the herbiciding of cut stumps and plants, and the planting of native plant species within the Forest Preserve Property. If the ACOE approves the Application, including the Mitigation Work proposed therein, and issues a Section 404 Permit, the parties contemplate that the District will be asked to execute the Section 404 Permit as an off-site mitigation sponsor.

**F.** Continental further proposes to cause the Mitigation Work and Maintenance Work to be completed by paying a flat sum to the District in the amount of $500,000 (the "**Mitigation Payment**") and that the District would use the Mitigation Payment to complete, or cause to be completed, the Mitigation Work and Maintenance Work.

**G.** The District is willing to (i) execute, as an off-site mitigation sponsor, a Section 404 Permit that (a) authorizes the Mitigation Work and Maintenance Work, (b) is effective (or is effective conditioned only on the District's execution of it as an off-site mitigation sponsor), and (c) that is otherwise consistent with this Agreement and acceptable to the District (an "**Acceptable 404 Permit**") and (ii) accept the Mitigation Payment from Continental, so that the District can perform, or cause to be performed, the Mitigation Work and Maintenance Work on the Forest Preserve Property.

**Section 2. Execution of Acceptable 404 Permit; Mitigation Payment.**

If ACOE issues an Acceptable 404 Permit to Continental, Continental shall execute the Acceptable 404 Permit and deliver it to the District. The District President promptly shall, or cause her designee to, execute the Acceptable 404 Permit on behalf of the District, as an off-site mitigation sponsor, and return it to Continental. Thereafter, and after Continental acquires the Continental Property, Continental shall tender to the District the Mitigation Payment via wire transfer.

**Section 3. Performance of Mitigation Work.**

After Continental makes the Mitigation Payment, the District shall cause the Mitigation Work and Maintenance Work to be completed in accordance with the Mitigation Plan, including the performance standards in Section VIII of the Mitigation Plan and any requirements contained within the Acceptable 404 Permit (collectively, the "**Performance Standards**"), by either (i) performing the Mitigation Work and Maintenance Work itself through its own forces, (ii) causing the Mitigation Work and Maintenance Work to be performed by a contractor, or (iii) a combination of (i) and (ii). If the District engages a contractor to complete the Mitigation Work or the Maintenance Work, or any portion thereof, the District shall engage such contractor through applicable procurement laws, including the District's own procurement requirements. Continental will have no right to select or terminate any contractor. After it completes the Mitigation Work and the Maintenance Work, the District shall notify Continental of such completion. Thereafter, Continental shall promptly seek from ACOE a letter of completion or closure (or its equivalent) stating that the Mitigation Work and Maintenance Work has been completed in accordance with the Acceptable 404 Permit (a "**Completion Letter**").

**Section 4. No Additional Payment; No Refund.**

If the cost to the District of performing the Mitigation Work and Maintenance Work exceeds the amount of the Mitigation Payment, then the District will bear such cost and

Continental will not be required to pay for any such additional costs. If the cost to the District of performing the Mitigation Work or Maintenance Work is less than the amount of the Mitigation Payment, then the District will retain the difference between such cost and such amount, and Continental will not be entitled to a refund of any portion of the difference.

**Section 5. Term.**

This Agreement will be effective as of the Effective Date and will terminate (i) if Continental sends to the District written notice of termination prior to Continental tendering an Acceptable 404 Permit to the District, (ii) at the District's option, if, on or before the one-year anniversary of the Effective Date, Continental has failed to make the Mitigation Payment or (iii) if the ACOE issues a Completion Letter and the District sends to Continental written notice of termination.

**Section 6. Binding Effect; No Third Party Beneficiaries.**

The District may not assign its obligations to complete the Mitigation Work and Maintenance Work without Continental's prior written consent. Continental may assign its rights and obligations to any owner of the fee simple interest of the Continental Property, if it first sends written notice to the District that it has sold or conveyed fee simple interest to such assignee and such notice includes a copy of a deed or other evidence of such conveyance. No claim as a third party beneficiary under this Agreement by any person, firm, or corporation will be made, or be valid, against the Parties. Nothing in this Agreement grants to Continental any real property interest (whether an easement, a lease, or other interest) in the Forest Preserve Property.

**Section 7. Default and Enforcement.**

**A. Default.** If a Party (the "**Defaulting Party**") fails to perform its obligations under this Agreement, then it will be in default of this Agreement only if (i) the other Party sends written notice to the Defaulting Party describing such failure in sufficient detail so that the Defaulting Party may remedy such failure and (ii) the Defaulting Party has not, within 30 days after it has received such notice, either (a) cured such failure or (b) if such failure cannot be reasonably cured within such 30-day period, commenced and continuously and diligently pursued a cure of such failure.

**B. Enforcement; Venue.** If a Defaulting Party is in default of this Agreement, the other Party may, in law or in equity, by suit, action, mandamus or any other proceeding, including, without limitation, specific performance, enforce or compel the performance of this Agreement. Venue for any such suit, action, mandamus, or other proceeding will be the Circuit Court of Lake County, Illinois.

**C. Prevailing Party.** In the event of a judicial proceeding brought by one Party against the other Party (i) the prevailing Party in the judicial proceeding will be entitled to reimbursement from the unsuccessful Party of all costs and expenses, including reasonable attorneys' fees, incurred by the prevailing Party in connection with the judicial proceeding and in connection with the enforcement of its rights under this Agreement and (ii) if, as a result of such judicial proceeding, the court determines, in a final, non-appealable order, that the District has failed to perform the Mitigation Work or Maintenance Work as required by this Agreement then, the District, at Continental's request, shall grant Continental a license allowing Continental to enter the Forest Preserve Property for the purpose of completing the Mitigation Work or the Maintenance Work as the case may be.

**Section 8. General Provisions.**

**A. Authority to Execute.** Each person executing this Agreement represents, warrants, and covenants that, as of the Effective Date, he or she has the right, power, and authority, to enter into, execute, and deliver this Agreement and to perform (or cause the performance of) the obligations of the Party on whose behalf he or she is executing this Agreement.

**B. Notices.** All notices required or permitted to be given under this Agreement shall be given by the Parties in writing by: (i) personal delivery; (ii) deposit in the United States mail, enclosed in a sealed envelope with first class postage thereon; or (iii) deposit with a nationally recognized overnight delivery service, addressed as stated in this Section. The address of any Party may be changed by written notice to the other Parties. Notice will be deemed to have been given and received upon actual receipt. Notices and communications to the Parties will be addressed to, and delivered at, the following addresses:

If to the District: Lake County Forest Preserve District
1899 West Winchester Road
Libertyville, IL 60048
Attention: Executive Director

| | |
|---|---|
| with a copy to: | Holland & Knight LLP<br>131 S. Dearborn Street, 30th Floor<br>Chicago, IL 60603<br>Attention: Matthew E. Norton |
| If to Continental: | Continental Beeson Corner LLC<br>W134 N8675 Executive Parkway<br>Menomonee Falls, WI 53051<br>Attention: Legal Department |

Nothing in this Section is intended to invalidate any notice that is actually received.

**C. Time of the Essence.** Time is of the essence in the performance of all obligations of this Agreement.

**D. Entire Agreement; Interpretation.** This Agreement constitutes the entire agreement between the Parties, superseding any and all prior agreements and negotiations between the Parties, whether written or oral, relating to the subject matter of this Agreement. Any rule or construction that a document is to be construed against the drafting party is not applicable to this Agreement.

**E. Amendments and Modifications.** No amendment or modification to this Agreement will be effective unless and until it is reduced to writing and approved and executed by all Parties to this Agreement in accordance with all applicable statutory procedures.

**F. Counterparts, Separate Signature Pages, Facsimile or Electronic Signatures.** This Agreement may be executed in several counterparts, by separate signature pages, each of which may be deemed an original, and all such counterparts and separate signature pages together shall, together, constitute one and the same Agreement. In addition, this Agreement may be executed and delivered by facsimile or portable document format (.pdf) signature, such that execution of this Agreement by facsimile or portable document format (.pdf) signature shall be deemed effective for all purposes as though this Agreement was a "blue ink" original.

**Continental Beeson Corner LLC**
By: Continental Properties Company, Inc., its manager

By: _____
Daniel J. Minahan, President

Witness:

_____

**Lake County Forest Preserve District**

By: _____
Ann B. Maine, President

Attest:

_____
Julie Gragnani
Board Secretary

**Exhibit A**

General Depiction of portion of Forest Preserve Property and Continental Property

**Exhibit B**

Mitigation Plan

**13-0036**

# PROJECT MITIGATION DOCUMENT

## PRAIRIE WOLF FOREST PRESERVE

**USACE LRC-2012-621**

**IEPA Log #C-0667-13**

**CITY OF LAKE FOREST, LAKE COUNTY, ILLINOIS**

**PREPARED FOR:**

**Continental Beeson Corner LLC**
**W134 N8675 Executive Parkway**
**Menomonee Falls, Wisconsin 53051**

**In cooperation with**
**Lake County Forest Preserves District**

**APRIL 11, 2016**

*26575 W. COMMERCE DRIVE, SUITE 601, VOLO, ILLINOIS 60073*
*OFFICE (847) 740-0888 FAX (847) 740-2888*

## TABLE OF CONTENTS

**I. OBJECTIVES** ..... PAGE 1

**II. SITE SELECTION** ..... PAGE 5

**III. SITE PROTECTION INSTRUMENT** ..... PAGE 5

**IV. BASELINE INFORMATION** ..... PAGE 6

**V. CREDIT DETERMINATION METHODOLOGY** ..... PAGE 8

**VI. MITIGATION WORK PLAN** ..... PAGE 8

**VII. MAINTENANCE PLAN** ..... PAGE 10

**VIII. PERFORMANCE STANDARDS** ..... PAGE 11

**IX. MONITORING REQUIREMENTS** ..... PAGE 13

**X. LONG TERM MANAGEMENT PLAN** ..... PAGE 14

**XI. ADAPTATIVE MANAGEMENT PLAN** ..... PAGE 14

**XII. FINANCIAL ASSURANCES** ..... PAGE 14

**APPENDIX A. SPECIES LISTS** ..... PAGE 15

## INTRODUCTION

The Continental Beeson Corner LLC is proposing a new grocery store including the required stormwater management facilities, parking stalls, delivery truck access, and landscaping on a 9.1 acre property. The project is located east of Illinois Route 43 (Waukegan Road) and north of Illinois Route 22 (Half Day Road) in Section 17, Township 43 North, Range 12 East, and 3rd P.M. The project is further located by the G.P. S. decimal coordinates of Latitude Lat. 42.202696 and Longitude -87.862969. The store will be approximately 74,375 square feet with 350 parking stalls with drive aisles and direct access to Illinois Route 43. The parking lots and drive aisles cover approximately 4.10 acres (178,553 square feet). Potable water will be provided by Village of Bannockburn, and wastewater treatment will be provided by the North Shore Water Reclamation District. Stormwater management will consist of bioswales, recessed parking islands, and underground detention in accordance with the requirements of the Lake County Watershed Development Ordinance and Village of Bannockburn. The project requires a Section 404 Individual Permit and compensatory wetland mitigation. This Project Mitigation Document (PMD) pertains to the off-site permittee responsible mitigation to be implemented at the Prairie Wolf Forest Preserve in the City of Lake Forest, Lake County, Illinois (Exhibit 1). Prairie Wolf Forest Preserve property is owned by the Lake County Forest Preserve District (LCFPD). This PMD is required by the Army Corps of Engineers' (USACE) Individual Permit authorization. This document follows the required 12 mitigation plan components that need to be addressed under the federal Mitigation Rule.

# I. OBJECTIVES

### A. Impact Site – IL Route 22 and IL Route 43

Direct and indirect impacts to the wetlands will result from grading and other development aspects of the project. The purpose of the proposed project is to construct a grocery store with fresh produce and other commodities needed in a part of Lake County with few choices for grocery stores.

The permanent and indirect impact to 3.70-acres of wetland/waters requires compensatory mitigation of 11.57-acres. The applicant has secured 6.00-acres of wetland bank credit in the Chicago River watershed from the Atkinson Road Mitigation Bank. The remaining 5.57-acres of credit needed will be provided off-site by the restoration and enhancement of wetlands and uplands at Prairie Wolf Forest Preserve.

**B. Mitigation Site – Off-site**

The entire 35-acre off-site mitigation project site (approximately 25-acres mitigation site with approximately 10-acres of 100-foot buffer) is owned by the LCFPD as shown in Exhibit 1. It is bounded to the east by single family residences, to the north by West Old Elm Road and single family residences, to the west by the Middle Fork Chicago River and additional Forest Preserve, and to the south additional Forest Preserve. The goals and objectives for this permittee responsible mitigation site are to compensate for functional and biological values lost from the project impacts. The goal is to enhance the native vegetation cover, remove invasive and weedy native and non-native plant species, and improve habitat for native species of waterfowl, amphibians, reptiles, and vegetation. Enhancement of the site is expected to have a positive effect on wildlife and water quality values of the Middle Fork Chicago River and the greater Chicago River watershed in Lake County.

Specific project objectives include:

1. Reduce cover and density of aggressive native woody plant species.
2. Re-establish coverage of native herbaceous and woody vegetation species and limit the establishment of non-native species.

The proposed mitigation will enhance 5.65-acres of existing wetland, restore 10.59-acres of wetland, enhance 9.11-acres of upland, and enhance 9.35-acres of 100-foot buffer around the mitigation site. All estimated acreages have been provided by LCFPD.

**Sustainable Design**

Because the project is primarily vegetation enhancement and the fact that no grading or structures or drain tile disablement are proposed, there will be no anticipated change in the Middle Fork River hydrology. However, the vegetative composition of the wetlands and uplands is expected to change as a result of invasive species control, increased herbaceous cover, and long-term maintenance activities should make the mitigation sustainable and have positive wetland and watershed benefits.

**Agency Clearance Letters**

The Bannockburn project site has been cleared for biological and cultural resources. The Prairie Wolf project site will be submitted for state biological clearance through the Illinois Department of Natural Resource's EcoCAT. No ground disturbance, e.g., grading, will be part of this project so a cultural clearance request has not been submitted to the Illinois Historic Preservation Agency.

**Watershed Objectives**

Regional Permit Program-General Condition 22 (K) states "Where an appropriate watershed plan is available, the applicant shall address in writing how the proposed activity is aligned with the relevant water quality, hydrologic, and aquatic resource protection recommendations in the watershed plan". This project is within the watershed of the Middle Fork River of the North Branch Chicago River which has an approved watershed plan, the *North Branch of the Chicago River Watershed-Based Plan* (2008) by the Lake County Stormwater Management Commission. Two of the goals of the plan and how this project addresses those goals are outlined below.

*1. IMPROVE WATER QUALITY IN THE NORTH BRANCH CHICAGO RIVER*

*Objective 1: Reduce nonpoint and point source pollutant loadings from runoff by some measurable standard.*

Since the project is designed to promote dense herbaceous vegetation that currently does not exist, it is anticipated that this project will decrease nonpoint pollutant loadings from local runoff.

*Objective 2: Reduce streambank and streambed erosion.*

The project site does not contain any defined channels.

*Objective 3: Correct wastewater overflow conditions that have a significant impact on water quality.*

The project site does not contain a wastewater treatment facility.

*Objective 4: Protect and restore riparian greenways and buffers along and around all water resources.*

The project site will protect and enhance riparian greenways and riparian buffers.

*2. REDUCE FLOOD DAMAGE IN THE NORTH BRANCH CHICAGO RIVER*

*Objective 1: Reduce flow rates and volumes from existing developed areas and prevent increases in flow rates and volumes from new development.*

The project is not proposing new impervious areas and therefore no increases to flow rates and volumes. The vegetation enhancements may promote greater "stay on" volume of local runoff.

*Objective 2: Protect and restore floodplain functions.*

There is mapped floodplain on this site, however, no negative impacts to floodplain functions are anticipated.

*Objective 3: Maintain and manage the river corridor and other drainageways to preserve conveyance of stormwater in an environmentally-friendly manner.*

The site is bounded on the west by the Middle Fork River. This project will preserve all stormwater conveyance functions.

*Objective 4: Mitigate flood damages using both remedial and preventive measures including property protection.*

There are no remedial and preventive measures proposed to mitigate flood damage.

*Objective 5: Determine potential locations and feasibility of regional stormwater detention sites.*

The site is not being considered for regional stormwater detention.

**Likely Future Adjacent Land Uses and Compatibility**

No future development is anticipated to the east, north, west, and south as these areas are already developed and Forest Preserve and so the proposed wetland mitigation is highly compatible. The Forest Preserve is retaining the right to route a multi-use trail through the western portion of the buffer. The trail will not impact the mitigation area.

## II. SITE SELECTION

The off-site permittee responsible mitigation site was identified as a viable site because:

1. The site is already owned by LCFPD;
2. Wetlands on the Forest Preserve property immediately adjacent to the proposed development will be indirectly impacted;
3. The site is approximately 3,000 feet northeast of the proposed development;
4. The site is within the Middle Fork River watershed in Lake County.
5. Regulatory and non-regulatory agencies support the use of this site for permittee responsible mitigation instead of wetland bank mitigation.

Once the five year vegetation management and monitoring activities are completed, the native vegetation will be in a much improved condition to compete with invasive species. However, for the improvements to be self sustaining, occasional long term management activities will be necessary and have been committed to by the Forest Preserve after the five year management and monitoring period.

## III. SITE PROTECTION INSTRUMENT

The LCFPD shall ensure that the mitigation shall not be made subject to any future construction and/or fill activities. The only allowable activities on the site will be for the purposes of enhancing or maintaining the mitigation area and passive recreation, this includes a multi-use trail in the buffer area.

# IV. BASELINE INFORMATION

### Mapping Resources

The United States Geological Survey (USGS) topographic map indicates a blue line stream along the west side of the project site, but does not indicate any wetlands on the project site (Exhibit 2). The National Wetland Inventory map does not indicate mapped wetlands on the project site (Exhibit 3). The Lake County Wetland Inventory map indicates the presence of a stream/wetland complex and a separate wetland complex on the project site (Exhibit 4). The mapped wetlands are not identified as Advanced Identification (ADID) wetlands. ADID wetlands are considered High Quality Aquatic Resources (HQAR). The Flood Insurance Rate Map indicates mapped floodplain on the majority of the project site (Exhibit 6). The USGS Hydrologic Atlas identifies the Middle Fork River and provides evidence of a hydrologic connection to the Chicago River, a Waters of the U. S. (Exhibit 7). The NRCS Lake County Soil Survey (Exhibit 8) indicates three mapped hydric soils on the project site. The soils are identified as Pella silt loam (153A+), Ashkum silty clay loam (232A), and Sawmill silty clay loam (1107A).

### Wetland Investigation

Field assessment visits by Hey and LCFPD staff occurred during the winter of 2015-2016. No formal wetland delineation has been conducted. However, wetland boundaries (Wetlands 1 to 8) have been estimated based on these field visits and available mapping resources (Exhibit 8).

### Jurisdictional Determination

The site wetlands appear to have a hydrologic connection to the Chicago River, a Waters of the U. S. as regulated by the USACE. A written jurisdictional determination has not been requested from the USACE.

### Existing Hydrology

The mitigation site drains west to the Middle Fork River which eventually flows into the North Branch Chicago River which is ultimately tributary to the Des Plaines River. The hydrology will be maintained at the mitigation site.

### Existing Vegetation

The parcel contains an over story of mixed hardwoods that include various oak (*Quercus*) species, shagbark hickory (*Carya ovata*), black walnut (*Juglans nigra*) and quaking aspen (*Populus tremuloides*). This parcel has been invaded by exotic (non-native) and opportunistic (native invasive) species such as common buckthorn (*Rhamnus cathartica*), green ash (*Fraxinus pennsylvanica*), elm (*Ulmus* spp), and eastern cottonwood (*Populus*

*deltoides*). The understory shrub community is relatively depauperate due to the invasion of exotic species, but contains some native species including, but not limited to, choke cherry (*Prunus virginiana*), wild gooseberry (*Ribes missouriense*) and hawthorns (*Crataegus* spp). Detailed vegetative surveys of herbaceous vegetation have not been conducted within the parcel; however, in general, native herbaceous cover is sparse, again due to the shade created by exotic and opportunistic woody plants. Since this project was not initiated until after most plants entered fall dormancy, more comprehensive species lists will not be available until several site visits have occurred throughout the growing season of 2016. Nevertheless, some sedge species have been observed on wetland borders and are presumed to be common lake sedge (Carex lacustris) and broad-leaved woolly sedge (Carex pellita). Both species occur in a variety of wetland habitats including marshes, sedge meadows, and upland depressions within savanna/woodland communities.

**Existing Soils**

As presented in the Lake County Soil Survey, the hydric soil in the proposed mitigation is predominately Pella silt loam, over wash (153A+). The Pella series consists of very deep, poorly drained soils formed in loamy or silty sediments and the underlying stratified loamy glacial sediments on lake plains, outwash plains, and till plains. The mapped upland soils, Wauconda silt loam-697A and Wauconda and Beecher silt loam-978A, contain hydric inclusions of Pella.

**Existing Wildlife Usage**

No detailed wildlife surveys have been conducted.

**Historic and Current Land Use**

A review of several historical aerial photographs 1939 to 2014 on Lake County Maps Online website, indicates that the project site has been a forest and subject to little or no row crop tillage. Possible historic land use of the project site was grazing and woodlot. Current land use is open space.

**Current Owner**

LCFPD is the current property owner.

**Watershed Context/Surrounding Land Use**

The mitigation site is on the east bank of the Middle Fork River of the North Branch Chicago River. As previously mentioned the adjacent land use is residential and open space.

## V. CREDIT DETERMINATION METHODOLOGY

The primary goal of this project is to provide mitigation in the same watershed as the proposed impacts and in close proximity to the impact site for functional replacement of the impacted wetlands. The enhancement of wetlands and uplands on a Forest Preserve will compensate for the remaining 5.57-acres of mitigation that are required, which is in addition to the 6.00-acres of mitigation bank credits that are also being purchased.

**Potential Mitigation Credit Generation**

Wetland Enhancement 5.65-acres x 0.25 = 1.41 acres

Wetland Restoration 10.59-acres x 1.00 = 10.59 acres

Upland Enhancement 9.11 acres (no credit requested)

100-foot Buffer 9.35-acres (no credit requested)

TOTAL POTENTIAL MITIGATION CREDIT 12 ACRES

## VI. MITIGATION WORK PLAN

Vegetation management for invasive trees and shrubs will consist of girdling, cutting, and burning debris piles followed by herbicide treatments to the cut stumps. Undesirable herbaceous plants will be hand pulled, mowed or treated with herbicide. Implementation of this work plan will take place concurrent with the impacts authorized by the Section 404 permit for the grocery store project and will be implemented no later than one year of permitted impact.

**Grading and Soil Management**

If after the vegetation management there are areas of bare soil susceptible to erosion, appropriate soil erosion and sediment control measures will be implemented and maintained throughout the duration of the project. No grading is proposed.

**Water Control**

No water control structures are proposed or necessary. Hydrologic analysis and modeling for the site as a whole will be conducted. In 2014, the District contracted a drain tile investigation of the entire Prairie Wolf Forest Preserve site. Existing drain tiles lie adjacent to the proposed mitigation site. Further analysis is

necessary to plan for future restoration and enhancement efforts. This analysis is critical for adaptively managing this mitigation site and the Prairie Wolf Forest Preserve in total.

**Site Access**

Site access will be provided by the LCFPD. The site will need to be accessed by using clean timber matting that will be removed after the initial major work has been completed.

**Initial Control of Invasive Species**

Initial clearing of exotic and invasive woody species of the entire site will take place. Invasive and weedy species are prevalent throughout the parcel and will need to be controlled prior to the installation of native plant species to promote the establishment and growth of desirable species.

During the winter, invasive or low quality woody species will be controlled through mechanical removal and chemical treatment. Target species will be cut at the base and treated with an herbicide appropriate for species and site conditions. Cut material will be stacked and burned on-site. All required local and state permits will be acquired prior to burning activities. All undesirable species will be targeted for removal including common buckthorn, honeysuckle, green ash, elm and cottonwood. Woody resprouts will be controlled early in the first growing season with follow-up foliar applications.

**Planting Plan**

The proposed communities, mesic, wet mesic, and wet savanna, will be seeded and planted following woody species control. These communities are shown on the Mitigation Plan (Exhibit 9) and will be represented by a mosaic of the various vegetation community types. Native seed and plant material shall adhere to LCFPD seed/plant provenance specifications to preserve and utilize local genotypes from a specific geographic area with similar geography and climate. Native seed, plant, tree, and shrub lists are provided in Appendix A.

Native seed material will be hand or mechanically broadcasted in late fall, evenly throughout all communities after woody species control is completed during the winter months.

Native plant material (approximately 40,000 plugs) will be installed within restoration and enhancement wetlands during the growing season (May/June). Plants will be installed appropriately according to species type and site conditions. Plug list is provided in Appendix A.

Native trees and shrubs (includes protective fencing, mulch, and follow-up watering) will be installed across approximately 12 acres)

## VII. MAINTENANCE PLAN

Management will be conducted both before and after seed and plant installation activities to help promote the establishment of native species. Both mechanical and chemical weed control methods will be performed according to needs. After native species installation has been completed, spot treatments will be made with appropriate herbicides to effectively control the weeds commonly associated with upland and wetland plant communities.

Target species within the mitigation include, but are not limited to common buckthorn (*Rhamnus* spp.), honeysuckle species (*Lonicera* spp.), teasel (*Dipsacus* spp.), garlic mustard (*Alliaria petiolata*), field thistle (*Cirsium arvense*), common burdock (*Arctium minus*), reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), cattail (*Typha spp.)*, and common reed (*Phragmites australis*). Persons performing herbicide treatments during the execution of this plan will have obtained a current herbicide applicator or operator license and meet the Forest Preserves' experience requirements for weedy or non-native species identification and management. All herbicides will be applied in strict accordance with label restrictions.

### SCHEDULE

Table 1 includes a tentative schedule of management activities for the mitigation.

**Table 1. Tentative Schedule of Management and Monitoring Activities**

| Task | 2016 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Woody Clearing | | | | | | | | | | | X | X |
| Herbicide Application | | | | X | X | X | X | X | X | X | | |
| **Task** | **2017** | | | | | | | | | | | |
| | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| Woody Clearing | X | X | | | | | | | | | | |
| Seed Installation | | | | | | | | | | | X | X |
| Plant Installation | | | | | X | X | | | | | | |
| Vegetation Monitoring | | | | | X | X | | X | X | | | |
| Invasive Species Control | | | | X | X | X | X | X | X | X | | |
| Adaptive Management As needed | | | | X | X | X | X | X | X | X | | |
| **Task** | **2018** | | | | | | | | | | | |
| | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| Vegetation Monitoring | | | | | X | X | | X | X | | | |
| Invasive Species Control | | | | X | X | X | X | X | X | X | | |
| Controlled Burning | | | | | | | | | | X | X | |

| Task | 2019 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| Vegetation Monitoring | | | | | X | X | | X | X | | | |
| Invasive Species Control | | | | X | X | X | X | X | X | X | | |
| **Task** | **2020** | | | | | | | | | | | |
| | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| Vegetation Monitoring | | | | | X | X | | X | X | | | |
| Invasive Species Control | | | | X | X | X | X | X | X | X | | |
| Controlled Burning | | | X | X | X | | | | | X | X | |
| **Task** | **2021** | | | | | | | | | | | |
| | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| Vegetation Monitoring | | | | | X | X | | X | X | | | |
| Invasive Species Control | | | | X | X | X | X | X | X | X | | |

# VIII. PERFORMANCE STANDARDS

## VEGETATION

The following performance criteria are consistent the USACE Permittee Responsible Compensatory Mitigation Requirements.

1. Species selected for the planting shall be native to the county where the mitigation site is located (ref. Swink and Wilhelm, Plants of the Chicago Region, 1994), and shall be appropriate for the hydrologic zone to be planted. A minimum number of native perennial species proposed for establishment shall be present within each plant community to meet certification, as follows:
    - Wet mesic/Wet savanna– minimum of 35 native perennial species
    - Mesic prairie (Uplands within the 25-acre mitigation site and does not include the 100-foot buffer which is only planted with trees and shrubs) – minimum of 25 native perennial species
3. At least 50% of the required minimum number of species shall occur at a 10% frequency or greater, within each plant community zone or area. Multiple transects within a given plant community may be combined for this frequency analysis.
4. A native mean coefficient of conservatism value (native mean C) of greater than or equal to 3.5 shall be achieved in each separate vegetated plant community (e.g. wet prairie, marsh, mesic prairie buffer) and as measure over the entire mitigation site area. Native plant species coefficients of

conservatism are designated in Swink, Floyd and Gerould Wilhelm, Plants of the Chicago Region (Indianapolis: Indiana Academy of Science, 4th edition, 1994).

5. The native floristic quality index value (native FQI) shall be greater than or equal to 20 in each separate vegetated community zone and as measured over the entire mitigation site. The floristic quality assessment method is described in Swink and Wilhelm Plants of the Chicago Region. Steps #4 and #5 are evaluated based on the overall plant community inventories as well as transect summaries. If a portion of the site has achieved compliance with the performance standards, the standard shall be maintained in that portion until the final compliance sign off for the mitigation site.
6. No area over the entire mitigation site greater than 1 square meter shall be devoid of vegetation, as measured by aerial coverage, unless specified on approved mitigation plans. This standard does not apply to vernal pools that exist or may develop.
7. None of the three most dominant plant species in any of the wetland community zones may be non-native species or weedy species, including but not limited to *Typha angustifolia*, *Typha X glauca*, *Phragmites australis*, *Lythrum salicaria*, *Salix interior*, or *Phalaris arundinacea*, unless otherwise indicated on the approved mitigation plan. These species shall not cumulatively comprise more than 5% of the total percent cover (not relative cover) for each community.
8. The native perennial species within each wetland plant community shall represent at least 80% of the total dominance measure. A lower percent native perennial species of the total dominance measure may be acceptable if it is demonstrated with transect data that the remaining dominance percentage is by native annual and biennial wetland plant species and the FQI and mean C standards are exceeded.
9. A vegetation map of the mitigation site based on as-built drawings developed at the completion of implementation shall be submitted. This information shall be descriptive and define the limits of all vegetation areas by community type, based on field observations. The permanent transects shall be shown on this map. Representative photographs of each vegetation area by general community zone shall be submitted to the USACE.

**HYDROLOGY**

Consistent with the USACE's Wetlands Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region-Version 2.0 (2010) , all areas to receive restoration credit as wetland plant communities shall have soils saturated within 12 inches or less of the ground surface for at least 12.5% of the growing season as defined in this Interagency Coordination

Agreement (2008). To meet this standard the mitigation site shall demonstrate inundated or saturated soils for 23 consecutive days during the growing season. In addition to this minimum, hydrology data should reflect a hydrologic regime that is appropriate to the native plant community proposed for establishment. Some of the wetlands that exist or may develop are ephemral wetlands and that typical wetland hydrology may not be achievable. These may be wet before the growing season begins and dry out, but these would support wooded wetland species. The six proposed monitoring well locations are shown on Exhibit 9. Final locations for the monitoring wells will be field-identified.

## IX. MONITORING REQUIREMENTS

### Monitoring

Vegetation data will be collected using quadrat sampling and meander search methods annually during mid-summer (July/August) to assess overall vegetative site quality. For quadrat sampling, a sufficient number of straight-line sampling transects will be established across all community types to achieve a representative amount of plant frequency and coverage data. A meander search will be performed to provide a comprehensive species list. Representative photographs will be taken to further illustrate conditions. The results of the meander search will be evaluated using the Chicago Region FQA Calculator version September 29, 2014 (Herman, B., Sliwinski, R. and S. Whitaker. 2013. Chicago Region FQA (Floristic Quality Assessment) Calculator. U. S. Army Corps of Engineers, Chicago, IL).

Mitigation inspections will include ongoing attention to any erosion or sediment problems. The risk of any such problems will lessen as site vegetative cover increases and matures. Repairs will be conducted promptly to prevent small erosion problems from becoming larger problems. Minor grading, supplemental seeding and use of appropriate erosion control blanket will be needed in any areas where erosion persists.

### MONITORING REPORT

An annual report describing results of sampling and an evaluation of performance will be submitted by January 31st of the year following each management season. The monitoring report will include the following information:

1. Representative photographs of the mitigation.
2. A summary of management activities performed during the year.

3. Tabular statistics of the vegetation surveys.
4. The discussion will include a review of progress in meeting goals and performance standards, and the adaptive management actions to deal with any shortfalls. If any of the performance standards are not met in any year, a detailed explanation and proposed corrective measures will be provided.

## X. LONG TERM MANAGEMENT PLAN

The LCFPD will be responsible for long term management and will annually inspect the mitigation site to identify any needed management activities. Management activities will then be conducted by LCFPD, by contracts they award, or other means.

## XI. ADAPTIVE MANAGEMENT PLAN

The LCFPD is responsible for adaptive management of the mitigation site. If necessary, additional seeds/plants will be installed after the first and/or second growing seasons. This supplemental seeding/planting will be intended to assist the plant community in areas with low vegetative density or diversity and will allow for modifications (add or delete) to be made to the seed list based on community development.

## XII. FINANCIAL ASSURANCES

The site is owned by LCPFD and it will be responsible for providing the necessary financial assurances to ensure that the approved mitigation is constructed and that management and monitoring and long term plans are properly funded. The LCFPD will be responsible to implement the long term management and that the site is maintained.

## COMPLETION

In addition to the annual reports, a letter will be sent at the end of Year 5 to the USACE as notification that the work described in the management section has been completed. The final report will be included documenting the achievement of the above performance criteria and the success of the project. The letter will request receipt of written confirmation from the USACE indicating that the Plan has been carried out to the USACE's satisfaction.

# APPENDIX A

## SPECIES LISTS
## FOR
## SEED/PLANT/TREE/SHRUB INSTALLATION

# PRAIRIE WOLF (NORTH MITIGATION SITE) SEEDING PROJECT
## Species Lists, Fall Seedings, 2017

**BC: Broadcast (do not drill)**

| | | | PRAIRIE WOLF; CLEARING AREAS Upland Areas: 9.2 Acres | | | | | | PRAIRIE WOLF; CLEARING AREAS Wetland Areas: 16.25 Acres | | | | | | Total Amt. Needed | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | qty./acre | | | subtotal | | | qty./acre | | | subtotal | | | | |
| **BC** | **Species (Graminoids)** | **Common Name** | **oz.** | **lbs.** | **seeds/ acre** | **oz.** | **lbs.** | | **oz.** | **lbs.** | **seeds/ acre** | **oz.** | **lbs.** | | **oz.** | **lbs.** |
| | Bromus ciliatus | Fringed Brome | 6 | | 45,000 | 55.20 | 3.45 | | | | 0 | 0.00 | 0.00 | | 55.20 | 3.45 |
| | Bromus kalmii | Prairie Brome | 10 | | 100,000 | 92.00 | 5.75 | | 2 | | 20,000 | 32.50 | 2.03 | | 124.50 | 7.78 |
| | Bromus pubescens/purgans | Woodland Brome | 6 | | 43,800 | 55.20 | 3.45 | | | | 0 | 0.00 | 0.00 | | 55.20 | 3.45 |
| | Calamogrostis canadensis (DF) | Blue Joint Grass | 0.5 | | 101,500 | 4.60 | 0.29 | | 1.3 | | 263,900 | 21.13 | 1.32 | | 25.73 | 1.61 |
| X | Carex annectens | Large Yellow Fox Sedge | 1.3 | | 117,780 | 11.96 | 0.75 | | 1.2 | | 108,720 | 19.50 | 1.22 | | 31.46 | 1.97 |
| X | Carex bebbi | Bebb's Oval Sedge | | | 0 | 0.00 | 0.00 | | 1 | | 75,700 | 16.25 | 1.02 | | 16.25 | 1.02 |
| X | Carex bicknellii | Copper-Shouldered Oval S. | 3 | | 74,100 | 27.60 | 1.73 | | | | 0 | 0.00 | 0.00 | | 27.60 | 1.73 |
| | Carex blanda | | 5.5 | | 68,750 | 50.60 | 3.16 | | | | 0 | 0.00 | 0.00 | | 50.60 | 3.16 |
| X | Carex brevior | Plains Oval Sedge | 3 | | 87,000 | 27.60 | 1.73 | | | | 0 | 0.00 | 0.00 | | 27.60 | 1.73 |
| X | Carex buxbaumii | Dark-Scaled Sedge | | | 0 | 0.00 | 0.00 | | 3 | | 43,500 | 48.75 | 3.05 | | 48.75 | 3.05 |
| X | Carex cephalophora | Short-Headed Bracted Sed. | 1 | | 32,000 | 9.20 | 0.58 | | | | 0 | 0.00 | 0.00 | | 9.20 | 0.58 |
| X | Carex cristatella | Crested Oval Sedge | | | 0 | 0.00 | 0.00 | | 1 | | 58,000 | 16.25 | 1.02 | | 16.25 | 1.02 |
| X | Carex davisii | Awned Graceful Sedge | 5.5 | | 49,500 | 50.60 | 3.16 | | | | 0 | 0.00 | 0.00 | | 50.60 | 3.16 |
| X | Carex granularis | Pale Sedge | 2.6 | | 41,080 | 23.92 | 1.50 | | 2.6 | | 41,080 | 42.25 | 2.64 | | 66.17 | 4.14 |
| X | Carex gravida | Long-Awned Bracted Sed. | 3 | | 36,000 | 27.60 | 1.73 | | | | 0 | 0.00 | 0.00 | | 27.60 | 1.73 |
| X | Carex hirsutella | Hairy Green Sedge | 2.5 | | 45,000 | 23.00 | 1.44 | | | | 0 | 0.00 | 0.00 | | 23.00 | 1.44 |
| X | Carex lacustris | Common Lake Sedge | | | 0 | 0.00 | 0.00 | | 1.2 | | 34,800 | 19.50 | 1.22 | | 19.50 | 1.22 |
| X | Carex lupulina | Common Hop Sedge | | | 0 | 0.00 | 0.00 | | 3 | | 10,500 | 48.75 | 3.05 | | 48.75 | 3.05 |
| X | Carex molesta | Field Oval Sedge | 2 | | 50,000 | 18.40 | 1.15 | | 1.2 | | 30,000 | 19.50 | 1.22 | | 37.90 | 2.37 |
| X | Carex normalis | Spreading Oval Sedge | 2 | | 50,000 | 18.40 | 1.15 | | 1.5 | | 37,500 | 24.38 | 1.52 | | 42.78 | 2.67 |
| X | Carex pellita/lanuginosa | Broad-Leaved Wooly Sedg. | | | 0 | 0.00 | 0.00 | | 0.8 | | 20,640 | 13.00 | 0.81 | | 13.00 | 0.81 |
| X | Carex radiata | Straight-Styled Wood Sedge | 1.2 | | 49,440 | 11.04 | 0.69 | | 0.8 | | 32,960 | 13.00 | 0.81 | | 24.04 | 1.50 |
| X | Carex retrorsa | Deflexed Bottlebrush Sedg. | | | 0 | 0.00 | 0.00 | | 2 | | 22,000 | 32.50 | 2.03 | | 32.50 | 2.03 |
| X | Carex rosea | Curly-Styled Wood Sedge | 0.9 | | 33,660 | 8.28 | 0.52 | | | | 0 | 0.00 | 0.00 | | 8.28 | 0.52 |
| X | Carex scoparia | Lance-Friuted Oval Sedge | 1 | | 83,600 | 9.20 | 0.58 | | 0.6 | | 50,160 | 9.75 | 0.61 | | 18.95 | 1.18 |
| X | Carex sparganoides | | 2.8 | | 53,200 | 25.76 | 1.61 | | | | 0 | 0.00 | 0.00 | | 25.76 | 1.61 |
| X | Carex sprengelii | Long-Beaked Sede | 4 | | 40,000 | 36.80 | 2.30 | | | | 0 | 0.00 | 0.00 | | 36.80 | 2.30 |
| X | Carex stipata | Common Fox Sedge | | | 0 | 0.00 | 0.00 | | 2 | | 70,600 | 32.50 | 2.03 | | 32.50 | 2.03 |
| X | Carex tenera | Narrow-Leaved Oval Sedg. | 1.5 | | 30,000 | 13.80 | 0.86 | | 0.8 | | 16,000 | 13.00 | 0.81 | | 26.80 | 1.68 |
| X | Carex vulpinoidea | Brown Fox Sedge | | | 0 | 0.00 | 0.00 | | 0.5 | | 58,650 | 8.13 | 0.51 | | 8.13 | 0.51 |
| | Cinna arundinacea | Common Wood Reed | 1.4 | | 79,380 | 12.88 | 0.81 | | 0.6 | | 34,020 | 9.75 | 0.61 | | 22.63 | 1.41 |
| | Danthonia spicata | Poverty Oats | 3 | | 75,000 | 27.60 | 1.73 | | | | 0 | 0.00 | 0.00 | | 27.60 | 1.73 |
| | Elymus canadensis | Canada Wild Rye | 18 | | 90,000 | 165.60 | 10.35 | | 3 | | 15,000 | 48.75 | 3.05 | | 214.35 | 13.40 |
| | Elymus villosus | Silky Wild Rye | 12 | | 92,400 | 110.40 | 6.90 | | | | 0 | 0.00 | 0.00 | | 110.40 | 6.90 |
| | Elymus virginicus | Virginia Wild Rye | 30 | | 126,000 | 276.00 | 17.25 | | 24 | | 100,800 | 390.00 | 24.38 | | 666.00 | 41.63 |
| | Festuca obtusa | Nodding Fescue | 3 | | 45,000 | 27.60 | 1.73 | | | | 0 | 0.00 | 0.00 | | 27.60 | 1.73 |
| | Glyceria striata | Fowl Manna Grass | 0.5 | | 72,300 | 4.60 | 0.29 | | 0.7 | | 101,220 | 11.38 | 0.71 | | 15.98 | 1.00 |
| | Hystrix patula | Bottlebrush Grass | 7.5 | | 45,750 | 69.00 | 4.31 | | | | 0 | 0.00 | 0.00 | | 69.00 | 4.31 |
| X | Juncus tenuis | Path Rush | 0.3 | | 300,000 | 2.76 | 0.17 | | | | 0 | 0.00 | 0.00 | | 2.76 | 0.17 |
| | Muhlenbergia mexicana | Leafy Satin Grass | 0.6 | | 137,400 | 5.52 | 0.35 | | 0.5 | | 114,500 | 8.13 | 0.51 | | 13.65 | 0.85 |
| | Panicum implicatum/lanuginosum | Old -Field Panic Grass | 0.8 | | 52,000 | 7.36 | 0.46 | | 0.2 | | 13,000 | 3.25 | 0.20 | | 10.61 | 0.66 |
| X | Poa palustris | Marsh Blue Grass | | | 0 | 0.00 | 0.00 | | 0.8 | | 118,400 | 13.00 | 0.81 | | 13.00 | 0.81 |
| X | Scirpus atrovirens | Dark Green Rush | | | 0 | 0.00 | 0.00 | | 0.2 | | 66,000 | 3.25 | 0.20 | | 3.25 | 0.20 |
| X | Scirpus pendulus/lineatus | Red Bulrush | | | 0 | 0.00 | 0.00 | | 0.5 | | 189,000 | 8.13 | 0.51 | | 8.13 | 0.51 |
| | Spartina pectinata | Prairie Cord Grass | | | 0 | 0.00 | 0.00 | | 1.5 | | 16,350 | 24.38 | 1.52 | | 24.38 | 1.52 |
| | Sporobolus heterolepis | Prairie Dropseed | 4 | | 56,400 | 36.80 | 2.30 | | | | 0 | 0.00 | 0.00 | | 36.80 | 2.30 |
| | | **Graminoid seeds/acre:** | | | **2,403,040** | | | | | | **1,763,000** | | | | | |
| | | **Graminoid seeds/sq. ft.:** | | | **55.17** | | | | | | **40.47** | | | | | |
| | | **Graminoid lbs./acre:** | | | **9.15** | | | | | | **3.66** | | | | | |

| | | | PRAIRIE WOLF; CLEARING AREAS Upland Areas: 9.2 Acres | | | | | PRAIRIE WOLF; CLEARING AREAS Wetland Areas: 16.25 Acres | | | | | Total Amt. Needed | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | qty./acre | | | subtotal | | qty./acre | | | subtotal | | | |
| | Species (Forbs) | Common Name | oz. | lbs. | seeds/ acre | oz. | lbs. | oz. | lbs. | seeds/ acre | oz. | lbs. | oz. | lbs. |
| | Agastache nepetoides | Yellow Giant Hyssop | 0.4 | | 36,920 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| | Allium canadense | Wild Onion/Garlic | 10 | | 5,800 | 92.00 | 5.75 | | | 0 | 0.00 | 0.00 | 92.00 | 5.75 |
| | Allium cernuum | Nodding Wild Onion | 2.5 | | 21,000 | 23.00 | 1.44 | | | 0 | 0.00 | 0.00 | 23.00 | 1.44 |
| | Anemone canadense | Meadow Anemone | 0.8 | | 6,160 | 7.36 | 0.46 | 0.8 | | 6,160 | 13.00 | 0.81 | 20.36 | 1.27 |
| | Anemone cylindrica (DF) | Thimbleweed | 0.4 | | 11,000 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| | Anemone virginiana (DF) | Tall Anemone/Thimbleweed | 1 | | 24,000 | 9.20 | 0.58 | | | 0 | 0.00 | 0.00 | 9.20 | 0.58 |
| | Aquilegia canadensis | Wild Columbine | 1 | | 35,300 | 9.20 | 0.58 | | | 0 | 0.00 | 0.00 | 9.20 | 0.58 |
| | Arisaema triphyllum | Jack-in-the-Pulpit | 3 | | 1,290 | 27.60 | 1.73 | | | 0 | 0.00 | 0.00 | 27.60 | 1.73 |
| | Asclepias incarnata (DF) | Marsh Milkweed | | | 0 | 0.00 | 0.00 | 3.5 | | 16,450 | 56.88 | 3.55 | 56.88 | 3.55 |
| | Aster drummondii (DF) | Drummond's Aster | 0.6 | | 40,980 | 5.52 | 0.35 | | | 0 | 0.00 | 0.00 | 5.52 | 0.35 |
| | Aster lateriflorus (DF) | Side-Flowering Aster | | | 0 | 0.00 | 0.00 | 0.4 | | 90,000 | 6.50 | 0.41 | 6.50 | 0.41 |
| | Aster sagittifolius (DF) | Arrow-Leaved Aster | 0.5 | | 54,500 | 4.60 | 0.29 | | | 0 | 0.00 | 0.00 | 4.60 | 0.29 |
| | Aster simplex (DF) | Panicled Aster | | | 0 | 0.00 | 0.00 | 0.5 | | 98,750 | 8.13 | 0.51 | 8.13 | 0.51 |
| | Baptisia leucantha | White Wild Indigo | 4 | | 7,200 | 36.80 | 2.30 | | | 0 | 0.00 | 0.00 | 36.80 | 2.30 |
| | Blephilia hirsuta | Wood Mint | 0.2 | | 50,460 | 1.84 | 0.12 | | | 0 | 0.00 | 0.00 | 1.84 | 0.12 |
| | Cacalia plantaginea (DF) | Prairie Indian Plantain | | | 0 | 0.00 | 0.00 | 3 | | 42,000 | 48.75 | 3.05 | 48.75 | 3.05 |
| X | Campanula americana | Tall Bellflower | 0.5 | | 226,250 | 4.60 | 0.29 | | | 0 | 0.00 | 0.00 | 4.60 | 0.29 |
| | Chelone glabra | Turtlehead | | | 0 | 0.00 | 0.00 | 0.5 | | 43,800 | 8.13 | 0.51 | 8.13 | 0.51 |
| | Cicuta maculata | Water Hemlock | | | 0 | 0.00 | 0.00 | 3 | | 36,000 | 48.75 | 3.05 | 48.75 | 3.05 |
| | Cirsium discolor (DF) | Pasture Thistle | 4 | | 16,000 | 36.80 | 2.30 | | | 0 | 0.00 | 0.00 | 36.80 | 2.30 |
| | Comandra umbellata | Bastard/False Toadflax | 2.5 | | 1,750 | 23.00 | 1.44 | | | 0 | 0.00 | 0.00 | 23.00 | 1.44 |
| | Coreopsis tripteris | Tall Coreopsis | 1.8 | | 28,260 | 16.56 | 1.04 | | | 0 | 0.00 | 0.00 | 16.56 | 1.04 |
| | Desmodium glutinosum | Pointed Tick Trefoil | 6 | | 5,040 | 55.20 | 3.45 | | | 0 | 0.00 | 0.00 | 55.20 | 3.45 |
| X | Dodecatheon meadia | Shooting Star | 0.5 | | 33,750 | 4.60 | 0.29 | | | 0 | 0.00 | 0.00 | 4.60 | 0.29 |
| X | Eupatorium maculatum (DF) | Spotted Joe Pye Weed | | | 0 | 0.00 | 0.00 | 0.4 | | 35,440 | 6.50 | 0.41 | 6.50 | 0.41 |
| X | Eupatorium perfoliatum (DF) | Common Boneset | | | 0 | 0.00 | 0.00 | 0.2 | | 37,640 | 3.25 | 0.20 | 3.25 | 0.20 |
| X | Eupatorium purpureum (DF) | Purple Joe Pye Weed | 0.5 | | 25,300 | 4.60 | 0.29 | | | 0 | 0.00 | 0.00 | 4.60 | 0.29 |
| | Euphorbia corollata | Flowering Spurge | 3 | | 28,200 | 27.60 | 1.73 | | | 0 | 0.00 | 0.00 | 27.60 | 1.73 |
| | Galium boreale | Northern Bedstraw | 1 | | 66,500 | 9.20 | 0.58 | | | 0 | 0.00 | 0.00 | 9.20 | 0.58 |
| | Gaura biennis | Biennial Gaura | 6 | | 16,200 | 55.20 | 3.45 | | | 0 | 0.00 | 0.00 | 55.20 | 3.45 |
| X | Gentiana andrewsii | Closed/Bottle Gentian | | | 0 | 0.00 | 0.00 | 0.2 | | 52,740 | 3.25 | 0.20 | 3.25 | 0.20 |
| X | Gentiana flavida | Yellow Gentian | 0.3 | | 56,010 | 2.76 | 0.17 | | | 0 | 0.00 | 0.00 | 2.76 | 0.17 |
| | Geranium maculatum | Wild Geranium | 2 | | 9,800 | 18.40 | 1.15 | | | 0 | 0.00 | 0.00 | 18.40 | 1.15 |
| | Helenium autumnale | Sneezeweed | | | 0 | 0.00 | 0.00 | 0.3 | | 41,340 | 4.88 | 0.30 | 4.88 | 0.30 |
| | Helianthus divaricatus | Woodland Sunflower | 1 | | 4,800 | 9.20 | 0.58 | | | 0 | 0.00 | 0.00 | 9.20 | 0.58 |
| | Helianthus hirsutus | Hispid Sunflower | 5 | | 30,000 | 46.00 | 2.88 | | | 0 | 0.00 | 0.00 | 46.00 | 2.88 |
| | Helianthus strumosus | Pale-Leaved Sunflower | 3.5 | | 15,400 | 32.20 | 2.01 | | | 0 | 0.00 | 0.00 | 32.20 | 2.01 |
| | Heracleum maximum | Cow Parsnip | 3 | | 8,100 | 27.60 | 1.73 | | | 0 | 0.00 | 0.00 | 27.60 | 1.73 |
| | Hydrophyllum virginianum | Virginia Waterleaf | 2 | | 5,600 | 18.40 | 1.15 | | | 0 | 0.00 | 0.00 | 18.40 | 1.15 |
| X | Hypericum punctatum | Spotted St. John's Wort | 0.2 | | 78,000 | 1.84 | 0.12 | | | 0 | 0.00 | 0.00 | 1.84 | 0.12 |
| | Impatens capensis | Spotted Touch-Me-Not | 3 | | 8,700 | 27.60 | 1.73 | | | 0 | 0.00 | 0.00 | 27.60 | 1.73 |
| | Lilium michiganense | Turk's Cap/Michigan Lily | 2 | | 14,200 | 18.40 | 1.15 | | | 0 | 0.00 | 0.00 | 18.40 | 1.15 |
| X | Lobelia cardinalis | Cardinal Flower | | | 0 | 0.00 | 0.00 | 0.3 | | 143,340 | 4.88 | 0.30 | 4.88 | 0.30 |
| X | Lobelia inflata | Indian Tobacco | | | 0 | 0.00 | 0.00 | 0.3 | | 149,250 | 4.88 | 0.30 | 4.88 | 0.30 |
| | Lobelia siphilitica | Great Blue Lobelia | | | 0 | 0.00 | 0.00 | 0.3 | | 150,000 | 4.88 | 0.30 | 4.88 | 0.30 |
| | Lycopus americanus | Common Water Horehound | | | 0 | 0.00 | 0.00 | 1 | | 182,500 | 16.25 | 1.02 | 16.25 | 1.02 |
| | Monarda fistulosa | Wild Bergamot | 0.2 | | 15,020 | 1.84 | 0.12 | | | 0 | 0.00 | 0.00 | 1.84 | 0.12 |
| | Oxypolis rigidior | Cowbane | 2 | | 24,400 | 18.40 | 1.15 | 5 | | 61,000 | 81.25 | 5.08 | 99.65 | 6.23 |
| | Pedicularis canadensis | Lousewort/Wood Betony | 0.6 | | 20,700 | 5.52 | 0.35 | | | 0 | 0.00 | 0.00 | 5.52 | 0.35 |
| | Penstemon calycosus | Smooth Beard Tongue | 0.4 | | 36,000 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| | Penstemon digitalis | Foxglove Beard Tongue | 0.4 | | 45,560 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| | Penthorum sedoides | Ditch Stonecrop | | | 0 | 0.00 | 0.00 | 0.3 | | 365,100 | 4.88 | 0.30 | 4.88 | 0.30 |
| | Phryma leptostachya | Lopseed | 1 | | 4,000 | 9.20 | 0.58 | | | 0 | 0.00 | 0.00 | 9.20 | 0.58 |
| | Physostegia virginiana | Obedient Plant | | | 0 | 0.00 | 0.00 | 2.6 | | 48,880 | 42.25 | 2.64 | 42.25 | 2.64 |
| | Polemonium reptans | Jacob's Ladder | 0.4 | | 7,800 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| | Polygonum virginiana | Woodland Knotweed | 2.5 | | 8,750 | 23.00 | 1.44 | | | 0 | 0.00 | 0.00 | 23.00 | 1.44 |
| | Prenanthes alba | Lion's Foot/White Lettuce | 1.4 | | 23,520 | 12.88 | 0.81 | | | 0 | 0.00 | 0.00 | 12.88 | 0.81 |
| | Pycnanthemum virginica | Common Mountain Mint | 0.2 | | 55,080 | 1.84 | 0.12 | | | 0 | 0.00 | 0.00 | 1.84 | 0.12 |
| | Ranunculus fascicularis | Early Buttercup | 1 | | 10,000 | 9.20 | 0.58 | | | 0 | 0.00 | 0.00 | 9.20 | 0.58 |
| | Rudbeckia hirta | Black-Eyed Susan | 2.2 | | 227,700 | 20.24 | 1.27 | | | 0 | 0.00 | 0.00 | 20.24 | 1.27 |
| | Rudbeckia subtomentosa | Sweet Black-Eyed Susan | 2.1 | | 102,480 | 19.32 | 1.21 | | | 0 | 0.00 | 0.00 | 19.32 | 1.21 |
| | Rudbeckia triloba | Brown Eyed Susan | 2.3 | | 76,820 | 21.16 | 1.32 | | | 0 | 0.00 | 0.00 | 21.16 | 1.32 |
| | Rumex altissimus | Pale Dock | | | 0 | 0.00 | 0.00 | 2 | | 22,800 | 32.50 | 2.03 | 32.50 | 2.03 |
| | Scrophularia marilandica | Late Figwort | 0.4 | | 72,680 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| | Scutellaria lateriflora | Mad-Dog Skulllcap | | | 0 | 0.00 | 0.00 | 0.9 | | 58,500 | 14.63 | 0.91 | 14.63 | 0.91 |
| | Senecio aureus (DF) | Golden Ragwort | | | 0 | 0.00 | 0.00 | 0.8 | | 56,960 | 13.00 | 0.81 | 13.00 | 0.81 |
| | Silphium perfoliatum | Cup Plant | | | 0 | 0.00 | 0.00 | 10 | | 18,500 | 162.50 | 10.16 | 162.50 | 10.16 |
| | Smilacina racemosa | Feathery False Solomon's Seal | 7 | | 4,550 | 64.40 | 4.03 | | | 0 | 0.00 | 0.00 | 64.40 | 4.03 |
| | Solidago flexicaulus (DF) | Zig-Zag Goldenrod | 0.4 | | 33,520 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| | Solidago juncea (DF) | | 0.4 | | 56,240 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| | Solidago riddellii (DF) | Riddell's Goldenrod | | | 0 | 0.00 | 0.00 | 0.8 | | 78,400 | 13.00 | 0.81 | 13.00 | 0.81 |
| | Solidago ulmifolia (DF) | Elm-Leaved Goldenrod | 0.8 | | 104,000 | 7.36 | 0.46 | | | 0 | 0.00 | 0.00 | 7.36 | 0.46 |
| | Spiraea alba | Meadowsweet | | | 0 | 0.00 | 0.00 | 0.2 | | 78,120 | 3.25 | 0.20 | 3.25 | 0.20 |
| | Taenidia integerrima | Yellow Pimpernel | 1 | | 7,600 | 9.20 | 0.58 | | | 0 | 0.00 | 0.00 | 9.20 | 0.58 |
| | Thalictrum dasycarpum | Purple Meadow Rue | 4 | | 52,400 | 36.80 | 2.30 | 1.8 | | 23,580 | 29.25 | 1.83 | 66.05 | 4.13 |
| | Thalictrum dioicum | Early Meadow Rue | 2.4 | | 17,520 | 22.08 | 1.38 | | | 0 | 0.00 | 0.00 | 22.08 | 1.38 |
| | Tradescantia ohiensis | Spiderwort | 2.7 | | 22,680 | 24.84 | 1.55 | | | 0 | 0.00 | 0.00 | 24.84 | 1.55 |
| | Triosteum perfoliatum | Late Horse Gentian | 8 | | 3,600 | 73.60 | 4.60 | | | 0 | 0.00 | 0.00 | 73.60 | 4.60 |
| X | Verbena hastata | Blue Vervain | | | 0 | 0.00 | 0.00 | 0.8 | | 86,800 | 13.00 | 0.81 | 13.00 | 0.81 |
| | Verbena urticifolia | | 0.4 | | 56,720 | 3.68 | 0.23 | | | 0 | 0.00 | 0.00 | 3.68 | 0.23 |
| X | Veronicastrum virginica | Culver's Root | 0.2 | | 150,620 | 1.84 | 0.12 | 0.2 | | 150,620 | 3.25 | 0.20 | 5.09 | 0.32 |
| | Zizia aurea | Golden Alexanders | 5 | | 50,500 | 46.00 | 2.88 | 3.5 | | 35,350 | 56.88 | 3.55 | 102.88 | 6.43 |
| | | **Forb seeds/acre:** | | | **2,262,930** | | | | | **2,210,020** | | | | |
| | | **Forb seeds/sq. ft.:** | | | **51.95** | | | | | **50.74** | | | | |
| | | **Forb lbs./acre:** | | | **7.60** | | | | | **2.73** | | | | |
| | | **Total seeds/acre:** | | | **4,665,970** | | | | | **3,973,020** | | | | |
| | | **Total seeds/sq. ft.:** | | | **107.12** | | | | | **91.21** | | | | |
| | | **Total lbs./acre:** | | | **16.75** | | | | | **6.38** | | | | |

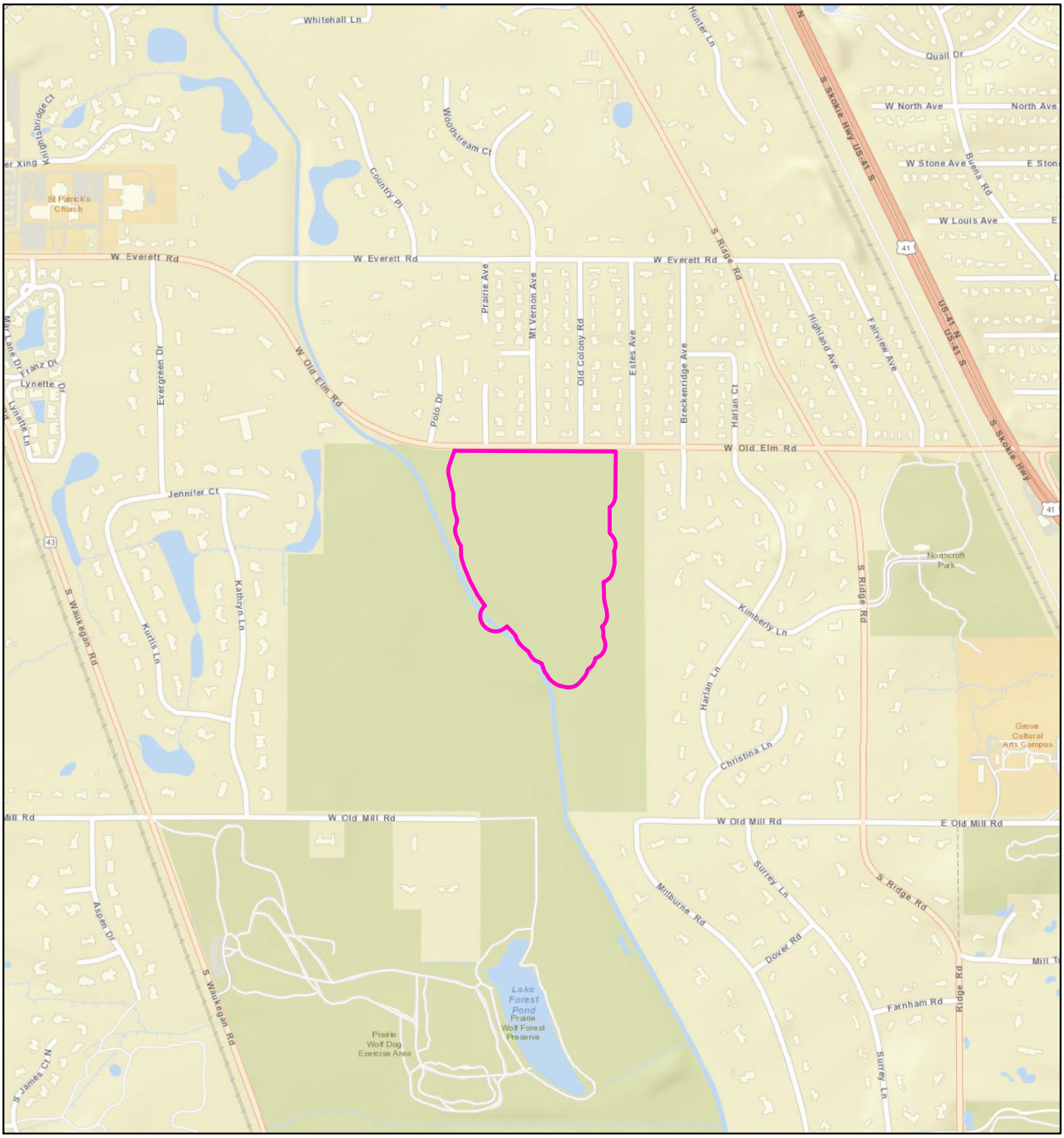
## PRAIRIE WOLF - NORTH MITIGATION SITE
## NATIVE WETLAND PLANT PLUGS
### PLAN

| Species | Wetlands | Wetland Margins | Other Upland Areas | TOTALS ~16.8 Acres Wetlands | |
|---|---|---|---|---|---|
| | Plant Qty. | Plant Qty. | Plant Qty. | Plant Qty. | Flat* Qty. |
| Acorus calamus (Sweet Flag) | 380 | 0 | 0 | 380 | 10 |
| Anemone canadensis (Meadow Anemone) | 0 | 228 | 152 | 380 | 10 |
| Asclepias incarnata (Marsh Milkweed) | 1064 | 0 | 0 | 1064 | 28 |
| Bromus ciliatus (Fringed Brome) | 0 | 912 | 0 | 912 | 24 |
| Calamagrostis canadensis (Bluejoint Grass) | 1900 | 0 | 0 | 1900 | 50 |
| Carex annectans (Yellow Fox Sedge) | 342 | 342 | 0 | 684 | 18 |
| Carex bebbii (Bebb's Oval Sedge) | 950 | 0 | 0 | 950 | 25 |
| Carex bicknellii (Prairie Oval Sedge) | 0 | 0 | 760 | 760 | 20 |
| Carex blanda (Common Wood Sedge) | 760 | 0 | 0 | 760 | 20 |
| Carex conjuncta (Green-Headed Fox Sedge) | 760 | 0 | 0 | 760 | 20 |
| Carex cristatella (Crested Oval Sedge) | 950 | 0 | 0 | 950 | 25 |
| Carex lacustris (Common Lake Sedge) | 1140 | 0 | 0 | 1140 | 30 |
| Carex lupulina (Common Hop Sedge) | 836 | 0 | 0 | 836 | 22 |
| Carex molesta (Field Oval Sedge) | 190 | 570 | 190 | 950 | 25 |
| Carex pellita (Broad-Leaved Woolly Sedge) | 950 | 0 | 0 | 950 | 25 |
| Carex radiata (Straight-Styled Wood Sedge) | 0 | 684 | 0 | 684 | 18 |
| Carex rosea (Curly-Styled Wood Sedge) | 0 | 0 | 684 | 684 | 18 |
| Carex sartwellii (Running Marsh Sedge) | 532 | 0 | 0 | 532 | 14 |
| Carex scoparia (Lance-Fruited Oval Sedge) | 0 | 950 | 0 | 950 | 25 |
| Carex sparganoides (Loose-Headed Bracted Sedge) | 0 | 684 | 0 | 684 | 18 |
| Carex sprengelii (Long-Beaked Sedge) | 0 | 152 | 456 | 608 | 16 |
| Carex stipata (Common Fox Sedge) | 836 | 304 | 0 | 1140 | 30 |
| Carex stricta (Common Tussock Sedge) | 760 | 0 | 0 | 760 | 20 |
| Carex tribuloides (Awl-Fruited Oval Sedge) | 988 | 0 | 0 | 988 | 26 |
| Carex tricoparpa (Hairy-Fruited Lake Sedge) | 988 | 0 | 0 | 988 | 26 |
| Carex vulpinoidea (Brown Fox Sedge) | 1140 | 0 | 0 | 1140 | 30 |
| Chelone glabra (Turtlehead) | 760 | 0 | 0 | 760 | 20 |
| Cicuta maculata (Water Hemlock) | 836 | 0 | 0 | 836 | 22 |
| Eupatorium maculatum (Joe Pyeweed) | 456 | 0 | 0 | 456 | 12 |
| Eupatorium perfoliatum (Common Boneset) | 380 | 380 | 0 | 760 | 20 |
| Helenium autunmale (Sneezeweed) | 0 | 228 | 0 | 228 | 6 |
| Iris virginica v. shrevei (Blue Flag Iris) | 1900 | 0 | 0 | 1900 | 50 |
| Juncus effusus (Common Rush) | 456 | 0 | 0 | 456 | 12 |
| Juncus torryei (Torrey's Rush) | 456 | 0 | 0 | 456 | 12 |
| Liatris spicata (Marsh Blazing Star) | 570 | 0 | 0 | 570 | 15 |
| Lobelia cardinalis (Cardinal Flower) | 760 | 0 | 0 | 760 | 20 |
| Lobelia siphilitica (Great Lobelia) | 722 | 0 | 0 | 722 | 19 |
| Mimulus ringens (Monkey Flower) | 380 | 0 | 0 | 380 | 10 |
| Physostegia virginiana (Obedient Plant) | 0 | 950 | 0 | 950 | 25 |
| Pycnanthemum virginianum (Common Mountainmint) | 0 | 304 | 304 | 608 | 16 |
| Scirpus pendulus (Nodding Bulrush) | 836 | 0 | 0 | 836 | 22 |
| Scutellaria lateriflora (Mad-Dog Skullcap) | 380 | 380 | 0 | 760 | 20 |
| Spartina pectinata (Prairie Cord Grass) | 1330 | 0 | 0 | 1330 | 35 |
| Sporobolus heterolepis (Prairie Dropseed) | 0 | 0 | 1710 | 1710 | 45 |
| Thalictrum dasycarpum (Purple Meadowrue) | 0 | 855 | 855 | 1710 | 45 |
| Vernonia fasciculata (Common Ironweed) | 456 | 0 | 0 | 456 | 12 |
| Veronicastrum virginicum (Culvers Root) | 0 | 418 | 418 | 836 | 22 |
| **Project Total Quantity:** | | | | **40014** | |

* Flat Qty based on 38 plants per flat

Prairie Wolf Forest Preserve
Trees and Shrubs List

| Scientific Name | Common Name | Form Desired | Quantity Available |
|---|---|---|---|
| *Carya cordiformis* | Yellowbud Hickory | 5-gallon | 15 |
| *Carya ovata* | Shagbark Hickory | 5-gallon | 29 |
| *Celtis occidentalis* | Hackberry | 5-gallon | 4 |
| *Celtis occidentalis* | Hackberry | 1-inch | 9 |
| *Juglans nigra* | Black Walnut | 1-inch | 5 |
| *Populus grandidentata* | Large-toothed Aspen | 5-gallon | 6 |
| *Populus tremuloides* | Quaking Aspen | 5-gallon | 2 |
| *Prunus serotina* | Black Cherry | 1-inch | 2 |
| *Quercus alba* | White Oak | 5-gallon | 55 |
| *Quercus alba* | White Oak | 1-inch | 125 |
| *Quercus bicolor* | Swamp White Oak | 5-gallon | 6 |
| *Quercus bicolor* | Swamp White Oak | 1-inch | 54 |
| *Quercus ellipsoidalis* | Hill's Oak | 1-inch | 12 |
| *Quercus macrocarpa* | Bur Oak | 5-gallon | 15 |
| *Quercus macrocarpa* | Bur Oak | 1-inch | 108 |
| *Quercus rubra* | Red Oak | 5-gallon | 5 |
| *Quercus rubra* | Red Oak | 1-inch | 21 |
| *Quercus velutina* | Black Oak | 5-gallon | 4 |
| *Quercus velutina* | Black Oak | 1-inch | 26 |
| *Amelanchier laevis* | Allegheny Shadblow | 5-gallon | 15 |
| *Carpinus caroliniana* | Musclewood | 5-gallon | 9 |
| *Celastrus scandens* | Bittersweet | 5-gallon | 21 |
| *Cephalanthus occidentalis* | Buttonbush | 5-gallon | 18 |
| *Cornus obliqua* | Silky Dogwood | 5-gallon | 23 |
| *Cornus stolonifera* | Red Osier Dogwood | 5-gallon | 30 |
| *Corylus americana* | Hazelnut | 5-gallon | 192 |
| *Crataegus mollis* | Downy Hawthorn | 5-gallon | 69 |
| *Hamamelis virginiana* | Witch Hazel | 5-gallon | 21 |
| *Ilex verticilata* | Winterberry | 5-gallon | 10 |
| *Lonicera prolifera* | Yellow Honeysuckle | 5-gallon | 60 |
| *Malus ioensis* | Iowa Crab | 5-gallon | 11 |
| *Ostrya virginiana* | Ironwood | 5-gallon | 8 |
| *Prunus americana* | Wild Plum | 5-gallon | 35 |
| *Prunus virginiana* | Chokecherry | 5-gallon | 38 |
| *Rhus glabra* | Smooth Sumac | 5-gallon | 6 |
| *Ribes americana* | Wild Black Currant | 5-gallon | 21 |
| *Ribes missouriense* | Wild Gooseberry | 5-gallon | 85 |
| *Rosa blanda* | Smooth Rose | 5-gallon | 27 |
| *Rosa setigera* | Illinois Rose | 5-gallon | 50 |
| *Salix discolor* | Pussy Willow | 5-gallon | 5 |
| *Salix humilis* | Prairie Willow | 5-gallon | 15 |
| *Sambucus canadensis* | Elderberry | 5-gallon | 27 |
| *Viburnum lentago* | Nannyberry | 5-gallon | 51 |
| *Viburnum prunifolium* | Black Haw | 5-gallon | 56 |
| *Xanthoxylum americanum* | Prickly Ash | 5-gallon | 4 |
| TOTAL | | | 1410 |




Scale:

0 1,000 Feet

Orientation:

Legend:

Project Boundary

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Location Information:

T.43N.-R.12E., Section 8

Project Number: 13-0036

Date: 3/30/2016

Prepared by:

**Hey and Associates, Inc.**

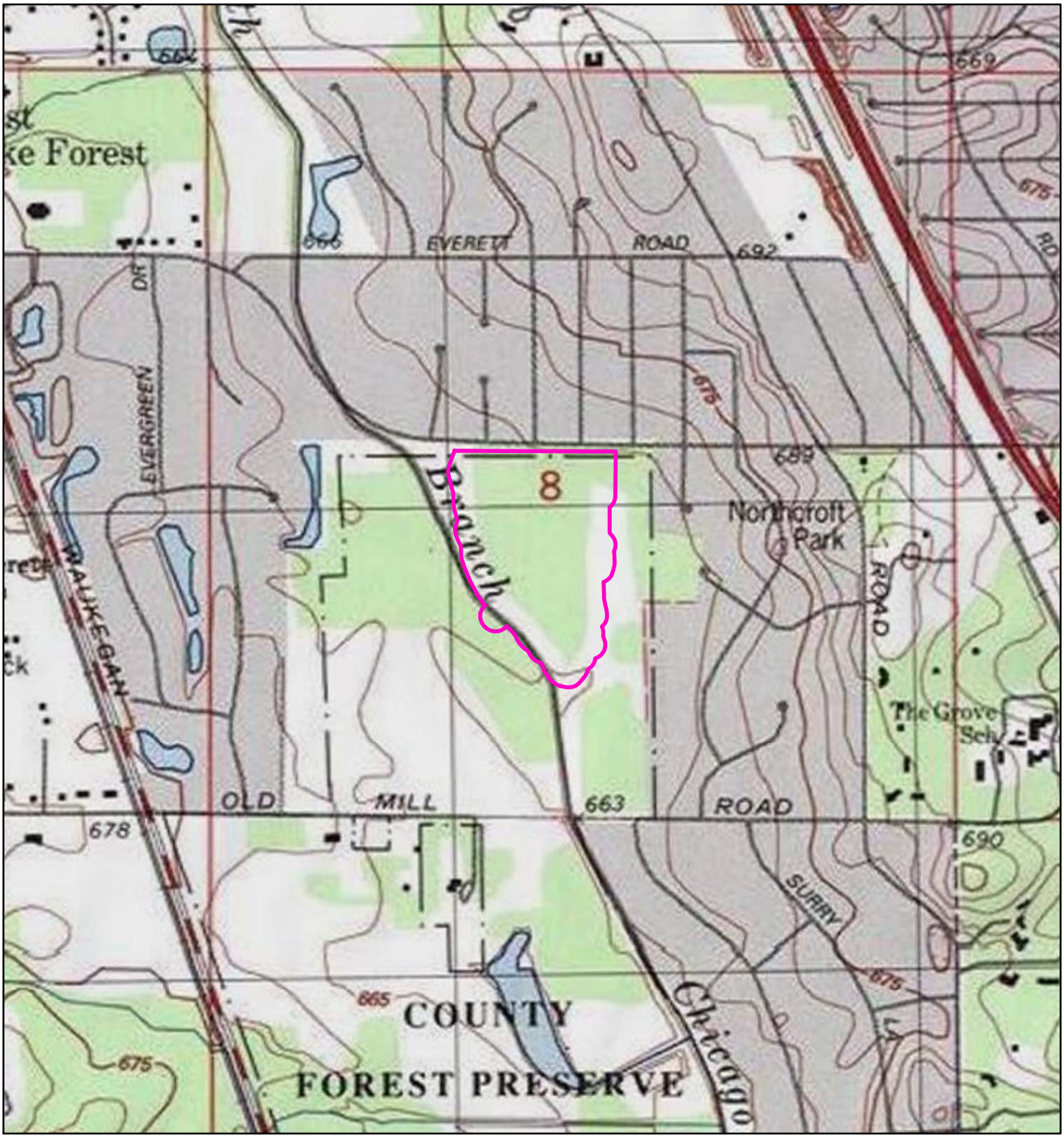
Engineering, Ecology and Landscape Architecture

Exhibit Title:

**Project Location**

Exhibit:

**1**




Scale:

0 1,000 Feet

Orientation:

Legend:

Project Boundary

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Location Information:

Highland Park Quadrangle

Project Number: 13-0036

Date: 3/30/2016

Prepared by:

*Hey and Associates, Inc.*

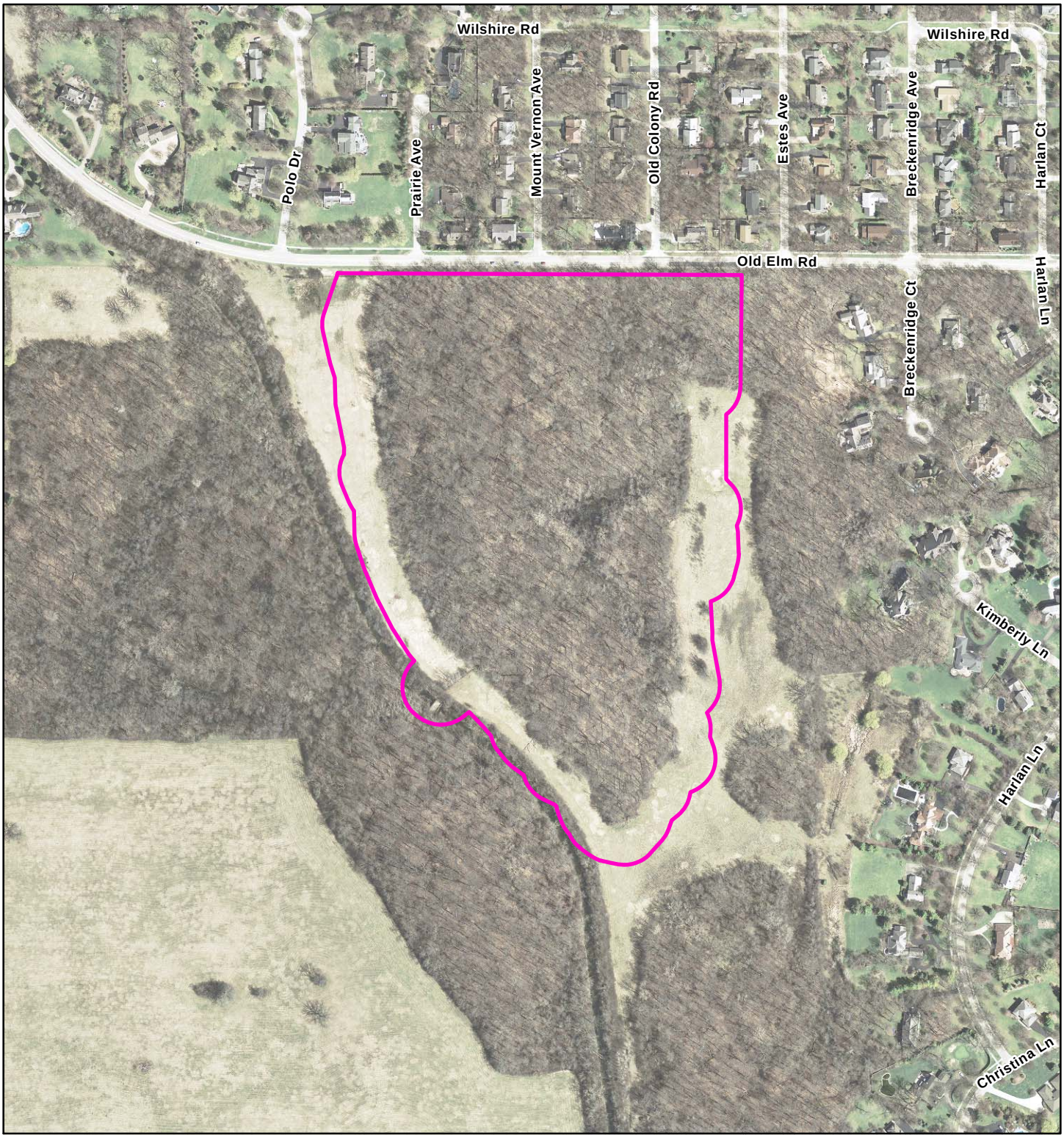
Engineering, Ecology and Landscape Architecture

Exhibit Title:

**USGS Topographic Map**

Exhibit:

**2**




Scale:

0 400 Feet

Orientation:

Legend:

National Wetland Inventory

Project Boundary

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Location Information:

Highland Park Quadrangle

Project Number: 13-0036

Date: 3/30/2016

Prepared by:

*Hey and Associates, Inc.*

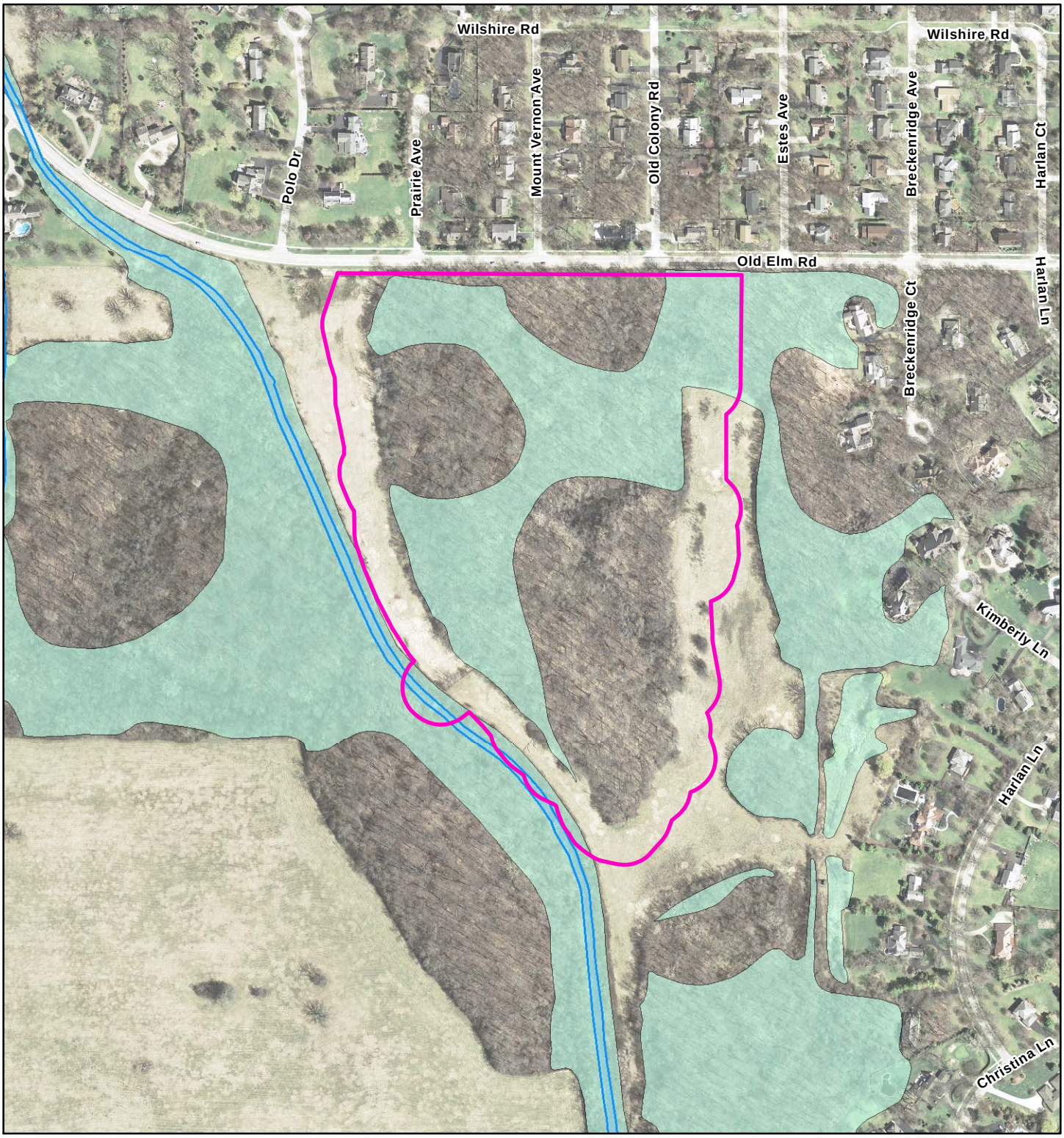
Engineering, Ecology and Landscape Architecture

Exhibit Title:

**National Wetland Inventory**

Exhibit:

**3**




Scale:

0 400 Feet

Orientation:

Legend:

- Rivers and Streams
- Lakes and Ponds
- ADID Wetlands (1992)
- LCWI
- Project Boundary

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Location Information:

West Deerfield

Project Number: 13-0036

Date: 3/30/2016

Prepared by:

***Hey and Associates, Inc.***

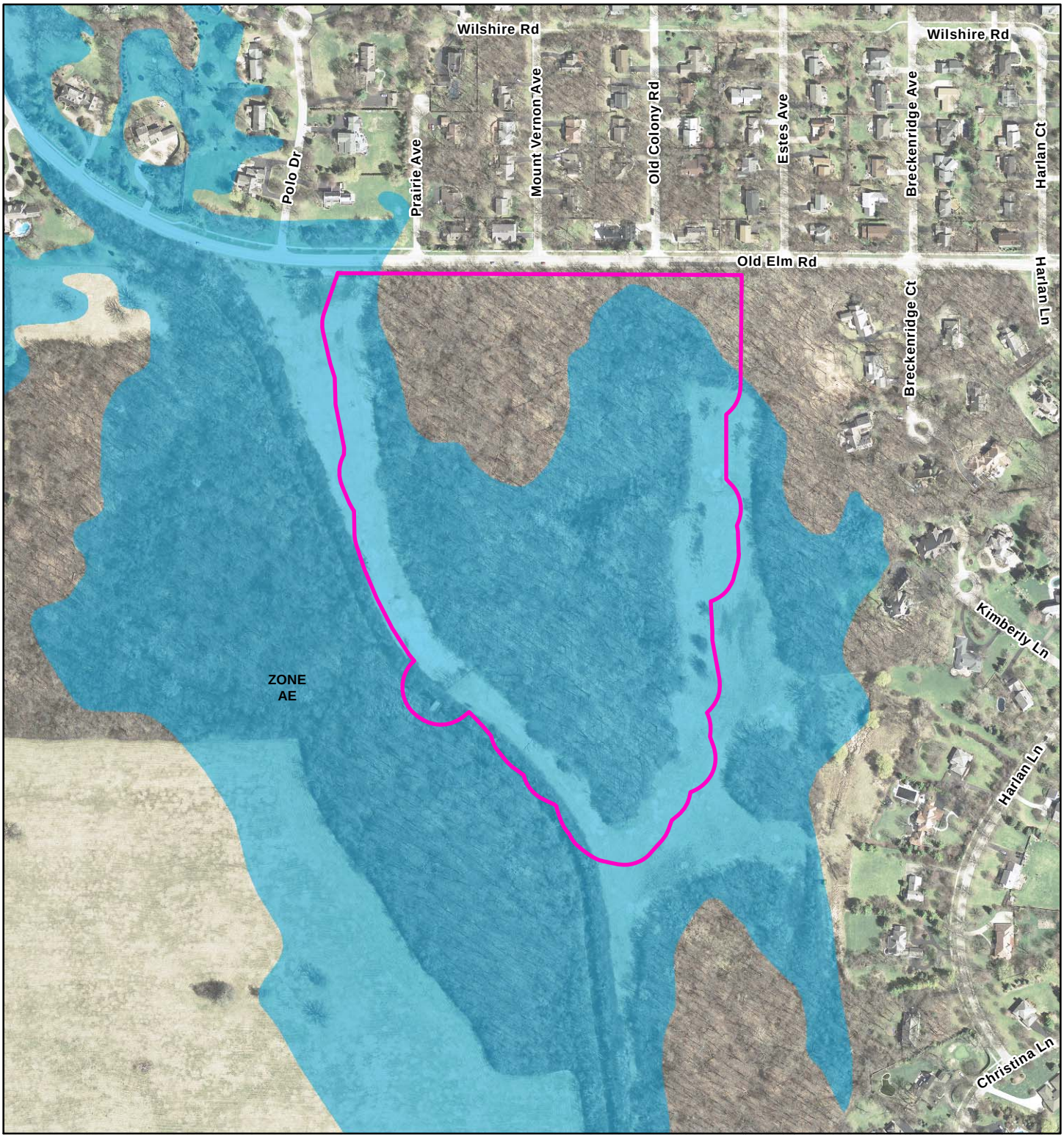
Engineering, Ecology and Landscape Architecture

Exhibit Title:

**Lake County Wetland Inventory**

Exhibit:

**4**




Scale:

0 400 Feet

Orientation:

Legend:

100 Year Flood Zone

Project Boundary

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Project Number: 13-0036

Date: 3/30/2016

Panel #:

17097C0278K

Prepared by:

*Hey and Associates, Inc.*

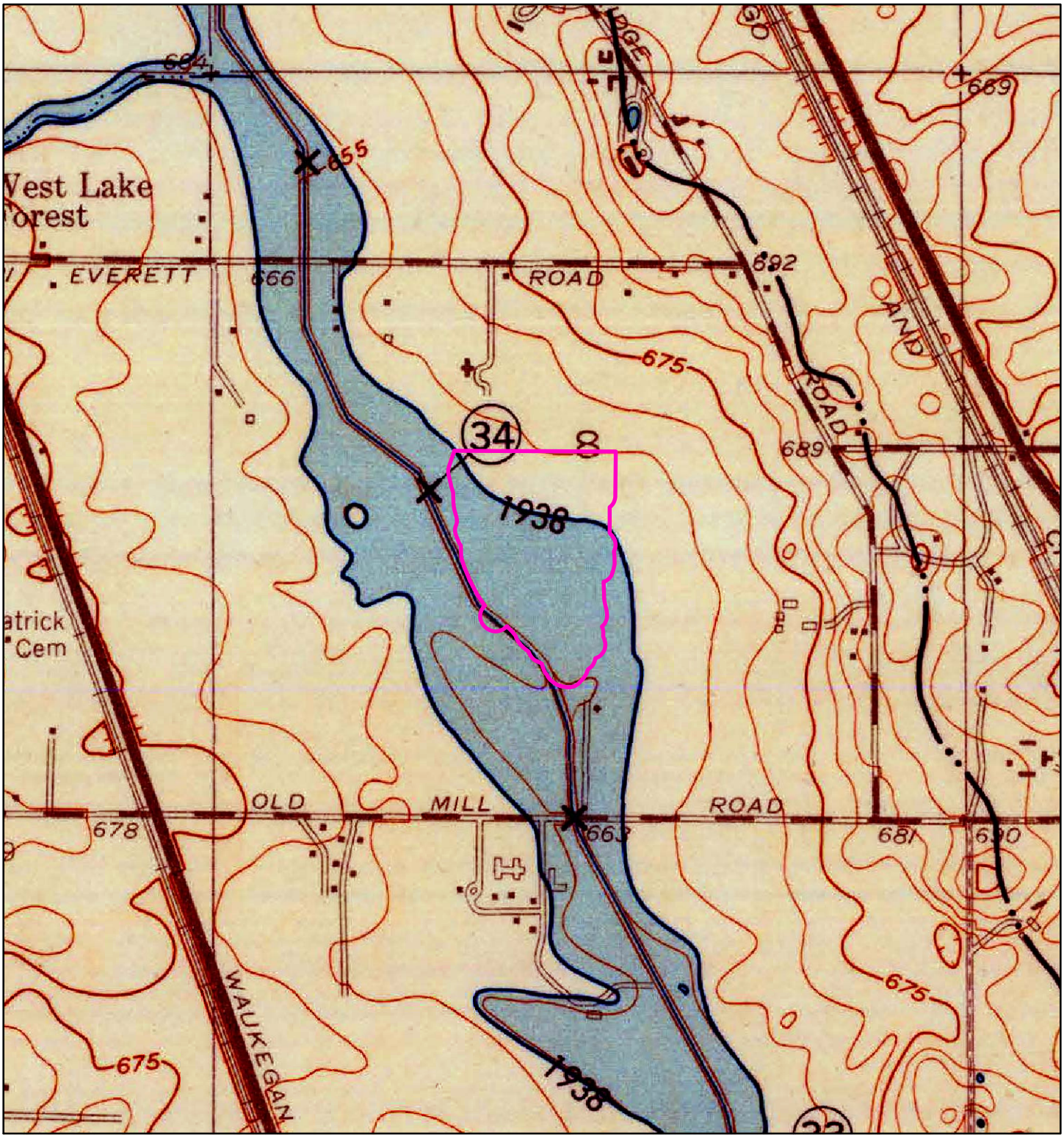
Engineering, Ecology and Landscape Architecture

Exhibit Title:

**Flood Insurance Rate Map**

Exhibit:

**5**




Scale:

0 1,000 Feet

Orientation:

Legend:

Project Boundary

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Project Number: 13-0036

Date: 3/30/2016

Hydro Atlas Date:

1963

Prepared by:

***Hey and Associates, Inc.***

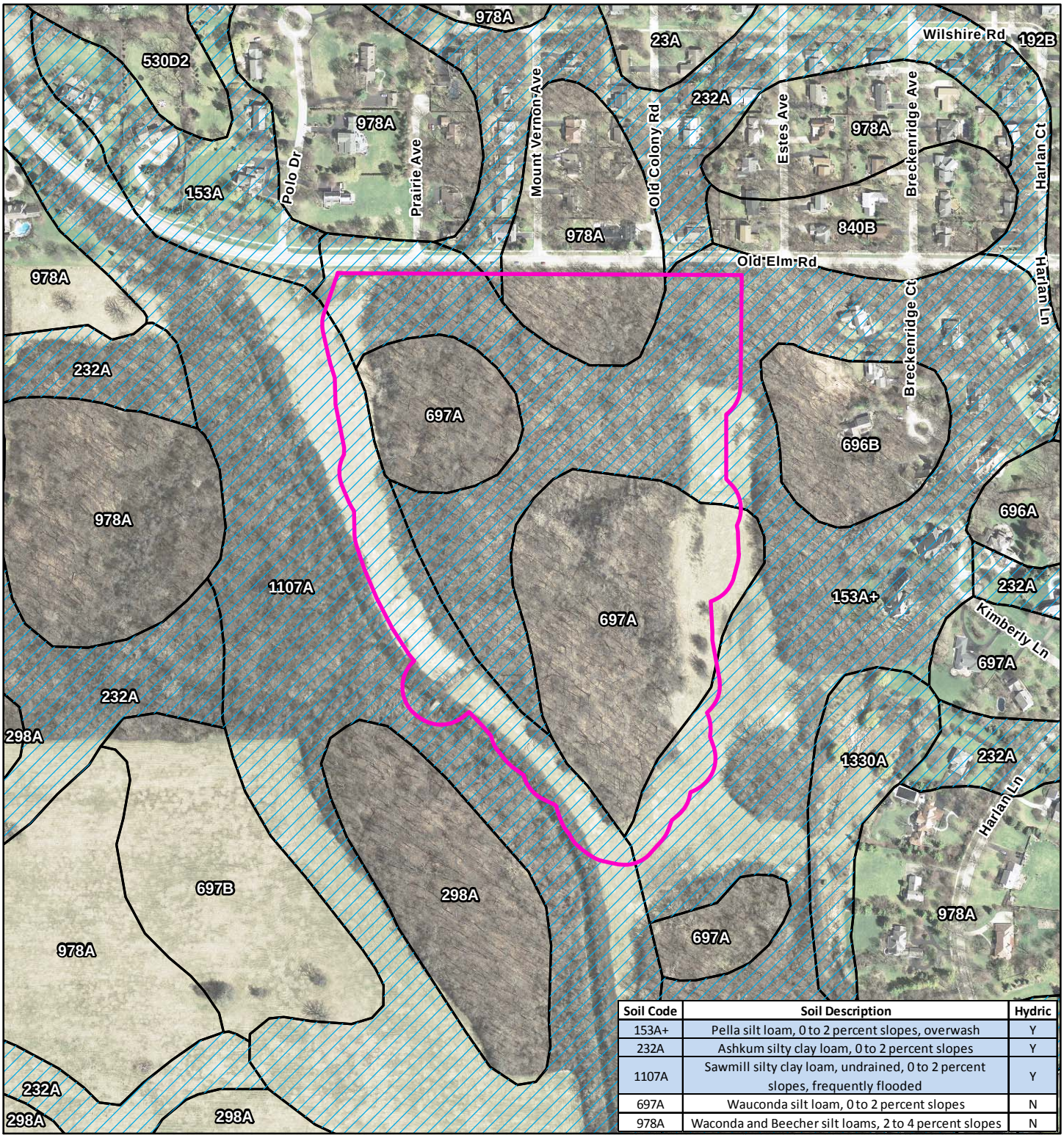
Engineering, Ecology and Landscape Architecture

Exhibit Title:

**USGS Hydrologic Atlas**

Exhibit:

**6**




| Soil Code | Soil Description | Hydric |
|---|---|---|
| 153A+ | Pella silt loam, 0 to 2 percent slopes, overwash | Y |
| 232A | Ashkum silty clay loam, 0 to 2 percent slopes | Y |
| 1107A | Sawmill silty clay loam, undrained, 0 to 2 percent slopes, frequently flooded | Y |
| 697A | Wauconda silt loam, 0 to 2 percent slopes | N |
| 978A | Waconda and Beecher silt loams, 2 to 4 percent slopes | N |

Scale:

0 400 Feet

Orientation:

Legend:

Hydric Soils

Soil Units

Project Boundary

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Project Number: 13-0036

Date: 3/30/2016

Soil Survey Date:

2004

Prepared by:

*Hey and Associates, Inc.*

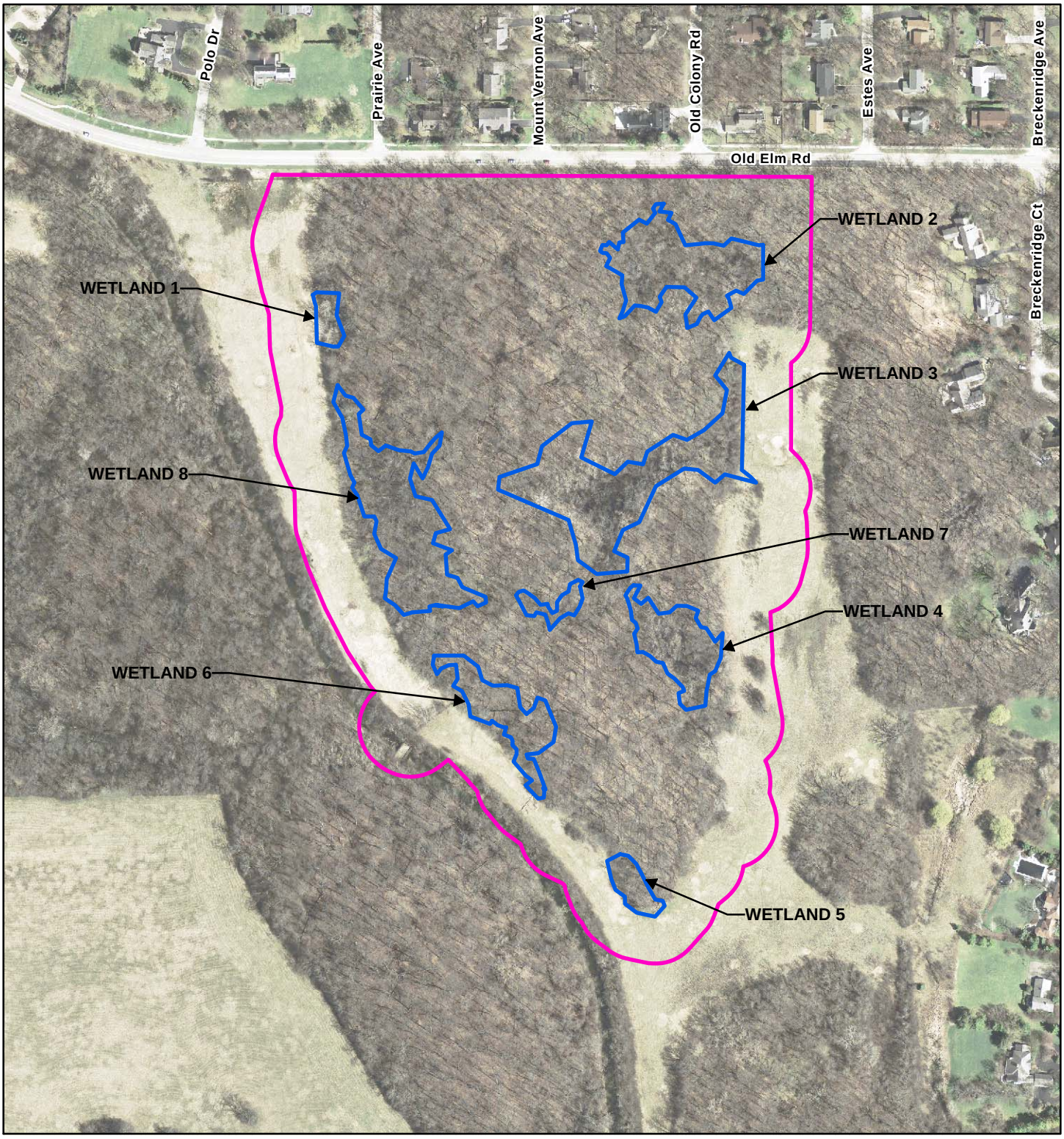
Engineering, Ecology and Landscape Architecture

Exhibit Title:

**NRCS Soil Survey**

Exhibit:

**7**




Scale:

0 300 Feet

Orientation:

Legend:

Estimated Wetland Boundary

Project Boundary

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Project Number: 13-0036

Date: 3/31/2016

Aerial Date:

2014

Prepared by:

*Hey and Associates, Inc.*

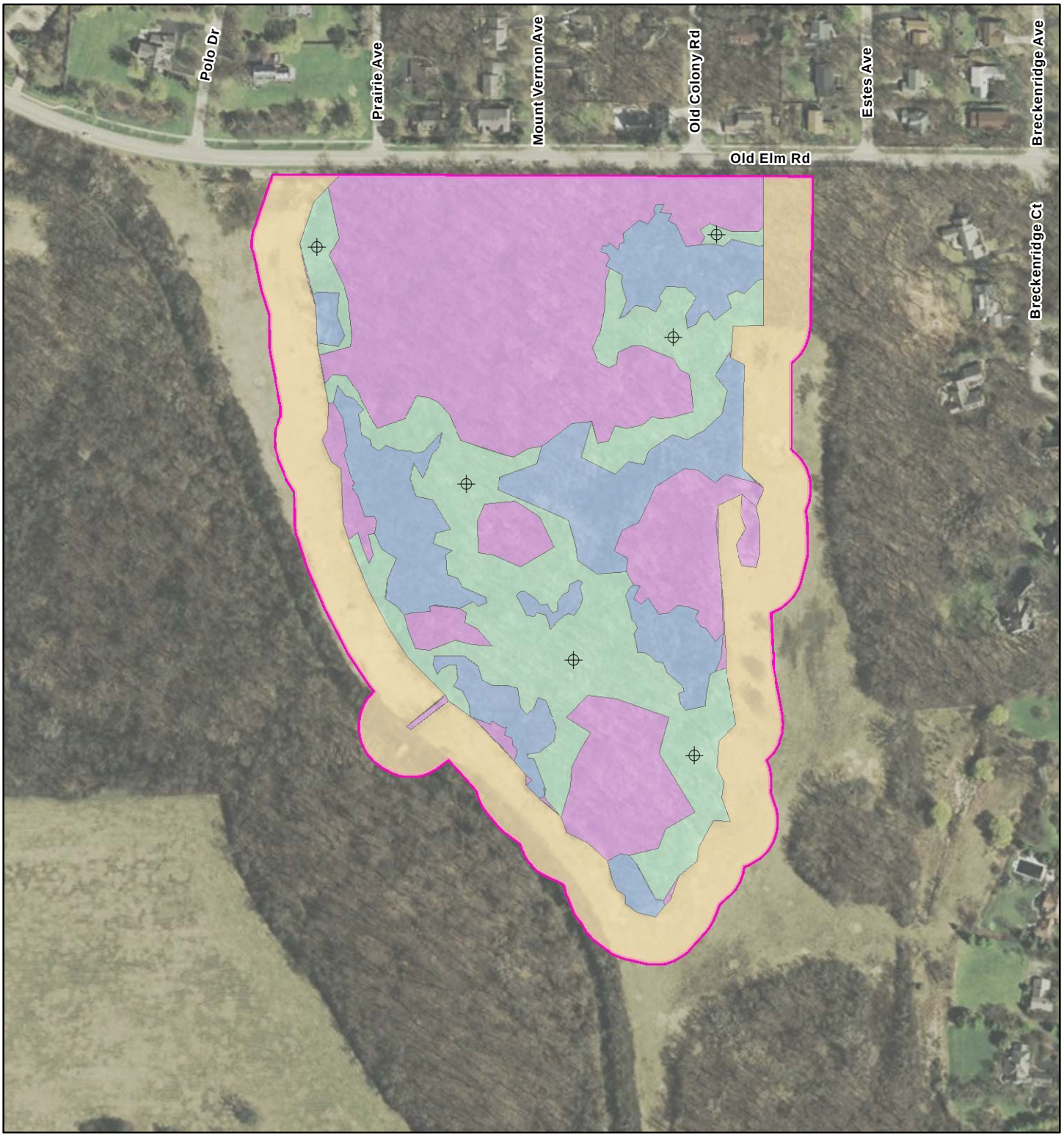
Engineering, Ecology and Landscape Architecture

Exhibit Title:

**Wetland Boundary**

Exhibit:

**8**




Scale:

0 300 Feet

Orientation:

Project Number: 13-0036

Date: 4/1/2016

Prepared by:

**Hey and Associates, Inc.**

Engineering, Ecology and Landscape Architecture

Legend:

- Wetlands Restoration
- Wetland Enhancement
- Upland Area
- 100 ft Buffer
- Project Boundary
- Monitoring Wells (6)

Project Name:

Prairie Wolf Forest Preserve

Prepared for:

Continental Beeson Corner LLC

Mitigation Plan Provided By:

Lake County Forest Preserve District

Exhibit Title:

**Mitigation Plan**

Exhibit:

**9**