

Prospectus

Prairie Stream Wetland Mitigation Bank Lake County, Illinois August 30, 2023

(RES Project # 106230)

Property Owner

Lake County Forest Preserves
1899 West Winchester Road
Libertyville, IL 60048

(847) 367-6640
pvitt@Llcpd.org

Bank Sponsor

RES Great Lakes, LLC
120 W Main St. #201
West Dundee, IL 60118

(608) 897-8641
Jlarsen@res.us



TABLE OF CONTENTS

1.0	INTRODUCTION.....	3
2.0	OBJECTIVES.....	3
1.1	Legal Description	6
1.2	Site Description	7
1.2.1	Ecological Suitability	7
1.2.2	Topography	7
1.2.3	Soils.....	7
1.2.4	Hydrology and Hydraulics.....	8
1.2.5	Wetlands and Waters.....	9
1.2.6	Vegetation.....	9
1.2.7	Endangered Resources.....	10
1.2.8	Archeological Resources.....	10
1.3	Hydrology Restoration	10
1.3.1	Overview.....	10
1.4	Construction	11
1.5	Seeding and Planting	11
1.5.1	Wet Prairie/Sedge Meadow Restoration.....	11
1.5.3	Wet Prairie/Sedge Meadow Enhancement.....	12
1.5.4	Upland Mesic Prairie Buffer Restoration.....	12
1.6	Establishment Timeline	13
1.7	Financial Assurances	13
1.8	Adaptive Management	14
1.9	Determination of Credits and Credit Release Schedule	15
3.0	PERFORMANCE STANDARDS.....	16
4.0	PROPOSED SERVICE AREA	16
5.0	NEEDS ASSESSMENT.....	16
6.0	TECHNICAL FEASIBILITY	17
7.0	REAL ESTATE OWNERSHIP.....	17
8.0	LONG TERM MANAGEMENT.....	17
9.0	SPONSOR QUALIFICATIONS.....	18
10.0	ECOLOGICAL SUITABILITY	19
11.0	ASSURANCE OF SUFFICIENT WATER RIGHTS	19
12.0	SIGNATURES	19
	EXHIBITS	0
	APPENDIX A	1

LIST OF TABLES

Table 1. Proposed Wetland Mitigation Credits	4
Table 2. Legal Descriptions.....	7
Table 3. Soil Map Units	8
Table 4. Federally Threatened and Endangered Species List.....	10
Table 5. Initial Years Bank Establishment Timeline	13

LIST OF EXHIBITS

Exhibit 1. Location Map.....	21
Exhibit 2. Lake County Wetland Inventory.....	22
Exhibit 3. FEMA Flood Hazard Map	23
Exhibit 4. NRCS Soil Survey Map	24
Exhibit 5. USGS Topographic Survey	25
Exhibit 6. USGS Hydrologic Atlas	26
Exhibit 7. Delineated Wetlands	27
Exhibit 8. Restoration and Enhancement Conceptual Plan.....	28

APPENDICES

Appendix A. Wetland Delineation Report

1.0 INTRODUCTION

Resource Environmental Solutions (RES), by and through its wholly owned subsidiary, HGS, LLC, (hereafter, Sponsor) is proposing to establish the Prairie Stream Wetland Mitigation Bank (hereafter, Bank) to generate wetland credits for the purpose of offsetting wetland loss. The Bank site is in Lake County, Illinois and will provide compensation for future unavoidable wetland impacts within the proposed Des Plaines River Watershed (Service Area). The purpose of this document is to further define the approach for the successful establishment and operation of the Bank.

This Prospectus is being submitted to the Interagency Review Team (IRT) consisting of the U.S. Army Corps of Engineers-Chicago District (Corps), the U.S. Environmental Protection Agency (EPA), and the U.S Fish and Wildlife Service (FWS). This Prospectus follows the requirements outlined in the 2017 Interagency Coordination Agreement (ICA) on Mitigation Banking within the Regulatory Boundaries of Chicago District, Corps of Engineers, as of September 2017 and the Compensatory Mitigation for Losses of Aquatic Resources: Final Rule, as published in the Federal Register on April 10, 2008 (Final Rule).

As defined in the Final Rule, the benefit of mitigation banks is their ability to help reduce risk and uncertainty, as well as temporal loss of resource function and services (CFR 332.3 b). As mitigation bank credits are not released for debiting until specific milestones associated with the mitigation bank site's protection and development are achieved, the use of mitigation bank credits can also help reduce risk that mitigation will not be fully successful (CFR 332.3 b).

The primary purpose of the Bank is to restore high-quality wetlands on the Lake County Forest Preserve District (LCFPD) property to restore ecological function on lands, and to provide compensatory mitigation in advance of unavoidable impacts by offering public, general use credits to mitigate impacts to Waters. The Bank's ecological purpose is consistent with the objectives of North Mill Creek-Dutch Gap Canal Watershed Plan. The Bank will improve and re-establish water quality, wildlife habitat, flood control and natural scenic beauty. Mitigation activities will focus on wetland re-establishment and rehabilitation through hydrology and native plant restoration, to create a native wet prairie typical of the pre-settlement Chicago Lake Plain region.

2.0 OBJECTIVES

There are three goals/objectives of the Bank:

1. Establish a natural, self-sustaining wetland complex that will include the re-establishment and rehabilitation of wet prairie wetlands.
2. Provide wetland credits to satisfy compensatory mitigation requirements for adverse impacts to Corps Jurisdictional wetlands in the Des Plaines River Service Area.
3. Provide an alternative to smaller permittee responsible mitigation (PRM) sites, which have a poor record of replacing wetland and stream functions.

The overall goal/objective of the Bank is to re-establish approximately 26.93 acres of high-quality wetlands on tile drained agricultural cropland, to enhance approximately 9.18 acres of existing degraded wetland, and to restore and enhance approximately 26.18 acres of upland buffer areas. The wetland restoration, wetland enhancement, upland buffer restoration and upland buffer enhancement will generate 36.71 wetland

mitigation credits. The breakdown of wetland mitigation credits can be found in Table 1 and incorporates the results of the 2021 wetland delineation.

Table 1. Proposed Wetland Mitigation Credits

Mitigation Bank (49.64 acres)	Acres Proposed	Range of Credit / Acre	Credit Ratio Proposed	Credit Total
<i>Wetland Areas</i>				
Wet Prairie/Sedge Meadow Restoration	26.93	100%	100%	26.93
Wet Prairie/Sedge Meadow Enhancement	4.08	50%	50%	2.04
Emergent Wetland Enhancement	5.10	50%	50%	2.55
<i>Upland Buffer Areas</i>				
Mesic Prairie Restoration	11.68	10-25%	20.75%	2.42
Dry-Mesic Oak Woodland Enhancement	1.36	10-25%	0	0
Mesic Oak Woodland Enhancement	0.49	10-25%	0	0
Mitigation Bank Total				33.94

100-Foot Perimeter Buffer (14.96 acres)	Acres Proposed	Range of Credit / Acre	Credit Ratio Proposed	Credit Total
<i>Wetland Areas</i>				
Wet Prairie/Sedge Meadow Restoration	1.33	10-25%	25%	0.3325
Wet Prairie/Sedge Meadow Enhancement	0.88	10-25%	25%	0.22
Emergent Wetland Enhancement	0.10	10-25%	25%	0.025
<i>Upland Areas</i>				
Mesic Prairie Restoration	10.58	10-25%	20.75%	2.20
Dry-Mesic Oak Woodland Enhancement	0.29	10-25%	0	0
Mesic Oak Woodland Enhancement	0.72	10-25%	0	0
Mesic Savanna/Prairie Restoration	1.06	10-25%	0	0
100-Foot Buffer Total				2.77

Non-Credited Areas within 100-Foot Perimeter Buffer (5.19 acres)	Acres Proposed	Range of Credit / Acre	Credit Ratio Proposed	Credit Total
<i>Buffer adjacent to pipeline easement</i>	2.78	0%	0%	0
Mesic Prairie Restoration	1.45	0%	N/A	N/A
Wet Prairie/Sedge Meadow Restoration	0.78	0%	N/A	N/A
Dry-Mesic Oak Woodland Enhancement	0.55	0%	N/A	N/A
<i>Buffer adjacent to private property and road ROW</i>	2.41	0%	0%	0
Mesic Prairie Restoration	1.66	0%	N/A	N/A
Emergent Wetland Enhancement	0.56	0%	N/A	N/A
Wet Prairie/Sedge Meadow Restoration	0.19	0%	N/A	N/A

Wetland mitigation will be achieved through restoration (re-establishment) and enhancement of wet prairie and emergent wetland plant communities. This will be accomplished by restoring natural hydrology by locating and disabling drain tiles, and by planting native vegetation. Upland buffer areas will be restored to mesic prairie to ultimately restore a high-quality along the edge of the wetland. The basis for determining proposed credits

per acre is directly tied to the ecological functions and uplift each mitigation type will provide. A detailed narrative on the proposed functional uplift and crediting for each mitigation type is provided below.

Upland Buffer Enhancement

The upland buffer is a minimum 100-foot-wide buffer around the perimeter of the site. The upland buffer extends beyond the 100-foot width in several locations into the interior of the Bank on the higher topographic areas.

The Restoration & Enhancement Conceptual Plan (Exhibit 8) includes 16.32-acres of upland buffer and 3.84-acres of wetland buffer for a total of 20.16-acres in the 100-foot perimeter buffer. Of these, 2.78-acres (1.45 mesic prairie restoration acres, 0.78 wet prairie/sedge meadow restoration acres, and 0.55 dry-mesic oak woodland enhancement acres) are adjacent to an off-property pipeline easement. No buffer credits are being sought for these 2.78 acres (Table 1). Also within the 100-foot perimeter buffer are 2.41 acres (1.66 mesic prairie restoration acres, 0.56 emergent wetland enhancement acres, and 0.19 wet prairie restoration acres) adjacent to unprotected private property and road right-of-way. No buffer credits are being sought for these 2.37 acres. The Bank acreage for which upland credits are being sought includes; 23.91-acres of mesic prairie, 1.42-acres of dry-mesic oak woods, 1.08-acres of mesic oak woods and 1.06-acres of mesic savanna, for a total of 27.47 upland acres. We are seeking 20.75% credit for mesic prairie restoration within the upland buffer which is in the mid-range of the ICA's credit generation percentages. We are not seeking any credit for woodland enhancement or savanna restoration within the upland buffer.

The mesic prairie upland buffer will function to provide sediment and nutrient trapping. The southern buffer will protect the bank from agricultural runoff by absorbing runoff and providing increased infiltration and limited floodwater storage. Once restored, the buffer will provide wildlife (e.g., grassland birds) habitat and provide increased site biodiversity and minimize any pesticide movement through agricultural drift. Some limited carbon sequestration should accrue over time. The internal mesic prairie will be located on the higher topographic areas and thus provide for sediment trapping and nutrient captures through the life of the bank and beyond. Increased water infiltration and carbon sequestration will also likely be realized. Once seeding is complete, the mesic prairie buffer will become a part of the yearly maintenance and adaptive management plans and will be required to meet a set of performance standards. The sponsor is proposing using a highly diverse prairie seed mix in the variable width (minimum 100 feet wide) mesic prairie areas along with restoration through herbaceous and woody invasive species management.

Prairie buffers will help to keep invasive weeds out of the Bank interior because of their dense, thick tangled roots which will fill the soil pores, leaving little space for invading weeds to establish. These prairie roots are perennial, and thus they remain in the soil for years, controlling invasive weeds from season to season, year after year. Over time the buffers will be one of the planting zones responsible for major shifts in species and functional group composition. This will result in an increase in native species abundance and floristic quality, lead to declines in abundance of non-native species, and lead to increases in plant diversity. These changes in community structure will lead to changes at the ecosystem level including increases in light capture, peak biomass, primary production, litter biomass, root biomass, and C storage in roots.

Three additional upland woodland communities will be enhanced and will require a greater level of woody and herbaceous restoration and management: dry-mesic woodland, mesic oak woodland, and mesic savanna/prairie. Functions provided include varied wildlife habitat and increased plant diversity. Initial site preparation will consist of the removal of woody invasives through cutting and herbicide treatments as well as treatment of invasive herbaceous species. This will be followed by an overseeding of native species.

Wetland Re-establishment & Enhancement within Buffer

The 2017 ICA does not mention crediting for wetland re-establishment or enhancement in buffers. Within the 100-foot perimeter buffer (excluding the non-credited areas) there is proposed 1.33-acres of wet prairie/sedge meadow re-establishment, 0.88-acres of wet prairie/sedge meadow enhancement and 0.10-acres of emergent wetland enhancement. These buffer wetlands will receive the same site preparation, the same seed, same plants, the same level of management, and will be under the same set of Performance Standards as the non-buffer wetlands (Appendix B). While these wetland acres are within the buffer, they still can provide some direct wetland impact compensation as they are existing wetlands to be enhanced or wetlands to be restored. The bank sponsor proposes the 2.31-acres of wetland buffer acres generate the maximal allowable buffer credit of 25% which equates to 0.578 credits. These wetland buffer credits would not be included in the total allowable 15% for upland buffer credits.

Wetland Enhancement

Two farmed wetlands (1.97 acres) and portions of a reed canary grass dominated wetland (2.11 acres) collectively make up 4.08-acres of existing wetlands. These communities will receive the same seeding and same short and long-term management activities and will need to achieve the same set of Performance Standards as the wet prairie/sedge meadow re-establishment areas that are proposed to generate a 100% credit (1:1 ratio) per acre. In addition, the 2.11-acre wetland proposed for enhancement to wet prairie/sedge meadow is dominated by reed canary grass with low ecological value. This invasive species will require substantial site prep through a number of herbicide applications and potential burning, followed by a native overseeding. Thus, sponsor has proposed these be enhanced to wet prairie/sedge meadow and generate a 50% credit (2:1 ratio) per acre for a total of 2.04 credits.

Similarly, two farmed emergent wetlands and the non-buffer portions of a current emergent wetland in the southeast corner comprise the remaining 5.10-acres of existing wetlands. These emergent wetlands are proposed to undergo an extensive invasive species management strategy (especially through reed canary grass management) and then will be followed up with emergent seeding and emergent species plug planting and will undergo vegetation monitoring and be part of the long-term management. Finally, adherence to a set of Performance Standards with milestones will be required. Thus, the sponsor has proposed these be enhanced to emergent wetlands and generate a 50% credit (2:1) per acre for a total of 2.55 credits.

Overall, the four farmed wetlands currently provide little to no wildlife habitat resulting from the past long-term farming activities. They may even act as biological “sinks” for attracting some wildlife that have been negatively impacted by subsequent farming activities. Enhancement of these farmed wetlands will likely turn these wetlands into suitable wildlife habitat (e.g., a wildlife “source”). There will be a discernible functional and ecological lift by the proposed rehabilitation activities. Increased wildlife habitat will be realized in both restored (the farmed wetlands) and enhanced (the reed canary grass wetland and emergent wetland) communities.

Wetland Re-establishment

Inside the bank, 26.93-acres of agricultural ground will be restored to wet prairie/sedge meadow through re-establishment for which 100% credit (1:1 ratio) is proposed and will generate 26.93 credits (Table 1).

1.0 ESTABLISHMENT AND OPERATION

1.1 Legal Description

The proposed Bank site is owned by the LCFPD. The parcel numbers and legal description are found in Table

2. The site contains no power lines or other easements within the project site. There are no other known land-use restrictions that would affect the proposed Bank as proposed.

Table 2. Legal Descriptions

10 Digit Parcel Number	Legal Description
211200013	S1/2 NW1/4 NE1/4 (EX W 826.27') & (EX N 966.44') & (EX FARMLAND LEASEHOLD) SECTION 11 TOWNSHIP 46 RANGE 10
211200014	E1/2 NE1/4 (EX N 966.44') & (EX S 20') & (EX FARMLAND LEASEHOLD) SECTION 11 TOWNSHIP 46 RANGE 10
212100001	PT NW1/4 NW1/4; N 14.34CHS LYG W OF W LN RD (EX S 2 RDS & EX FARMLAND LEASEHOLD) SECTION 12 TOWNSHIP 46 RANGE 10
212100004	(EX N 14.34 CHS & EX COM 80RDS S OF NW COR S 80RDS E 80RDS N 40RDS NW TO BEG) ALLW OF RD NW1/4 SECTION 12 TOWNSHIP 46 RAN GE 10
211200009	SW1/4 NE1/4 (EX W826.27') & (EX S20') & (EX FARMLAND LEASEHOLD) SECTION 11 TOWNSHIP 46 RANGE 10
212100003	PT NW1/4 NW1/4; S 2 RDS N 14.34CHS LYG W OF W LN RD (EX FARMLAND LEASEHOLD) SECTION 12 TOWNSHIP 46 RANGE 10
212300007	S 330' OF N 2307' W1/2 SW1/4 (EX FARMLAND LEASEHOLD) SECTION 12 TOWNSHIP 46 RANGE 10
211400005	S1/2 SE1/4 SE1/4 (EX FARMLAND LEASEHOLD) SECTION 11 TOWNSHIP 46 RANGE 10

1.2 Site Description

The proposed Bank is located in unincorporated Antioch, Lake County, Illinois and approximately 3.5 miles west of Interstate 94 (Exhibit 1). The site is currently in agricultural land use but contains various farmed and unfarmed wetland complexes. The Bank site is bounded by wetland and upland Forest Preserve property to the north, US-45 to the east, agriculture row crop and residential to the south, and oak woodland, Deer Lake, and an unnamed stream channel to the west.

1.2.1 Ecological Suitability

Currently, the site is composed largely of agricultural land. The site is hydrologically connected to Deer Lake and an unnamed stream and contains areas of existing upland and bottomland scrub/shrub and wet, old field, emergent, and reed canary grass wetlands, and mesic/dry-mesic oak woodland. The wide variety of habitats onsite could be transformed into a diverse mosaic of high-quality wetlands and upland ecosystem types. Hydric soils and soils with seasonally high-water table are found on the site and are proposed to be included in the wetland bank.

1.2.2 Topography

The topography of the site is relatively flat with some variability (Exhibits 2 and 3). Elevations range from 775 to 760 feet.

1.2.3 Soils

Twenty-three (23) soil map units occur within the site boundaries and identified by NRCS during a soil survey completed in October 2009 (Exhibit 4), seven of which are hydric. The proposed bank area is primarily mapped as 153A: Pella silty clay loam. Soil data collected in the field during the wetland delineation confirmed the presence of hydric soil throughout the site. The complete soil data set is located in Table 3.

Table 3. Soil Map Units

Soil Map Unit Symbol	Soil Map Unit Name	Drainage Classification	Hydric Soil Rating
69A	Milford silty clay loam, 0 to 2 percent slopes	Poorly Drained	Yes
M69A	Milford mucky silty clay loam, 0 to 2 percent slopes	Poorly Drained	Yes
103A	Houghton muck, 0 to 2 percent slopes	Very Poorly Drained	Yes
146A	Elliott silt loam, 0 to 2 percent slopes	Somewhat Poorly Drained	No
192A	Del Rey silt loam, 0 to 2 percent slopes	Somewhat Poorly Drained	No
153A	Pella silty clay loam, 0 to 2 percent slopes	Poorly Drained	Yes
232A	Ashkum silty clay loam, 0 to 2 percent slopes	Poorly Drained	Yes
M232A	Ashkum mucky silty clay loam, 0 to 2 percent slopes	Poorly Drained	Yes
293A	Andres silt loam, 0 to 2 percent slopes	Somewhat Poorly Drained	No
298A	Beecher silt loam, 0 to 2 percent slopes	Somewhat Poorly Drained	No
298B	Beecher silt loam, 0 to 2 percent slopes	Somewhat Poorly Drained	No
325B	Dresden loam, 2 to 5 percent slopes	Well Drained	No
370A	Saylesville silt loam, 0 to 2 percent slopes	Moderately Well Drained	No
450A	Halfday silt loam, 0 to 2 percent slopes	Moderately Well Drained	No
450B	Halfday silt loam, 2 to 4 percent slopes	Moderately Well Drained	No
502A	Mazon silt loam, 0 to 2 percent slopes	Somewhat Poorly Drained	No
531A	Markham silt loam, 0 to 2 percent slopes	Moderately Well Drained	No
531B	Markham silt loam, 2 to 4 percent slopes	Moderately Well Drained	No
531B2	Markham silty clay loam, 2 to 4 percent slopes, eroded	Moderately Well Drained	No
531C2	Markham silty clay loam, 4 to 6 percent slopes, eroded	Moderately Well Drained	No
533A	Urban land, 0 to 2 percent slopes	NA	No
637A	Muskego silty clay loam, 0 to 2 percent slopes, overwash	Very Poorly Drained	Yes
802B	Orthents, clayey, nearly level	Moderately Well Drained	No
802D	Orthents, clayey, strongly sloping	Moderately Well Drained	No

RES collected soils data during the wetland delineation survey on October 14, 2021. Soils were sampled by hand using a shovel and soil probe. Data collected included soil texture and color; quantity, color, and depth of redoximorphic features; depth to saturation; depth to the water table, and identification of hydric soil indicators when present.

A total of sixteen soil data points were established throughout the site (Exhibit 7). In general, field-collected soils data is consistent with NRCS soils mapping. Data was collected to refine our understanding of the distribution of soil types throughout the property (including hydric soils); establish boundaries of existing and potentially restorable wetlands; inform the planting plan; determine depths to the water table, saturated soils, and hydric soils; and to inform the mitigation design plan.

1.2.4 Hydrology and Hydraulics

The proposed wetland bank boundary is situated within the center of the North Mill Creek HUC-12 sub-watershed (071200040201). It is located west of Bristol Road, east of Deer Lake, north of W. Edwards Road, and south of Candice Lake. It has an onsite drainage area of approximately 63.43 acres and an additional 91.76 acres of offsite drainage area. The existing land-use types within the bank boundary comprise approximately

50.3 acres of agricultural land, 10.73 acres of wetlands and farmed wetlands, and 3.4 acres of forested land.

Hydrologic inputs to the wetland bank consist of precipitation, groundwater, and runoff from these onsite and offsite drainage areas. Alterations in the site's natural hydrology are present throughout the project site in the form of drain tiles to manage surface water and support conventional agricultural practices.

Generally, water drains via overland flow across several depressional areas and through numerous drain tiles that are present and situated in a disorganized network throughout the site. A relatively flat and sloping topography is present, with topographic elevations within the bank boundary ranging from approximately 768-ft to 778-ft. Approximately 31.06 acres (49% of the total drainage area) drain to the north boundary of the site into Candice Lake, 13.06 acres (21% of the total drainage area) drain to west boundary of the site into Deer Lake, and 19.3 acres (30% of the total drainage area) drain to the east boundary of the Site, passing beneath Bristol Road and into to the agricultural field located east of the road.

As noted, there's approximately 91.76 acres of offsite area that is tributary to the project site. Approximately 12.3 acres located southwest of the site drain via overland flow into a depressional area located at the southwest corner of the site. Approximately 12.3 acres located south, northwest, and northeast of the site drain via overland flow into a depressional area located near the north boundary of the site. Approximately 31.56 acres located southeast, east, and northeast of the site drain via overland flow into a depressional area located at the southeast corner of the site.

Floodplain data was obtained from the FEMA Flood Map Service Center (Exhibit 3) Based on this data, there are approximately 1.28 acres (2% of the site) located within the Zone AE 100-yr floodplain which is situated along the north boundary of the site. This Zone AE 100-yr floodplain pertains to the stream, named Deer Lake drain based on Lake County IL data, which is located northwest of the bank boundary that connects Deer Lake and Candice Lake. An additional 3.5 acres (6% of the site) in a depressional area at the southeast corner of the site are located within the Zone A 100-yr floodplain.

1.2.5 Wetlands and Waters

The results of RES's October 14, 2021, wetland delineation indicate that there are approximately 10.73 acres of wetlands within the limits of the wetland bank (Exhibit 7). Of the total acreage of wetlands within the Bank area, 9.4 acres are emergent/reed canary grass wetlands, and 1.97 acres are farmed wetlands. The complete Wetland Delineation Report is located in Appendix A. The site does not contain any important wetlands according to the Corps Special Area Management Plan.

1.2.6 Vegetation

The agricultural portions of the site were found to be planted with soybean during multiple 2021 site visits. The unfarmed wetland areas were vegetated by species such as reed canary grass (*Phalaris arundinacea*), pigweed (*Amaranthus tuberculatus*), narrowleaf cattail (*Typha angustifolia*), creeping spike rush (*Eleocharis palustris*). Unfarmed upland area species include giant foxtail (*Setaria faberi*), smooth brome (*Bromus inermis*), bur oak (*Quercus macrocarpa*), swamp white oak (*Quercus bicolor*), shagbark hickory (*Carya ovata*), common buckthorn (*Rhamnus cathartica*). The primary vegetative communities on site in addition to agricultural land are emergent and/or reed canary grass wetland, mesic oak woodland, and scrub shrub bottomland.

1.2.7 Endangered Resources

RES queried the USFWS Information for Planning and Conservation (IPaC) to assess the potential presence of any federal and/or state threatened, endangered, species of concern, or candidate species in the vicinity of the project area. The USFWS database lists six species (1 bat, 2 birds, 2 insects and 2 flowering plants) as federally threatened or endangered in the vicinity of the site (Table 4). There are no critical habitats listed within the project area. If necessary, a Section 7 Consultation from the IDNR will be performed to obtain an official list of State-endangered resources within the project area. During the 2022 site investigation no endangered, threatened, or species of special concern were observed at the site.

Table 4. Federally Threatened and Endangered Species List

Scientific Name	Common Name	Status
Mammals		
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	Threatened
Birds		
<i>Charadrius melodus</i>	Piping Plover	Endangered
<i>Calidris canutus rufa</i>	Red Knot	Threatened
Insects		
<i>Lycæides melissa samuelis</i>	Karner Blue Butterfly	Endangered
<i>Danaus plexippus</i>	Monarch Butterfly	Candidate
Flowering Plants		
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	Threatened
<i>Cirsium pitcher</i>	Pitcher's Thistle	Threatened

1.2.8 Archeological Resources

If required for permitting purposes, RES will subcontract with an archeological survey firm to conduct a Phase I Archaeological & Cultural Reconnaissance Survey. The survey will satisfy Corps and other permitting requirements. Based on the Historic and Architectural Resources Geographic Information System (HARGIS) interactive map, there do not appear to be any historic buildings, structures, or sites listed in the National Register of Historic Places.

1.3 Hydrology Restoration

1.3.1 Overview

The Prairie Stream site is well situated for a wetland bank. The relatively flat topography and presence of several depressional areas already mimic wetland site conditions. The offsite areas that are tributary to the proposed wetland bank, along with the site's proximity to the floodplain and floodway associated with Deer Lake and Candice Lake will provide it with adequate hydrology. The presence of hydric soils is also conducive to reestablishing natural wetland conditions.

Generally, the hydrologic restoration of the site will involve disabling the subsurface drain tiles and maintaining existing overland flow paths throughout the site where water is currently being conveyed. The combination of these efforts will convert the site to conditions that will facilitate a wetland habitat. Disabling the drain tiles will prevent water from being intercepted and transported offsite and instead allow it to infiltrate into the proposed wetland area. Maintaining the overland flow paths will reduce the potential for inundation and flooding. Topographic variability and depressional areas will be maintained to promote habitat diversity.

1.4 Construction

The wetland hydrology restoration effort will primarily consist of drain tile disablement and leveling where necessary to recontour the ground and to maintain overland flow paths. Drain tile data provided by the LCFPD will be used for locating and disabling the drain tiles. If additional drain tiles are located during construction, these will be disabled where practicable to help restore wetland conditions. Typical earth moving equipment will be used for the excavation and tile disablement. The site will be restored with plantings and erosion control techniques appropriate for the climate and drainage conditions.

1.5 Seeding and Planting

The conceptual mitigation plan for the proposed Bank focuses on potential strategies for restoring and enhancing wetland hydrology and diverse native plant communities in existing wetlands and in areas currently being farmed. The restoration of prairies and buffers around the site's wetlands have been designed to provide nutrient pre-treatment of waters running off the surrounding roadways, agricultural fields and private property before being allowed to enter the wetlands. Plant communities proposed for restoration and enhancement strategies for the potential bank are described below. Seed mixes and plant lists have been developed for each proposed restoration community and will be included in the MBI.

1.5.1 Wet Prairie/Sedge Meadow Restoration

Approximately 26.93 acres of existing farmed uplands will be re-established as wet prairie (Exhibit 8). Re-establishment will occur via herbicide treatments followed by seeding and planting native wetland vegetation that will transition into short and long-term management to include mowing, brushing, herbicide application, and burning. Wet prairie/sedge meadow could be re-established by:

1. Breaking drain tiles of farmed upland areas to restore hydrology to re-establish wetlands.
2. Removal of aggressive or low-quality native and non-native woody and invasive herbaceous species. Apply up to two treatments of the herbicide "Roundup" or equivalent, to control and kill reed canary grass and other weeds. Reed canary grass areas may require follow-up treatments.
3. Perform pre-seeding soil preparation, such as disking as necessary.
4. Install native seed by drilling, no-till drilling, or broadcasting.
5. Begin initial mowings to manage non-natives.
6. Spot-spray re-emerging reed canary grass and other invasive species.
7. Assess fuel loads and, when sufficient, begin prescribed burning to be the primary management tool for both the short and long-term management.
8. Initiate short- and long-term management activities such as mowing, burning, and herbicide application to control targeted species and develop an annual vegetation monitoring program.

1.5.2 Emergent Wetland Enhancement

Approximately 5.10 acres of existing emergent wetlands and farmed wetlands will be enhanced as emergent wetland (Exhibit 8). Enhancement will occur via herbicide treatments followed by seeding and plugging native wetland vegetation that will transition into short and long-term management to include mowing, brushing, herbicide application, and burning. Emergent wetland could be enhanced by:

1. Breaking drain tiles of farmed upland areas to restore hydrology to re-establish wetlands.
2. Removal of aggressive or low-quality native and non-native woody and invasive herbaceous species. Apply up to two treatments of the herbicide "Roundup" or equivalent, to control and kill

- reed canary grass and other weeds. Reed canary grass areas may require follow-up treatments.
3. Install supplemental native seed by drilling, no-till drilling, or broadcasting.
 4. Install supplemental emergent wetland plant plugs.
 5. Begin initial mowings to manage non-natives.
 6. Spot-spray re-emerging reed canary grass and other invasive species.
 7. Assess fuel loads and, when sufficient, begin prescribed burning to be the primary management tool for both the short and long-term management.
 8. Initiate short- and long-term management activities such as mowing, burning, and herbicide application to control targeted species and develop an annual vegetation monitoring program.

1.5.3 Wet Prairie/Sedge Meadow Enhancement

Approximately 4.08 acres of existing emergent wetlands and farmed wetlands will be enhanced as emergent wetland (Exhibit 8). Enhancement will occur via seeding and plugging native wetland vegetation that will transition into short and long-term management to include mowing, brushing, herbicide application, and burning. Wet prairie/sedge meadow could be enhanced by:

1. Breaking drain tiles of farmed upland areas to restore hydrology to re-establish wetlands.
2. Removal of aggressive or low-quality native and non-native woody and invasive herbaceous species. Apply up to two treatments of the herbicide “Roundup” or equivalent, to control and kill reed canary grass and other weeds. Reed canary grass areas may require follow-up treatments.
3. Perform pre-seeding soil preparation, such as disking as necessary.
4. Install supplemental native seed by drilling, no-till drilling, or broadcasting.
5. Install supplemental wet prairie and sedge meadow wetland plant plugs.
6. Begin initial mowings to manage non-natives.
7. Spot-spray re-emerging reed canary grass and other invasive species.
8. Assess fuel loads and, when sufficient, begin prescribed burning to be the primary management tool for both the short and long-term management.
9. Initiate short- and long-term management activities such as mowing, burning, and herbicide application to control targeted species and develop an annual vegetation monitoring program.

1.5.4 Upland Mesic Prairie Buffer Restoration

A minimum 100-foot-wide buffer will be established around the perimeter of the site. Approximately 27.47 acres of farmed uplands could be restored to mesic prairie buffer (Exhibit 8). The mesic prairie buffer could be restored by:

1. Removal of aggressive or low-quality native and non-native woody and invasive herbaceous species. Apply up to two treatments of the herbicide “Roundup”, or equivalent, to control and kill any invasive herbaceous species that occupy this zone.
2. Plant and maintain a cover/site preparation crop after preparing the site for seeding native prairie vegetation by light disking and/or herbicide application, as necessary.
3. No-till drill a variety of native prairie species throughout the mesic prairie buffer areas.
4. Mow native grassland areas in years 1 and 2 to manage weeds. Some non-native weeds, such as Canada thistle, if found, will be treated with wick application or spot herbicide spraying.
5. Assess fuel loads and, when sufficient, begin prescribed burning to be the primary management

tool for short- and long-term management.

6. Initiate short- and long-term management activities such as mowing, burning, and herbicide application to control targeted species and develop an annual vegetation monitoring program.

1.6 Establishment Timeline

Table 5 summarizes the establishment timeline.

Table 5. Initial Years Bank Establishment Timeline

Activity	Schedule
2021	
Conduct wetland delineation	Fall 2021 (completed)
2023	
Install hydrology monitoring wells and dataloggers, monitor hydrology through growing season and beyond	Spring 2023
Obtain bank permit	Winter 2023
2024	
Invasive tree/shrub removal and stump herbicide treatment	Jan-March 2024
Drain tile disablement and ground leveling	Spring 2024
Reed canary grass and cattail herbicide treatment	Spring/Summer/Fall 2024
Install seed: wet prairie, emergent wetland, and mesic prairie buffer areas	Summer/Fall 2024
2025-2029	
Maintenance mowing/herbicide treatments	Spring
Maintenance mowing/herbicide treatments	Summer
Maintenance mowing/herbicide treatments	Fall

1.7 Financial Assurances

The Bank Sponsor (HGS, LLC) will provide a financial assurance mechanism consisting of a performance bond for 100% of costs associated with site construction, seeding, and planting. An additional management/maintenance bond will be provided separate from the construction performance bond. The length of the management bond will be approved by the IRT, but at a minimum, will be for five years. For long-term financial assurance, the Sponsor will establish a Long-Term Management Fund (LTMF) in an interest-bearing non-wasting endowment fund. The LTMF will be available for sole use to maintain the Bank upon closure.

Short Term: Within 120 days of anticipated bank construction after mitigation bank approval, the Sponsor will provide the USACE with a final performance bond in an amount sufficient to cover 100% of site construction, seeding and planting costs. The Bank Sponsor shall ensure that the construction performance bond shall remain in effect throughout the performance of construction and the substantial completion of the seeding and planting to create, restore and enhance wetlands and waters of the U.S. A management/maintenance bond, sufficient to cover a minimum of five years of adaptive management and monitoring, will be provided as a separate bond at the same time the construction performance bond is provided. If USACE determines that a breach of the terms and conditions of the Bank has occurred, the USACE will have the authority to direct the use of the performance bond payments to complete the activities enumerated in MBI.

Bank Operation: The Sponsor will be responsible for site monitoring and adaptive management from

construction through Bank closeout. Sufficient funds will be allocated by the Sponsor to perform the necessary management and monitoring activities while the bank is under operation. Upon satisfying all final MBI performance requirements, the LCFPD will serve as the Long-Term Manager (LTM).

The perpetual long-term financial assurance will consist of an LTMF established by the Sponsor. The Sponsor will place a mutually agreed upon lump sum dollar amount and/or a percentage of credit sale revenue into an LTMF. Prior to bank closure, the entire amount of the designated LTMF must be deposited into the LTMF and made available to the LTM. These long-term financial assurance mechanisms will be used for the perpetual maintenance of the bank site after all success criteria have been achieved and all credits have been released.

1.8 Adaptive Management

The Bank Sponsor will be responsible for the adaptive management implemented at the proposed Bank. Adaptive management is defined as the day to day, season to season refinements in restoration programming needed to achieve success against the performance criteria. Any adaptive refinement is not considered critical, and will not require a contingency plan, as refinements are an anticipated normal process on restoration and mitigation projects. Adaptive management affords the Bank Sponsor the option to take advantage of the latest scientific and technological techniques for successfully accomplishing restoration and mitigation projects.

The mitigation restoration, enhancement, and management programs require flexibility due to natural environmental variability and emerging scientific advancements. The restoration plan should not be viewed as being “fixed in stone.” The diversity and plant community goals and outcomes are firm, but the acreages of each community may vary from what is planned. This should not be thought of as a failure or an unwanted outcome. The restoration plan is a starting point in an ongoing process of restoring the proposed Bank area’s biodiversity and natural processes. Regular monitoring will provide feedback on restoration effectiveness and will generate information to evaluate and justify the need for changes. This process of evaluation, adjustment, refinement, and change is called “Adaptive Management.” Adaptive Management is a fundamental tool for use in restoration, management, and maintenance work.

The Bank Sponsor shall be responsible to maintain the Bank and perform remedial action except for damage or non-compliance caused by catastrophic events, events of Force Majeure, or unlawful acts. Certain circumstances, such as excessive flooding and vandalism, are beyond the control of the Bank Sponsor. The Bank Sponsor shall notify the USACE within 24 hours of their knowledge of the occurrence of a catastrophic event, event of force majeure, or unlawful act. As soon as reasonably possible the Bank Sponsor and the USACE shall meet to discuss the course of action in response to such an occurrence. In the meantime, the Bank Sponsor shall continue to manage and maintain the Bank property to the full extent practicable.

Remedial actions include over-seeding of low diversity or poorly growing areas with native seed collected on site or nearby or purchased from an outside vendor, use of equipment and vehicles to conduct seeding and woody species replacement, using appropriate equipment as needed for stabilizing slopes with cover crop and other typical slope protection strategies such as but not limited to erosion blanketing, limited rock placement, straw bale use, and installation water deterrence barriers to prevent/stop erosion. Maintenance and manipulation of water control structures is allowed with USACE and Interagency Review Team (IRT) approval.

Should any certified credits that have been debited be deemed as failing during the life of the Bank, every effort will be made to repair those areas. If the Bank Sponsor is unable to repair the certified credits that have been debited onsite, an alternative approved location or bank location may be used to replace the failed certified credits that have been debited with USACE and Interagency Review Team (IRT) approval.

1.9 Determination of Credits and Credit Release Schedule

The number of credits that could potentially be generated from the restoration and enhancement of the proposed Bank site were determined using the ICA and are found in Table 1.

Credit sales may commence upon approval of the banking instrument in accordance with the approved credit release schedule. RES plans to explore potential alternative credit release schedule options with the USACE during the MBI phase of the project. The credit release schedule provided in the ICA is presented below:

1. release a maximum of 20% of the total credits at the bank once the banking instrument has been signed, adequate financial assurances are in place, and the site protection instrument has been recorded;
2. release an additional 25% of the total credits at the bank once appropriate wetland hydrology is demonstrated at the bank, and all hydrology performance standards have been met. The hydrology standard must be met for \geq (greater than or equal to) 2 consecutive growing seasons to qualify for credit release and/or final release from maintenance and monitoring;
3. for each following year (beyond the first year that wetland hydrology was documented and approved), when interim vegetation and hydrology performance standards are met and approved in writing by the USACE, up to 15% of anticipated credits will be approved for sale if unsold, successfully restored credits are present.
4. after one year has passed from the date of the first credit sale, if wetland hydrology is not present in the majority of years, native plant communities are not developing, or if any performance standards are not met on areas that are of sufficient size to cover sold credits, the USACE will require one or more of the following: adaptive management actions, a decrease of credits available for sale, a suspension of credit sales, termination of the MBI, and/or utilization of financial assurances.

3.0 PERFORMANCE STANDARDS

Performance Standards were developed using the ICA guidance and are tied to specific crediting ratios. Vegetation performance standards have been developed for each of the proposed wetland (re-establishment and enhancement) and upland buffer vegetative communities and will be incorporated into the MBI. Mean C and FQA (all species) standards have been included in the Performance Standards for all of the proposed plant communities, as well as relative areal cover, species richness, number of dominant species, number of species with $\geq 5\%$ absolute areal cover, and maximum unvegetated areas.

Hydrology performance standards have been developed for the sedge meadow/wet prairie re-establishment communities. Hydrology will consist of a water table 12 inches or less below the soil surface for a minimum of 28 consecutive days, or two periods of 14 or more consecutive days, during the growing season under normal and wetter than normal hydrological conditions. RES also plans to install a groundwater monitoring well in an onsite “reference wetland” intended to provide hydrology support as part of the post-construction hydrology monitoring. Due to increasing variations in regional and local precipitation, there will likely be times when onsite monitoring well hydrology may not be reflective of the ICA hydrology standard but is still supporting wetlands. If the onsite wetlands do not consistently achieve the ICA mitigation hydrology standard, the “reference wetland” hydrology data will allow RES to capture baseline hydrology data for comparison with the re-established wetlands on the mitigation site.

4.0 PROPOSED SERVICE AREA

The proposed bank is in the Des Plaines River Watershed.

5.0 NEEDS ASSESSMENT

Development and wetland impact in the North Mill Creek-Dutch Gap Canal Watershed is anticipated to continue in the future, with transportation, infrastructure, and municipal projects in the works, in addition to residential and commercial development. Future residential development is likely in the adjacent and near vicinity of the Bank. The Prairie Stream Mitigation Bank will reduce impacts of the future development through fulfilling two goals and four objectives identified in the North Mill Creek-Dutch Gap Canal Watershed Plan. These goals and objectives include:

1. Improve and protect water quality (physical, biological, and chemical health), and eliminate impairments and non-point source pollution.
 - Maintain, expand and restore high quality riparian buffers where needed along and around streams, lakes and wetlands to protect/improve water quality and biological health of waters.
2. Protect, enhance & restore natural resources (soil, water, plant communities, and fish and wildlife) through the expansion of green infrastructure reserves and environmental corridors, maintaining hydrology and buffers for high quality areas, and employing good natural resource management practices.
 - Restore forest preserve lands to natural communities and control invasive species.
 - Develop environmental corridor and trail connections between new and existing forest preserves, across state lines, with community environmental corridor and trail systems.

The Bank will expand the riparian buffer draining into Deer Lake and Dutch Gap Canal, as well as remove a source of non-point pollution entering Dutch Gap Canal and provide a buffer to filter additional pollutants from offsite sources. The Bank will also restore natural areas which as part of the Lake County Forest Preserve network will be preserved in perpetuity, providing an important link to a large network of green spaces within the immediate area and improving regional habitat connectivity. Nearby natural areas include previously naturalized portions of Prairie Stream Forest Preserve to the North. Redwing Slough and Deer Lake Illinois State Natural Area are located directly to the west. The Bank connects Redwing Slough to Dutch Gap Forest Preserve, located directly across US-45 to the east and north which is also connected to Pine Dunes Forest Preserve to the east. Additional open space within close proximity to the Bank and/or the adjacent natural areas include Ravens Glen, Ethel's Woods, Van Pattern Woods, and Wadsworth Savanna.

The approval of this Bank will represent an opportunity to restore unique and increasingly threatened aquatic resources and habitat in an ecologically sensitive region, while at the same time ensuring that compensatory mitigation for unavoidable impacts in the region is channeled into a high-quality and scientifically rigorous wetland improvement.

6.0 TECHNICAL FEASIBILITY

Construction of the Bank is technically feasible. Soils throughout the site are all hydric or contain hydric inclusions, indicating the presence of relatively poorly drained soils. Existing wetlands and farmed wetlands/crop failure are also prevalent throughout the site indicating adequate hydrology is already present in several areas. The Bank site is heavily tiled; therefore, hydrology can be re-introduced to the site through the breaking of these tiles.

7.0 REAL ESTATE OWNERSHIP

The Bank Sponsor has the right to develop a wetland mitigation bank on the proposed site through the signing of a license agreement with the LCFPD. The parcels comprising the proposed Bank site are owned in fee title (outright) by LCFPD; therefore, no additional site protection instrument is necessary to protect the lands. LCFPD has not received any federal dollars for either the acquisition or restoration of the lands proposed for the Bank.

8.0 LONG TERM MANAGEMENT

The Bank will be managed perpetually by the LCFPD, but at any time may choose to assign this role to an USACE and IRT-approved entity. Implementation of long-term management practices will be necessary to maintain the Bank as a native ecosystem, which is the intent of the bank sponsor. It is anticipated that after five or more years of ecological restoration, enhancement, management, and achievement of final performance standards, the mitigation efforts will transition into a long-term management program. The long-term management program is critical for maintaining the value of the investment, perpetuating the plant community, and maximizing the ecological and aesthetic benefits of the native plant communities. The long-term manager will be responsible for implementing management activities, as necessary.

Management tasks will be guided by annual site assessments. These assessments will provide the necessary feedback on the success of the restorations and enhancements to the long-term manager. Site assessments identify developing problems and can be used to modify management techniques to achieve a higher success rate.

Various resource management activities such as prescribed burning, spot herbicide treatment, mechanical vegetation control, seeding, and planting may be conducted or applied within the Bank provided that the activity enhances wetland conditions. Except for the treatment of invasive and/or exotic species, each instance of an activity must be approved by the USACE, after coordination with the IRT. The Sponsor shall submit any changes or modifications to the proposed management plan activities to the USACE after coordination with the IRT. All resource management activities should comply with the following conditions:

1. Activities should be designed and executed in a manner that contributes to the achievement of the Bank's objectives,
2. Removal of wind-throw, or damaged trees, unless a result of insects (e.g., emerald ash borer) is discouraged unless included in an approved resource management plan,
3. Cavity and den trees shall be preserved to the maximum extent practicable,
4. Motorized vehicular traffic will not be permitted off-road/off-path unless associated with the short term and long-term management and monitoring activities performed on the site.
5. Native seed should be collected by hand or mechanical means, or by means that do not negatively impact the conservation values.

Recreational activities and undeveloped, non-commercial recreational use, including but not limited to, hunting, fishing, trapping, hiking, paddling, snowshoeing, photography, wildlife viewing, snowmobiling, cross-country skiing, and education related activities will be allowed, provided such activities do not negatively impact the conservation values. Other recreational activities may be conducted within the property provided they do not degrade wetland functions and restored conditions.

Firefighting or fire suppression activities, and machine clearing of fire lines/fire breaks as part of controlled burn activities, firefighting, or fire suppression will be allowed.

Installation of fences for land management or habitat protection purposes, and installation of signs for land management, facilitating passive recreation, education, or habitat protection purposes of reasonable size will be allowed.

The Bank is vulnerable to acts such as vandalism, wildfires, adverse weather, insects, and diseases. In some cases, it may be appropriate to do nothing with the expectation that the wetland vegetation will re-establish on its own. Such occasions will require approval of the USACE after coordination with the IRT.

9.0 SPONSOR QUALIFICATIONS

HGS, LLC is the Sponsor for the proposed Bank. HGS, LLC is a wholly owned subsidiary of RES, a fully scaled operating company providing ecological restoration and water resource solutions. RES is a vertically integrated, design-build operating company with the expertise – land, legal, regulatory, construction – and

capital to deliver cost-effective and high-quality environmental restoration and water quality projects with commercial speed.

Fifteen years ago, RES was initially founded to help clients obtain project permits by supplying compensatory wetland mitigation solutions. RES evolved to be the leading provider of innovative solutions to wetland and stream compensatory mitigation projects. Since inception, RES has provided design, permitting, construction, success criteria monitoring, maintenance, and credit sales for our own mitigation assets, as well as assets owned by third parties or partners.

RES acquired AES (Applied Ecological Services) in 2021, a recognized leader in ecology, wetlands restoration, and wetland mitigation banking throughout the U.S. Working with regulators in the early 1990s, AES (now RES) was instrumental in developing science-based wetland mitigation banking standards and permit regulations. In the Midwest, RES has been involved in the design, permitting, development, and management of over 130 wetland, stream, species, and conservation banks including providing assistance in four banks in Lake County, Illinois including the Metra Stateline Wetland Bank (Phase 1 and Phase 2), Butterfield Road Wetland Bank, Atkinson Road Wetland Bank, and Jelkes Creek Wetland Mitigation Bank and Restoration (Phase 1 and Phase 2).

10.0 ECOLOGICAL SUITABILITY

The Bank is characterized by a low complexity and a high likelihood of success based on the presence of hydric soils in the wetland reestablishment, establishment, and enhancement areas as well as existing drain tiles in the areas where wetland connectivity is going to be established. Additionally, a majority of wetland restoration will involve minimal grading, consisting primarily of minor leveling of the ground associated with the disablement of existing drain tiles to establish wetland connectivity between existing wetlands.

11.0 ASSURANCE OF SUFFICIENT WATER RIGHTS

Sufficient water rights exist to support the long-term sustainability of the Bank. Wetlands will be primarily supported by groundwater, precipitation, and runoff from onsite and offsite drainage areas which will be sufficient to provide the necessary hydrology. Details on the proposed hydrology of the Bank will be provided in the MBI.

12.0 SIGNATURES

Bank Sponsor Signature: John L. Larson

Date: 8/30/23

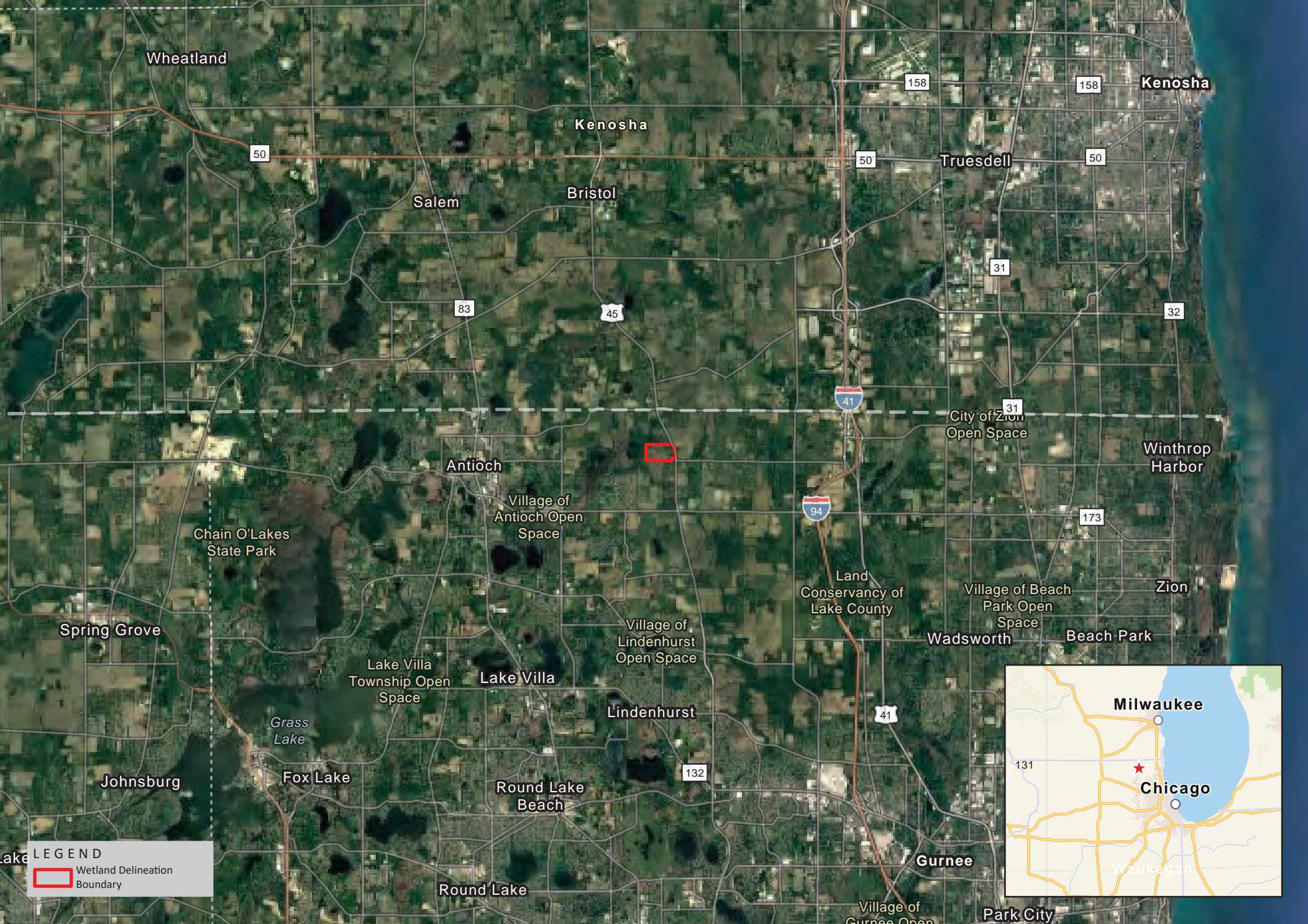
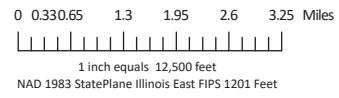


EXHIBIT 1: PROJECT LOCATION



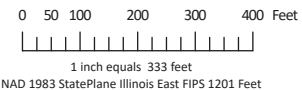
LCFPD WETLAND DELINEATION
 102799 (TSCHWARTZ)
 Map created on: 12/2/2021
 Imagery Source: USGS Topo Map





LEGEND

 Wetland Delineation Boundary	 Lake County Wetland Inventory
 Lake County ADID Wetlands	

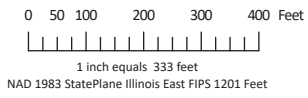


LCPD WETLAND DELINEATION
102799 (TSCHWARTZ)
Map created on: 12/2/2021
Imagery Source: Google Earth



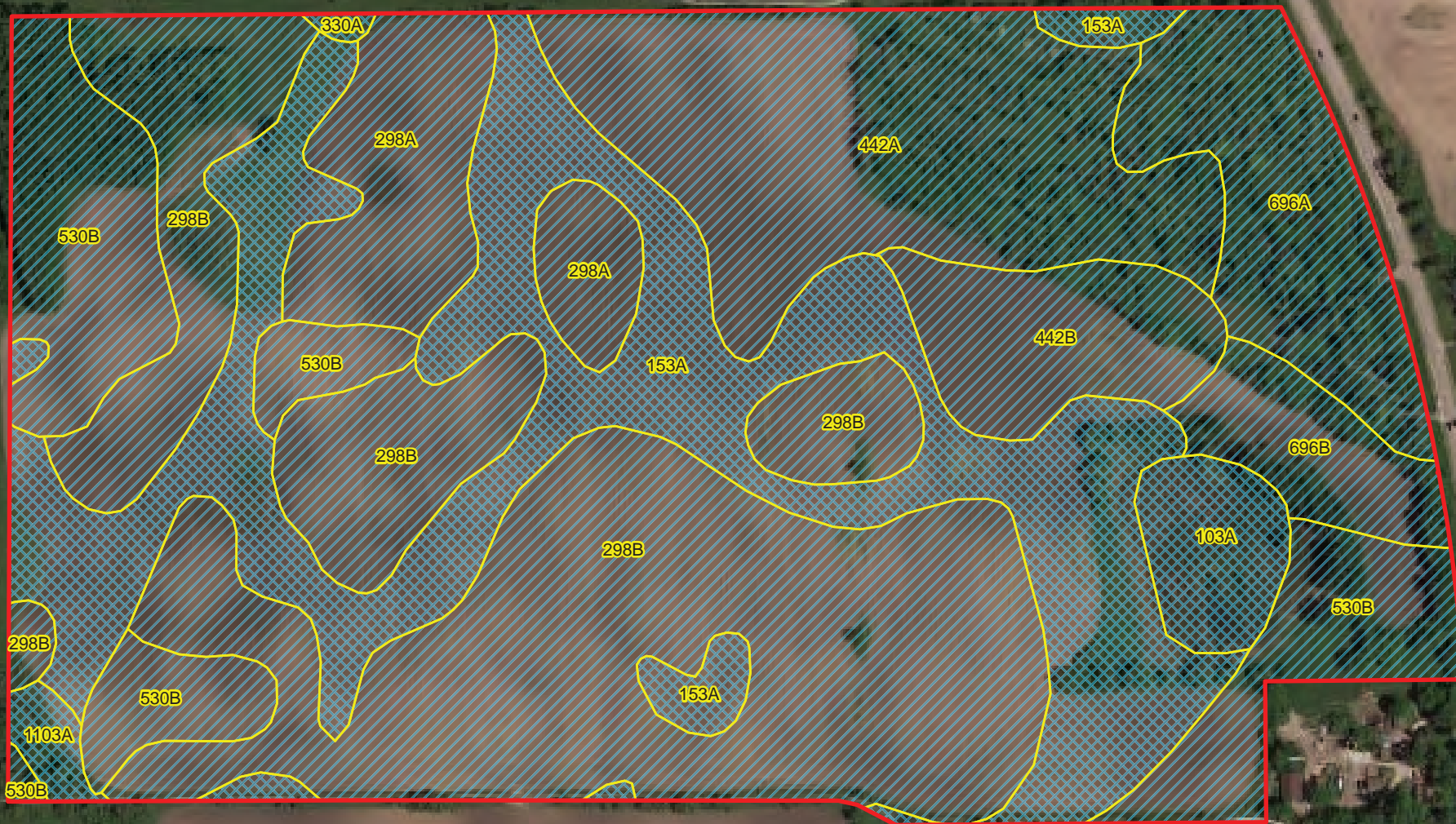


EXHIBIT 3: FEMA FLOOD HAZARD



LCFPD WETLAND DELINEATION
102799 (TSCHWARTZ)
Map created on: 12/2/2021
Imagery Source: Google Earth





LEGEND

Wetland Delineation Boundary

SSURGO SOILS

103A, Houghton muck, 0 to 2 percent slopes, Hydric: Yes

1103A, Houghton muck, undrained, 0 to 2 percent slopes, Hydric: Yes

153A, Pella silty clay loam, 0 to 2 percent slopes, Hydric: Yes

298A, Beecher silt loam, 0 to 2 percent slopes, Hydric: Inclusions

298B, Beecher silt loam, 2 to 4 percent slopes, Hydric: Inclusions

330A, Peotone silty clay loam, 0 to 2 percent slopes, Hydric: Yes

442A, Mundelein silt loam, 0 to 2 percent slopes, Hydric: Inclusions

442B, Mundelein silt loam, 2 to 4 percent slopes, Hydric: Inclusions

530B, Ozaukee silt loam, 2 to 4 percent slopes, Hydric: Inclusions

696A, Zurich silt loam, 0 to 2 percent slopes, Hydric: Inclusions

696B, Zurich silt loam, 2 to 4 percent slopes, Hydric: Inclusions

HYDRIC SOILS

Hydric Inclusions

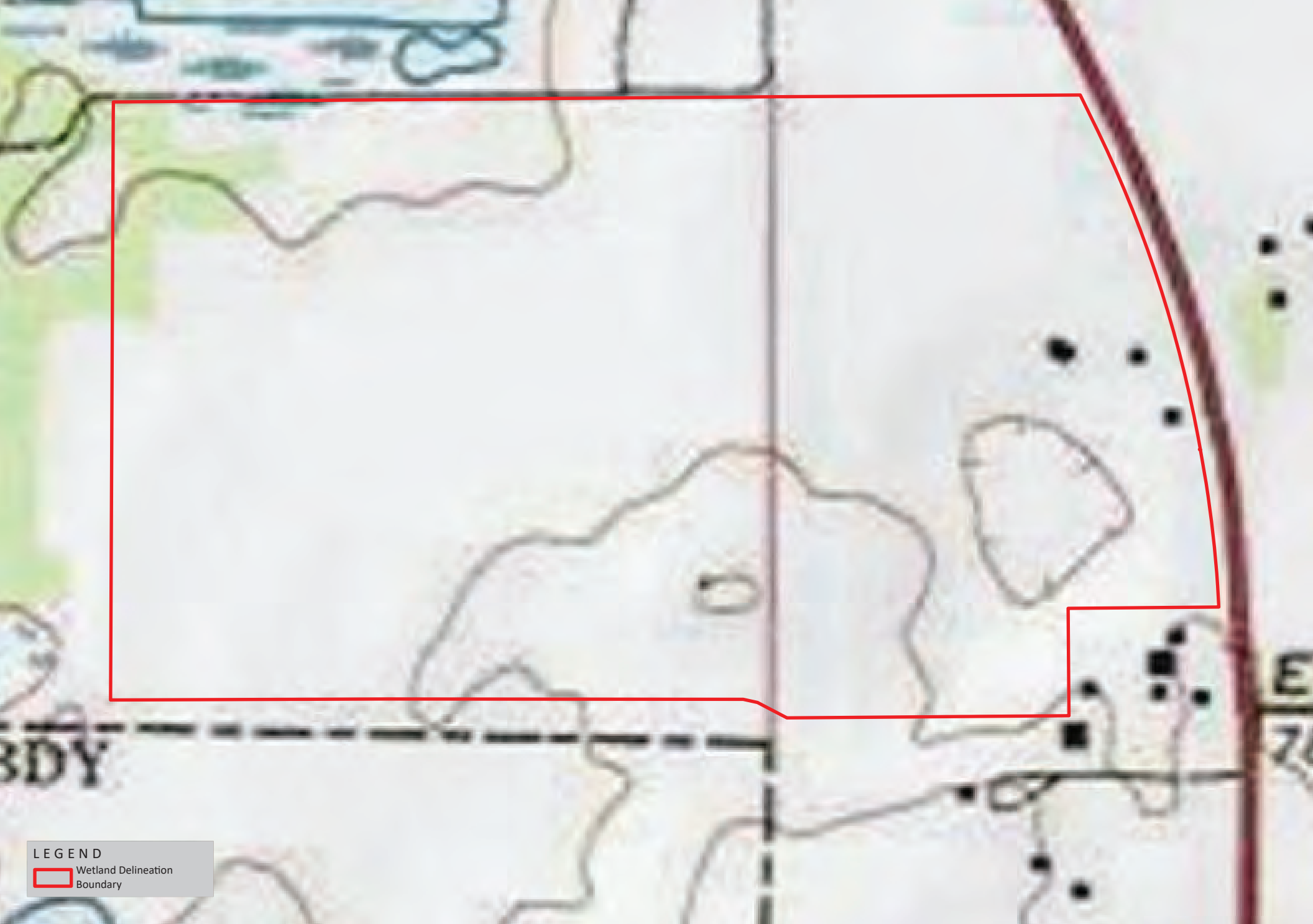
Hydric



0 50 100 200 300 400 Feet
1 inch equals 333 feet
NAD 1983 StatePlane Illinois East FIPS 1201 Feet

LCPD WETLAND DELINEATION
102799 (TSCHWARTZ)
Map created on: 12/2/2021
Imagery Source: Google Earth

res
PO Box 256 Brodhead, WI 53520



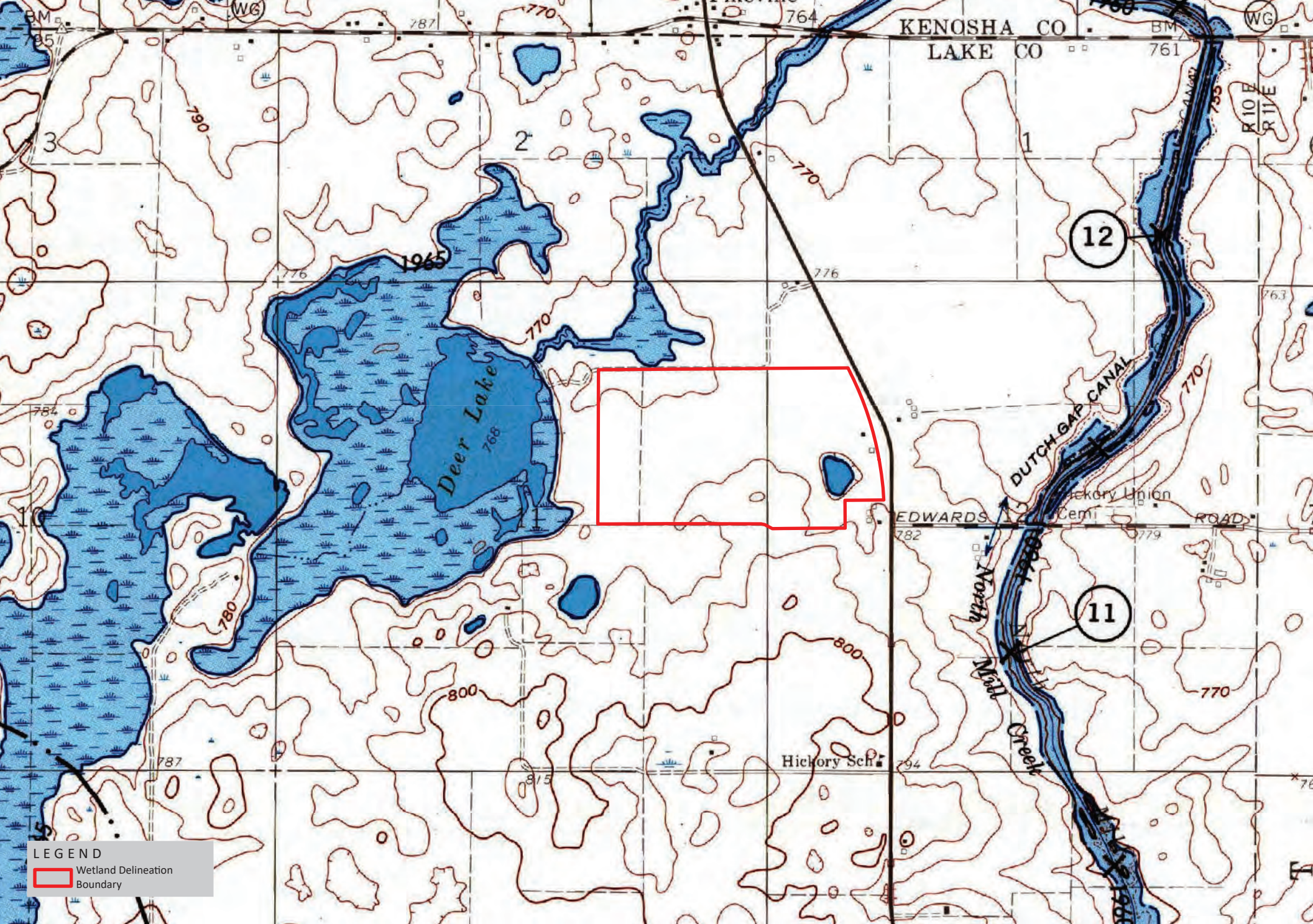
LEGEND
Wetland Delineation
Boundary



0 50 100 200 300 400 Feet
1 inch equals 333 feet
NAD 1983 StatePlane Illinois East FIPS 1201 Feet

LCPD WETLAND DELINEATION
102799 (TSCHWARTZ)
Map created on: 12/2/2021
Imagery Source: USGS Topo Map





LEGEND
Wetland Delineation Boundary

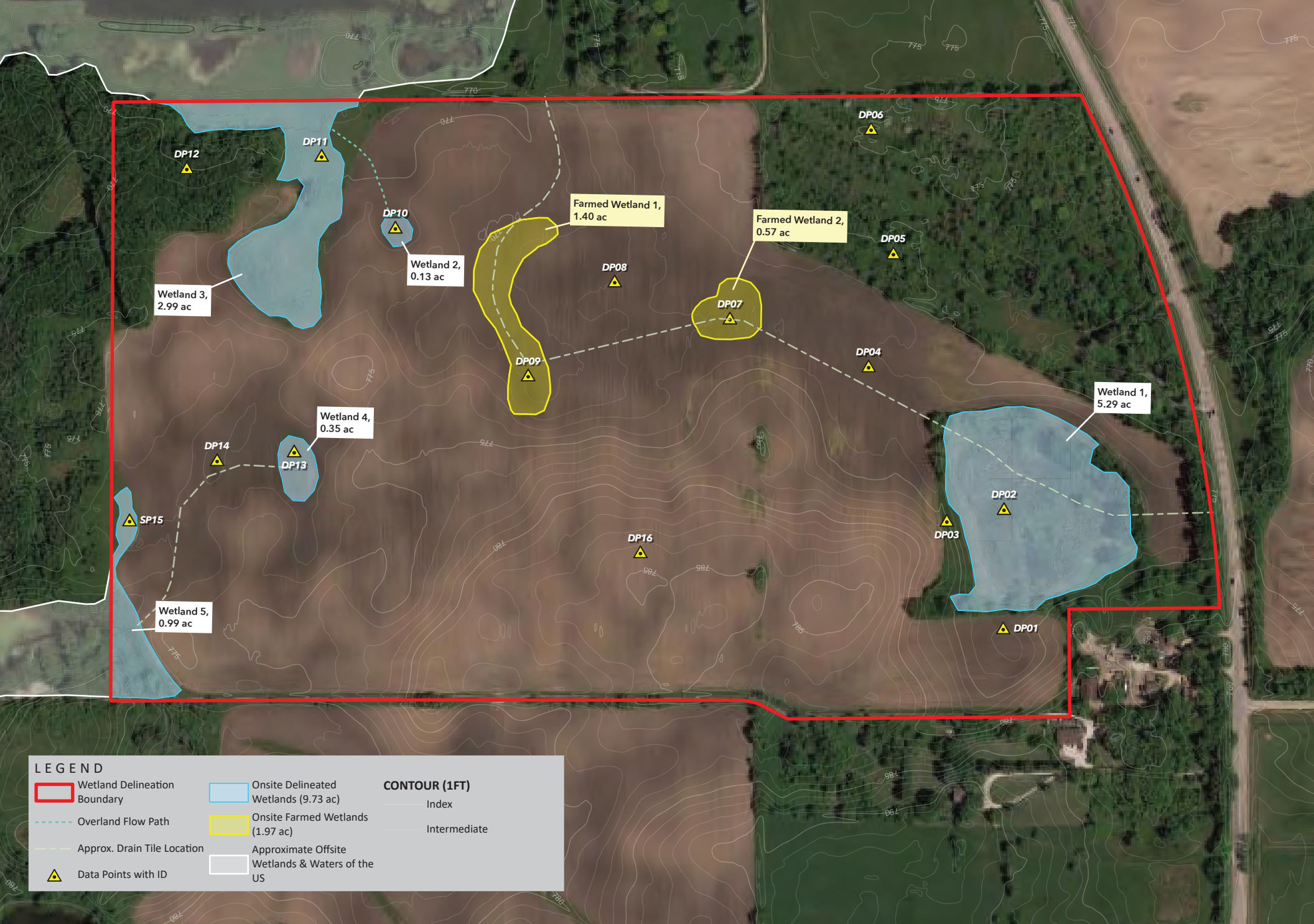
EXHIBIT 6: USGS HYDROLOGIC ATLAS (ANTIOCH, IL)



0 170 340 680 1,020 1,360 1,700 US Feet
1 inch equals 1,292 feet
NAD 1983 StatePlane Illinois East FIPS 1201 Feet

LCFPD WETLAND DELINEATION
102799 (TSCHWARTZ)
Map created on: 12/10/2021
Imagery Source: USGS Topo Map





LEGEND

Wetland Delineation Boundary

Onsite Delineated Wetlands (9.73 ac)

Onsite Farmed Wetlands (1.97 ac)

Overland Flow Path

Approx. Drain Tile Location

Data Points with ID

CONTOUR (1FT)

Index

Intermediate

Approximate Offsite Wetlands & Waters of the US

EXHIBIT 7: DELINEATED WETLANDS

LCFPD WETLAND DELINEATION
 102799 (TSCHWARTZ)
 Map created on: 12/2/2021
 Imagery Source: Google Earth

Exhibit 8
Restoration and Enhancement
Conceptual Plan

Prairie Stream
Lake County, IL



- Wetland Bank Boundary (69.80 ac)
- Parcels
- Utility Easement
- Drain Tiles
- Contour (1ft)

Restoration & Enhancement Targets within 100ft Buffer (Total: 20.16 ac)

- 2,Mesic Prairie Restoration, Buffer (10.58 ac)
- 2,Mesic Prairie Restoration, No Credit (3.11 ac)
- 4,Wet Prairie/Sedge Meadow Restoration, Buffer (1.33 ac)
- 4,Wet Prairie/Sedge Meadow Restoration, No Credit (0.97 ac)
- 5,Wet Prairie/Sedge Meadow Enhancement, Buffer (0.88 ac)
- 7,Dry-Mesic Oak Woodland Enhancement, Buffer (0.29 ac)
- 7,Dry-Mesic Oak Woodland Enhancement, No Credit (0.55 ac)
- 9,Mesic Oak Woodland Enhancement, Buffer (0.72 ac)
- 11,Emergent Wetland Enhancement, Buffer (0.10 ac)
- 11,Emergent Wetland Enhancement, No Credit (0.56 ac)
- 12,Mesic Savanna/Prairie Restoration, Buffer (1.06 ac)

Restoration & Enhancement Targets (Total: 49.64 ac)

- 2,Mesic Prairie Restoration (11.68 ac)
- 4,Wet Prairie/Sedge Meadow Restoration (26.93 ac)
- 5,Wet Prairie/Sedge Meadow Enhancement (4.08 ac)
- 7,Dry-Mesic Oak Woodland Enhancement (1.36 ac)
- 9,Mesic Oak Woodland Enhancement (0.49 ac)
- 11,Emergent Wetland Enhancement (5.10 ac)

