Item 7E.
BCWMC 6-16-16

Minnesota Wetland Conservation Act
Notice of Application

Local Government Unit (LGU)	Address
City of Plymouth	**3400 Plymouth Blvd.** **Plymouth, MN 55447**

1. PROJECT INFORMATION

Applicant Name	Project Name	Date of Application	Application Number
Gary and Rita Brummer	**Plymouth Commons**	**5/24/16**	**NA**

Type of Application (check all that apply):

☒ Wetland Boundary or Type Sequencing ☐ No-Loss ☐ Exemption ☐

☐ Replacement Plan ☐ Banking Plan

Summary and description of proposed project (attach additional sheets as necessary):

Three wetlands were delineated on-site. Wetland 1 is a 0.51 acre PEM1C, Type 3, Shallow Marsh wetland dominated by reed canary grass, cattail, duckweed, and various sedges. Wetland 2 is a 0.30 acre PEM1B, Type 2, Fresh (wet) meadow dominated by reed canary grass and lake sedge. Wetland 3 is a 0.16 acre PEM1C, Type 3, Shallow Marsh dominated by narrow leaf cattail. Wetland 3 may be a constructed stormwater mangement basin, however, additional documentation is required.

2. APPLICATION REVIEW AND DECISION

Signing and mailing of this completed form to the appropriate recipients in accordance with 8420.0255, Subp. 3 provides notice that an application was made to the LGU under the Wetland Conservation Act as specified above. A copy of the application is attached. Comments can be submitted to:

Name and Title of LGU Contact Person	Comments must be received by (minimum 15 business-day comment period):
Derek Asche **Water Resources Manager**	**June 20, 2016**
Address (if different than LGU) **City of Plymouth** **3400 Plymouth Blvd.** **Plymouth, MN 55447**	Date, time, and location of decision: **June 21, 2016** **9am** **Plymouth City Hall**
Phone Number and E-mail Address **763-509-5526** **dasche@plymouthmn.gov**	Decision-maker for this application: ☒ Staff ☐ Governing Board or Council

Signature: Derek Asche **Date:** 5/25/16

3. LIST OF ADDRESSEES

☒ SWCD TEP member: **Ms. Stacey Lijewski, HCD, 701 Fourth Avenue South, Suite 700, Minneapolis, MN, 55415-1600** (sent electronically)
☒ BWSR TEP member: **Ben Meyer, BWSR, 520 Lafayette Road North, St. Paul, MN, 55401-1397** (sent electronically)
☐ LGU TEP member (if different than LGU Contact):
☒ DNR TEP member: **Leslie Parris, MN DNR, 1200 Warner Road, St. Paul, MN, 55106** (sent electronically)
☒ DNR Regional Office (if different than DNR TEP member)
Kate Drewry, Area Hydrologist, MN DNR, 1200 Warner Road, St. Paul, MN, 55106 (sent electronically)
☒ WD or WMO (if applicable):
BCWMC, c/o Laura Jester, Keystone Waters LLC, 16145 Hillcrest Lane, Eden Prairie, MN, 553467 (sent electronically)
☒ Applicant (notice only) and Landowner (if different):
Gary and Rita Brummer, 99 36th Street SW, Montrose, MN, 55363
☒ Members of the public who requested notice (notice only):
Matthew Summers, Wenck Associates (sent electronically)
☒ Corps of Engineers Project Manager (notice only): **Melissa Jenny, Army Corps of Engineers, 180 5th Street East, Suite 700, St. Paul, MN, 55101-1678** (sent electronically)
☐ BWSR Wetland Bank Coordinator (wetland bank plan applications only)

4. MAILING INFORMATION

➢For a list of BWSR TEP representatives: www.bwsr.state.mn.us/contact/WCA_areas.pdf

➢For a list of DNR TEP representatives: www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf

➢Department of Natural Resources Regional Offices:

NW Region:	NE Region:	Central Region:	Southern Region:
Reg. Env. Assess. Ecol. Div. Ecol. Resources 2115 Birchmont Beach Rd. NE Bemidji, MN 56601	Reg. Env. Assess. Ecol. Div. Ecol. Resources 1201 E. Hwy. 2 Grand Rapids, MN 55744	Reg. Env. Assess. Ecol. Div. Ecol. Resources 1200 Warner Road St. Paul, MN 55106	Reg. Env. Assess. Ecol. Div. Ecol. Resources 261 Hwy. 15 South New Ulm, MN 56073

For a map of DNR Administrative Regions, see: http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf

➢For a list of Corps of Project Managers: www.mvp.usace.army.mil/regulatory/default.asp?pageid=687
or send to:
➢

US Army Corps of Engineers
St. Paul District, ATTN: OP-R
180 Fifth St. East, Suite 700
St. Paul, MN 55101-1678

➢For Wetland Bank Plan applications, also send a copy of the application to:

Minnesota Board of Water and Soil Resources
Wetland Bank Coordinator
520 Lafayette Road North
St. Paul, MN 55155

5. ATTACHMENTS

In addition to the application, list any other attachments:
☒ **Wetland Delineation Report for Plymouth Commons dated May 2016 by Wenck Assoc.**
☐
☐
☐
☐

PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent's contact information must also be provided.

Applicant/Landowner Name: Gary and Rita Brummer
Mailing Address: 3301 Highway 169
Plymouth, MN 55441
Phone: 612-669-1800
E-mail Address: plymouthcommons@hotmail.com

Authorized Contact (do not complete if same as above):
Mailing Address:
Phone:
E-mail Address:

Agent Name: Matthew Summers, Wenck Associates, Inc
Mailing Address: 1802 Wooddale Drive
Woodbury, MN 55125
Phone: 651-395-5206
E-mail Address: msummers@wenck.com

PART TWO: Site Location Information

County: Hennepin **City/Township: Plymouth**
Parcel ID and/or Address: 3301 US 169, PID: 2411822140003
Legal Description (Section, Township, Range):
Lat/Long (decimal degrees):
Attach a map showing the location of the site in relation to local streets, roads, highways. SEE DELINEATION REPORT
Approximate size of site (acres) or if a linear project, length (feet): 16 acres

If you know that your proposal will require an individual Permit from the U.S. Army Corps of Engineers, you must provide the names and addresses of all property owners adjacent to the project site. This information may be provided by attaching a list to your application or by using block 25 of the Application for Department of the Army permit which can be obtained at:

http://www.mvp.usace.army.mil/Portals/57/docs/regulatory/RegulatoryDocs/engform_4345_2012oct.pdf

PART THREE: General Project/Site Information

If this application is related to a delineation approval, exemption determination, jurisdictional determination, or other correspondence submitted ***prior to*** this application then describe that here and provide the Corps of Engineers project number.

Describe the project that is being proposed, the project purpose and need, and schedule for implementation and completion. The project description must fully describe the nature and scope of the proposed activity including a description of all project elements that effect aquatic resources (wetland, lake, tributary, etc.) and must also include plans and cross section or profile drawings showing the location, character, and dimensions of all proposed activities and aquatic resource impacts.

PART FOUR: Aquatic Resource Impact[1] Summary

If your proposed project involves a direct or indirect impact to an aquatic resource (wetland, lake, tributary, etc.) identify each impact in the table below. Include all anticipated impacts, including those expected to be temporary. Attach an overhead view map, aerial photo, and/or drawing showing all of the aquatic resources in the project area and the location(s) of the proposed impacts. Label each aquatic resource on the map with a reference number or letter and identify the impacts in the following table.

Aquatic Resource ID (as noted on overhead view)	**Aquatic Resource Type** (wetland, lake, tributary etc.)	**Type of Impact** (fill, excavate, drain, or remove vegetation)	**Duration of Impact** Permanent (P) or Temporary (T)[1]	**Size of Impact**[2]	**Overall Size of Aquatic Resource** [3]	**Existing Plant Community Type(s)** in Impact Area[4]	**County, Major Watershed #, and Bank Service Area #** of Impact Area[5]

[1]If impacts are temporary; enter the duration of the impacts in days next to the "T". For example, a project with a temporary access fill that would be removed after 220 days would be entered "T (220)".
[2]Impacts less than 0.01 acre should be reported in square feet. Impacts 0.01 acre or greater should be reported as acres and rounded to the nearest 0.01 acre. Tributary impacts must be reported in linear feet of impact and an area of impact by indicating first the linear feet of impact along the flowline of the stream followed by the area impact in parentheses). For example, a project that impacts 50 feet of a stream that is 6 feet wide would be reported as 50 ft (300 square feet).
[3]This is generally only applicable if you are applying for a de minimis exemption under MN Rules 8420.0420 Subp. 8, otherwise enter "N/A".
[4]Use *Wetland Plants and Plant Community Types of Minnesota and Wisconsin* 3rd Ed. as modified in MN Rules 8420.0405 Subp. 2.
[5]Refer to Major Watershed and Bank Service Area maps in MN Rules 8420.0522 Subp. 7.

If any of the above identified impacts have already occurred, identify which impacts they are and the circumstances associated with each:

PART FIVE: Applicant Signature

☐ Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature: _____ Date: 5-17-16

I hereby authorize **WENCK ASSOCIATES, INC** to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

[1] **The term "impact" as used in this joint application form is a generic term used for disclosure purposes to identify activities that may require approval from one or more regulatory agencies. For purposes of this form it is not meant to indicate whether or not those activities may require mitigation/replacement.**

Project Name and/or Number:

Attachment A
Request for Delineation Review, Wetland Type Determination, or Jurisdictional Determination

By submission of the enclosed wetland delineation report, I am requesting that the U.S. Army Corps of Engineers, St. Paul District (Corps) and/or the Wetland Conservation Act Local Government Unit (LGU) provide me with the following (check all that apply):

☒ **Wetland Type Confirmation**

☒ **Delineation Concurrence**. Concurrence with a delineation is a written notification from the Corps and a decision from the LGU concurring, not concurring, or commenting on the boundaries of the aquatic resources delineated on the property. Delineation concurrences are generally valid for five years unless site conditions change. Under this request alone, the Corps will not address the jurisdictional status of the aquatic resources on the property, only the boundaries of the resources within the review area (including wetlands, tributaries, lakes, etc.).

☐ **Preliminary Jurisdictional Determination**. A preliminary jurisdictional determination (PJD) is a non-binding written indication from the Corps that waters, including wetlands, identified on a parcel may be waters of the United States. For purposes of computation of impacts and compensatory mitigation requirements, a permit decision made on the basis of a PJD will treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. PJDs are advisory in nature and may not be appealed.

☐ **Approved Jurisdictional Determination**. An approved jurisdictional determination (AJD) is an official Corps determination that jurisdictional waters of the United States are either present or absent on the property. AJDs can generally be relied upon by the affected party for five years. An AJD may be appealed through the Corps administrative appeal process.

In order for the Corps and LGU to process your request, the wetland delineation must be prepared in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, any approved Regional Supplements to the 1987 Manual, and the *Guidelines for Submitting Wetland Delineations in Minnesota* (2013).
http://www.mvp.usace.army.mil/Missions/Regulatory/DelineationJDGuidance.aspx

Technical Evaluation Panel Concurrence: Project Name and/or Number:

TEP member: Representing:

Concur with road authority's determination of qualification for the local road wetland replacement program? ☐ Yes ☐ No

Signature: _____ Date:

TEP member: Representing:

Concur with road authority's determination of qualification for the local road wetland replacement program? ☐ Yes ☐ No

Signature: _____ Date:

TEP member: Representing:

Concur with road authority's determination of qualification for the local road wetland replacement program? ☐ Yes ☐ No

Signature: _____ Date:

TEP member: Representing:

Concur with road authority's determination of qualification for the local road wetland replacement program? ☐ Yes ☐ No

Signature: _____ Date:

Upon approval and signature by the TEP, application must be sent to: **Wetland Bank Administration**
Minnesota Board of Water & Soil Resources
520 Lafayette Road North
Saint Paul, MN 55155

WENCK File #5602-0002
May 2016

Wetland Delineation Report
Plymouth Commons

Prepared for:
TCO Design on Behalf of Gary and Rita Brummer

TCO Design:
9330 Thomas Avenue N
Brooklyn Park, MN 55444

WENCK ASSOCIATES
Responsive partner.
Exceptional outcomes.

Prepared by:

WENCK Associates, Inc.
1802 Wooddale Drive
Woodbury, MN 55125-2937
Phone: 651-294-4580
Fax: 651-228-1969

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FIGURES

APPENDICES

1.0 Introduction

Wenck Associates, Inc. (Wenck) staff conducted a wetland delineation within the subject property on April 19, 2016.

Wetlands are defined in the Federal Register (1982) as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

An area must have 3 elements present in order to be delineated as a wetland:

1) Greater than 50% dominance of hydrophytic plant species.
2) A hydric soil substrate.
3) Wetland hydrology during the growing season.

2.0 Site Description

The project area is a 16 acre multifamily housing development located at 3301 U.S. Highway 169, in Plymouth, Minnesota (Figures 1-5). The site has a significant of impervious cover from residential units, internal roads and paved parking lots. Delineated wetlands extend west and south of the site boundaries.

3.0 Methods

This wetland investigation was conducted by using the on-site methodology set forth in the 1987 U.S. Army Corps of Engineers (COE) Wetlands Delineation Manual (1987 Manual) and the 2010 U.S. Army Corps of Engineers *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Regional Supplement). Potential wetland areas were examined according to guidelines set forth in these documents and wetland boundaries were determined through analysis of the vegetation, soils, and hydrology.

Plant species at both wetland and upland transect points were identified and assigned a wetland indicator status according to the 2014 National Wetland Plant List, U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory (Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014. *The National Wetland Plant List*: 2014 Update of Wetland Ratings. Phytoneuron 2014-41: 1-42.). In the text of this report and on the enclosed data forms, the plant indicator status follows the plant's scientific or common name unless a status has not been assigned. According to the 1987 Manual and Regional Supplement, the hydrophytic plant criteria are met when more than 50% of the dominant species within the vegetative strata were assigned an obligate (OBL), facultative wet (FACW), or facultative (FAC) wetland status.

The presence of current wetland hydrology was determined through direct observation of the primary or secondary wetland hydrology indicators as defined in the 1987 Manual and Regional Supplement. The presence of a single primary indicator is sufficient to conclude that wetland hydrology is present. The direct observation of two or more secondary wetland hydrology indicators is required to conclude that wetland hydrology is present.

Hydric soils were determined through use of the *Field Indicators of Hydric Soils in the United States* (Untied States Department of Agriculture, Natural Resources Conservation Service. 2010. *Field Indicators of Hydric Soils in the United States*, Version 7.0 G.W. Hurt and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils). Soils were examined and classified by digging soil pits at sample point transects using a bucket auger. If the soils exhibited indicators of hydric soils as defined by USDA Soil Conservation Service (1994)-a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part-they were determined to be hydric.

Data sheets were completed for each transect sample point and are included as Appendix A. Photographs were taken at several locations, and are included in the body of Section 4. Photo locations are shown on Figure 5. Delineated wetland boundaries were flagged in the field and recorded using a hand-held GPS unit with sub-meter accuracy. The GPS data were then post-processed using the CORS network to further enhance accuracy. The post-processed data were then used to create the wetland boundary geodatabase files in ArcMap as presented in the report figures.

Wetlands are classified in the Results section by their Eggers and Reed, Circular 39, and Cowardin classification systems based on observed field conditions.

4.0 Results

4.1 OFF SITE ANALYSIS

The Minnesota Public Waters Inventory does not list any protected waters within the project area (Figure 2).

The 2013 Revised National Wetlands Inventory maps were used to identify areas classified as wetlands that would require further on-site investigation (Figure 3). Two NWI wetlands are mapped in the western edge of the project area, a Type 3 (Circular 39), Shallow Marsh (Eggers and Reed), PEMC (Cowardin) wetland, and a Type 6 (Circular 39), Shrub-Carr (Eggers and Reed), PSS1C (Cowardin) wetland.

The USDA NRCS Soil Survey was used to determine the location and prevalence of hydric soil (Figure 4). Approximately 1.7 acres of the project area are mapped as Houghton and Muskego soils, classified as 91-100% hydric. An additional 4 acres are mapped as Hamel, overwash-Hamel complex, classified as containing between 11-50% hydric soil.

LIDAR data maps (2' contours) were used to identify areas with low elevation or depressional topography likely to retain and/or pond water (Figure 5).

4.2 ON SITE INVESTIGATION

The boundaries of three wetlands were identified within the project area (Figure 5). See Appendix A for field data forms.

4.2.1 Wetland 1

Wetland 1 is an approximately 0.51 acre depressional marsh and drainageway that has been partially filled by historic human activity. It is classified for this report as:

- PEM1C (Cowardin)
- Type 3 (Circular 39)
- Shallow Marsh (Eggers and Reed)

Soils at the wetland transect point featured dark grey (10YR 3/1) mucky loam over dark grey (10YR 3/1) loam. Common redoximorphic concentrations began at eight inches. Organic soils would be expected within the wetland interior. Disturbed upland soils featured approximately three feet of fill over an original organic surface horizon.

The wetland vegetation community at the sample point was dominated by reed canary grass (*Phalaris arundinacea*, FACW) and duck weed (*Lemna minor*, OBL). Narrow-leaf cattail (*Typha angustifolia*, OBL) and sedges (*Carex sp.*) dominated the basin in general. Herbaceous vegetation at the upland point was minimal. The forest canopy throughout the wetland and upland locations was dominated by green ash (*Fraxinus pennsylvanica*, FACW) and box elder (*Acer negundo*, FAC).

Indicators of wetland hydrology observed included saturated soils and a high water table.

The wetland boundary was delineated based on changes in topography (fill areas) and probing the soil to evaluate hydrology. In some areas near the sidewalk, the wetland boundary was based on the edge of pavement.

Wetland 1: Looking SW from Photo Point 1 along boundary (see Figure 5 for photo point locations)

4.2.2 Wetland 2

Wetland 2 is an approximately 0.30 acre basin that extends west from the project area. The wetland is classified for this report as:

- PEM1B (Cowardin)
- Type 2 (Circular 39)
- Fresh (wet) Meadow (degraded subtype) (Eggers and Reed)

Soils at the wetland and upland transect points were similar, featuring black (10YR 2/1) to dark grey (10YR 3/1) clay loam over depleted (2.5Y 5/1) clay. Both the wetland and upland soils met hydric indicators. Free water was present at 15 inches in the wetland soil boring, whereas the upland boring was dry to at least 40" (depth of auger).

The wetland vegetation community was dominated by reed canary grass (*Phalaris arundinacea*, FACW) and lake sedge (*Carex lacustris*, OBL). No tree or shrubs were present. Upland vegetation was dominated by reed canary grass and common burdock (*Arctium minus*, FACU).

Observed wetland hydrology included saturation, dry-season water table, and geomorphic position.

The wetland boundary was delineated based on elevation, a subtle break in sub-dominant vegetation (sedge to burdock), and probing the soil to evaluate hydrology.

Wetland 2: Looking W/SW from Photo Point 2 (see Figure 5 for photo point locations)

4.2.3 Wetland 3

Wetland 2 is an approximately 0.16 acre stormwater basin. The wetland is classified for this report as:

- PEM1C (Cowardin)
- Type 3 (Circular 39)
- Shallow Marsh (Eggers and Reed)

Soils at the wetland and upland transect points were have been disturbed by human activity. Soils at the wetland transect point featured 19 inches of clay loam and clay fill over muck. Compacted clay near the bottom of the fill (15") has created a perched water table; the buried organic soils were very dry while the fill above were saturated and supported standing water. The fill has experienced sufficient prolonged saturation that a hydric soil profile has developed above the buried original soils. Upland soils featured 20+ inches of fill.

The wetland vegetation community was dominated by narrow leaf cattail. Upland vegetation consisted of closely mowed lawn, individual species were not identifiable.

Observed wetland hydrology included saturation and standing water.

The wetland boundary was delineated based on elevation, edge of pavement, and probing the soil to evaluate hydrology.

Wetland 3: Looking W along boundary from Photo Point 1 (see Figure 5 for photo point locations)

5.0 Conclusion

The on-site boundaries of three wetlands were identified and delineated per the scope of this report. Activities which impact or potentially impact wetlands may be regulated by the USACE (under Section 404 of the Clean Water Act), Minnesota DNR and by the Local Government Unit administering the Wetland Conservation Act. No grading or filling in wetland basins or other jurisdictional waters should commence until all necessary permits have been obtained or a finding of no jurisdiction has been obtained from applicable regulatory agencies. This wetland delineation meets the standards and criteria described in the 1987 Manual and Regional Supplement and the results represent the conditions present at the time of the field investigation.

Sincerely,

Wenck Associates, Inc.

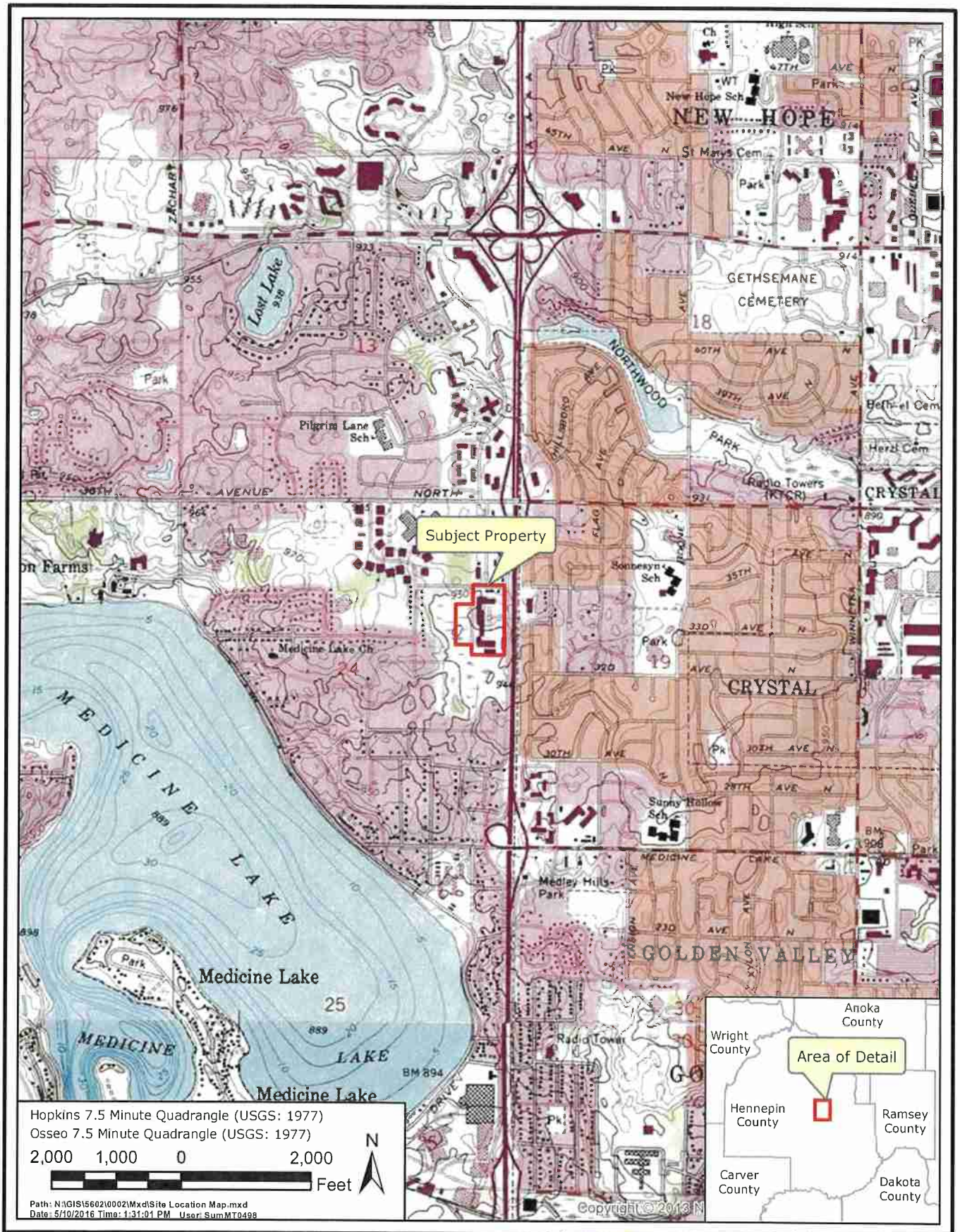
Matt Summers

May 18 2016

Date

Figures

1. Site Location Map
2. Minnesota Public Waters Inventory Map
3. National Wetland Inventory Map
4. Soil Survey Map
5. Delineated Wetland Map



PLYMOUTH TCO DESIGN

Site Location Map

WENCK ASSOCIATES

Responsive partner. Exceptional outcomes.

MAY 2016

Figure 1

PLYMOUTH TCO DESIGN

Public Waters Inventory

WENCK ASSOCIATES

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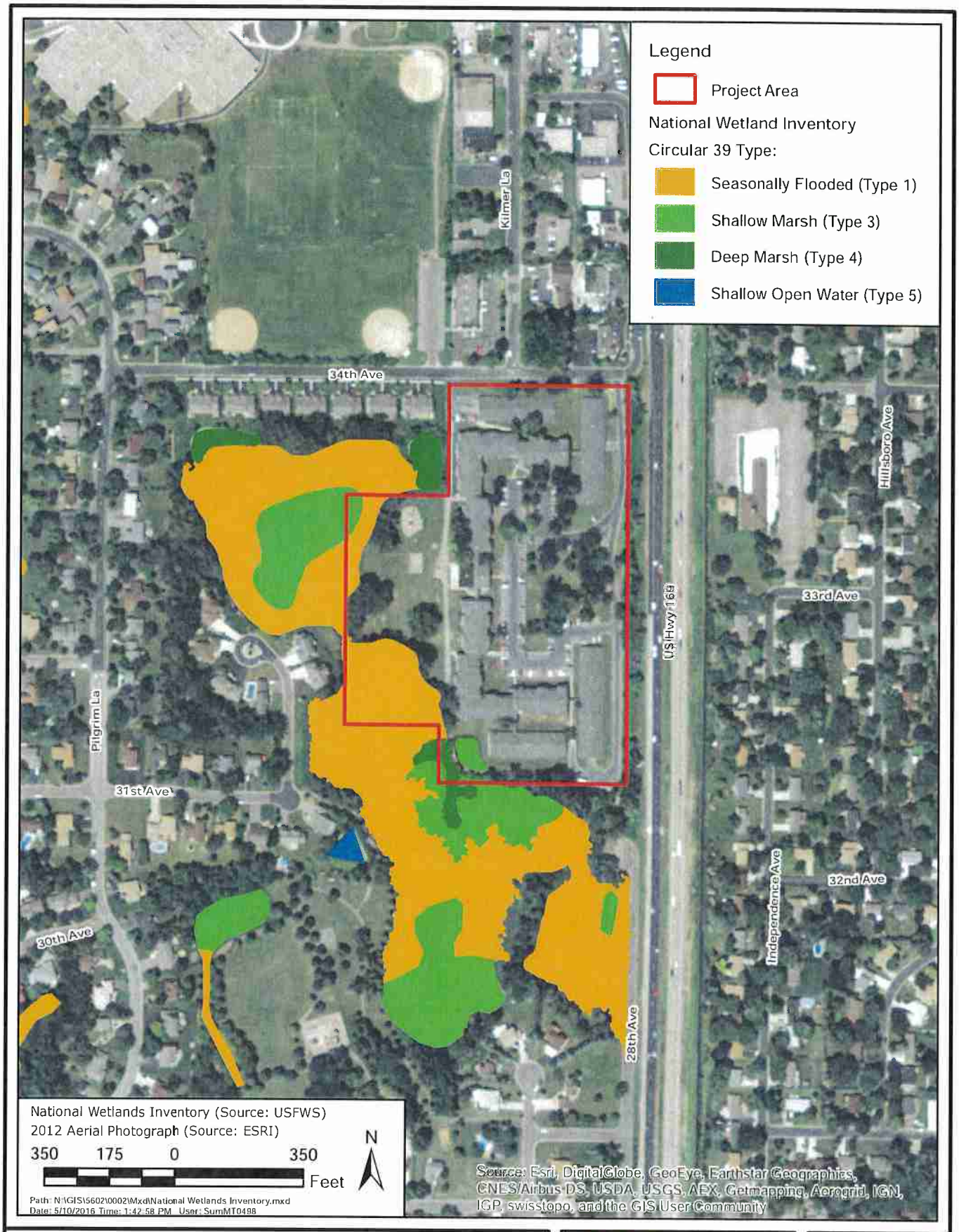
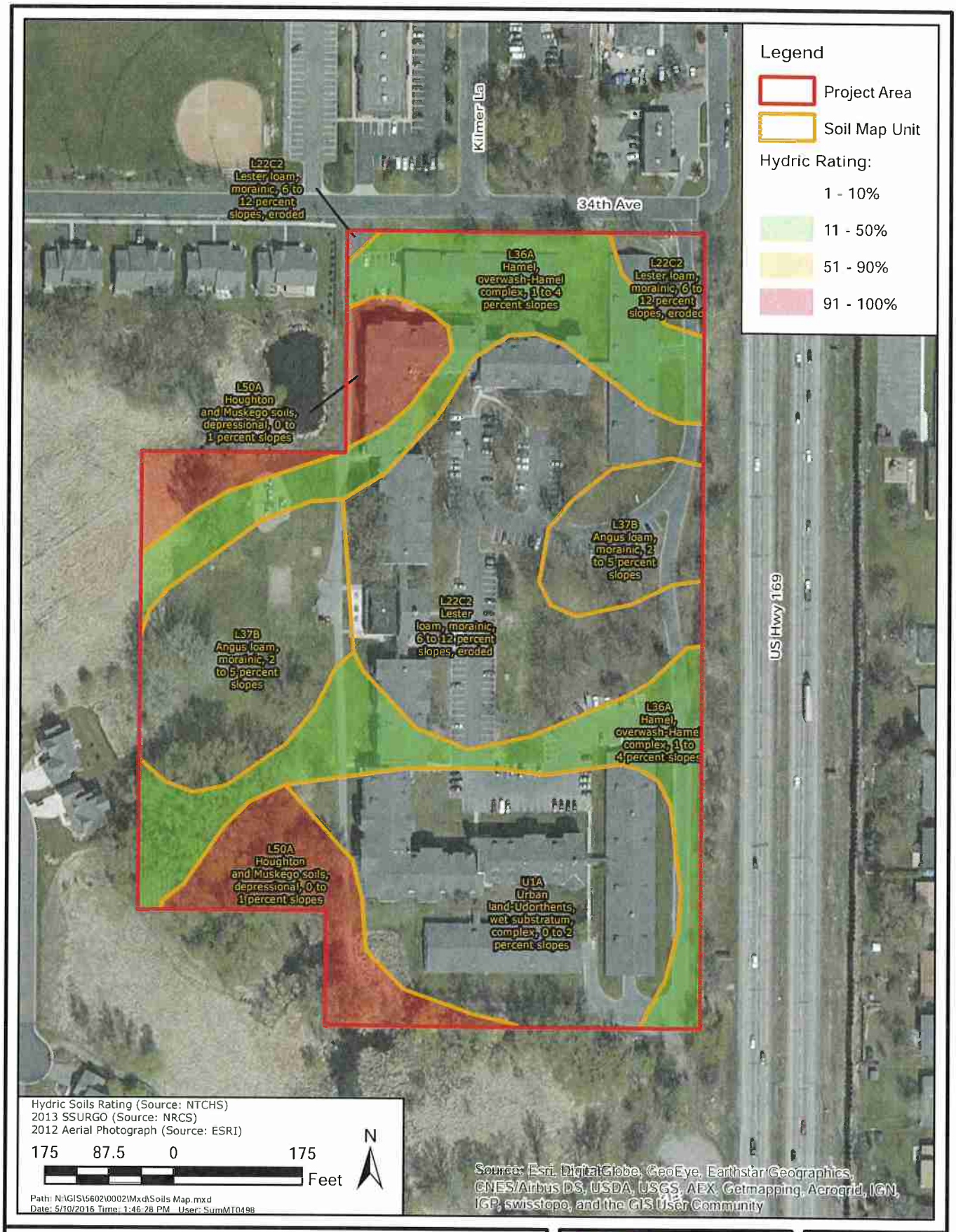
MAY 2016

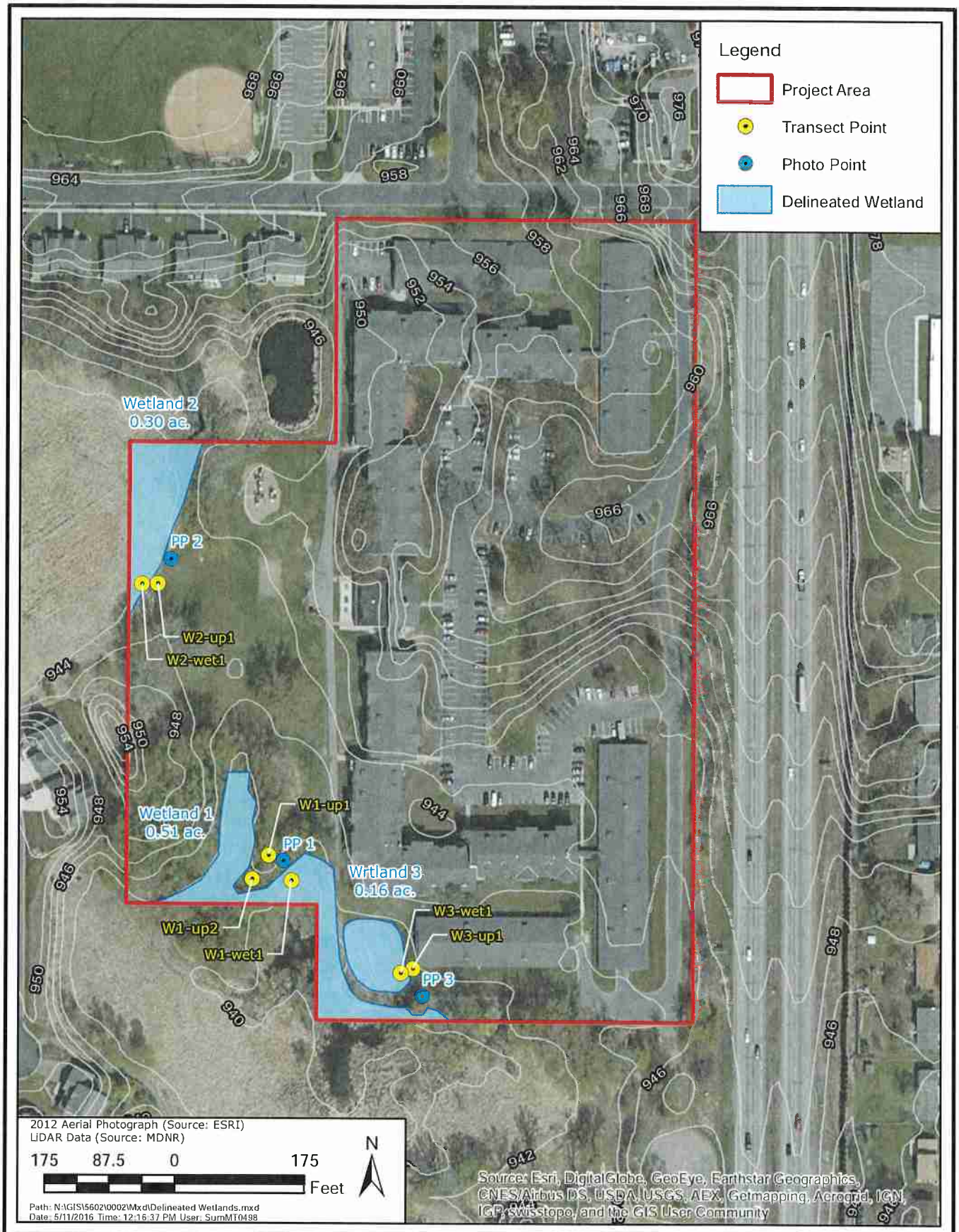
Figure 2



PLYMOUTH TCO DESIGN	WENCK ASSOCIATES Responsive partner. Exceptional outcomes.	MAY 2016
National Wetland Inventory		Figure 3



PLYMOUTH TCO DESIGN	WENCK ASSOCIATES Responsive partner. Exceptional outcomes.	MAY 2016
Soils Map		Figure 4



PLYMOUTH TCO DESIGN	WENCK ASSOCIATES Responsive partner. Exceptional outcomes.	MAY 2016
Delineated Wetlands Map		Figure 5

Appendix A

Field Data Forms

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Commons | City/County: Plymouth | Sampling Date: 4/19/2016
Applicant/Owner: TCO Design | State: MN | Sampling Point: W1-wet1
Investigator(s): Matthew Summers, Wenck Asspociates, inc | Section, Township, Range: S24 T118 R22
Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): concave
Slope (%): <2 | Lat: -93.40328 | Long: 45.01595 | Datum: NAD83
Soil Map Unit Name: L50A Houghton and Muskego, depressional | NWI Classification: PFO1A, Type 1
Subregion (MLRA or LRR): M | Are climatic/hydrologic conditions of the site typical for this time of the year? Y
Are vegetation [ ], soil [ ], or hydrology [ ] significantly disturbed? | Are "normal circumstances" present? Y
Are vegetation [ ], soil [ ], or hydrology [ ] naturally problematic? | (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y	Corps-regulated?:	
Indicators of wetland hydrology present?	Y	Wetland Type:	Type III, Shallow Marsh (fringe)

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: 30 ft)			
1 *Acer negundo*	70	Y	FAC
2 *Fraxinus pennsylvanica*	20	Y	FACW
3			
4			
5			
	90	= Total Cover	
Sapling/Shrub stratum (Plot size: 15 ft)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 5 ft)			
1 *Phalaris arundinacea*	50	Y	FACW
2 *Lemna minor*	20	Y	OBL
3 *Fraxinus pennsylvanica*	20	Y	FACW
4			
5			
6			
7			
8			
9			
10			
	90	= Total Cover	
Woody vine stratum (Plot size: 30 ft)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across all Strata: 5 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	20	x 1 =	20
FACW species	90	x 2 =	180
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	180 (A)		410 (B)

Prevalence Index = B/A = 2.28

Hydrophytic Vegetation Indicators:

[ ] Rapid Test for Hydrophytic Vegetation
[X] Dominance test is >50%
[X] Prevalence index is ≤3.0*
[ ] Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
[ ] Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: W1-wet1

Soil Series: _____ Series Drainage Class: _____

Taxonomy (Subgroup):

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Horizon	Matrix Color (moist)	Matrix %	Mottles Color (moist)	Mottles %	Mottles Type*	Mottles Loc**	Texture	Remarks
0-8		10YR 3/1						mucky loam	
8-21		10YR 3/1	85	7.5YR 5/6	10	C	PL/M	loam	
				10YR 5/2	5	D	PL/M		

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- [ ] Histisol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] 2 cm Muck (A10)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] 5 cm Mucky Peat or Peat (S3)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [x] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [x] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- [ ] Coast Prairie Redox (A16) **(LRR K, L, R)**
- [ ] Dark Surface (S7) **(LRR K, L)**
- [ ] Iron-Manganese Masses (F12) **(LRR K,L,R)**
- [ ] Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Check here if indicators are not present: [ ]

Restrictive Layer (if observed):

Type: _____ Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (not tilled) (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6
- [ ] Thin Muck Surface (C7)
- [ ] Gauge or Well Data (D9)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Drainage Patterns (B10)
- [ ] Dry Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted of Stressed Plants (D1)
- [x] Geomorphic Position (D2)
- [x] FAC-Neutral Test (D5)

Check here if indicators are not present: [ ]

Field Observations:

Surface water present?	Yes	[ ]	No	[x]	Depth (inches):	
Water table present?	Yes	[x]	No	[ ]	Depth (inches):	2
Saturation present? (includes capillary fringe)	Yes	[x]	No	[ ]	Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water within 6 feet of sample point

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Commons | City/County: Plymouth | Sampling Date: 4/19/2016
Applicant/Owner: TCO Design | State: MN | Sampling Point: W1-up1
Investigator(s): Matthew Summers, Wenck Asspociates, inc | Section, Township, Range: S24 T118 R22
Landform (hillslope, terrace, etc.): rise | Local relief (concave, convex, none): convex
Slope (%): 5 | Lat: -93.40341 | Long: 45.01604 | Datum: NAD83
Soil Map Unit Name: L50A Houghton and Muskego, depressional | NWI Classification: PFO1A, Type 1
Subregion (MLRA or LRR): M | Are climatic/hydrologic conditions of the site typical for this time of the year? Y
Are vegetation [ ], soil [✓], or hydrology [ ] significantly disturbed? | Are "normal circumstances" present? Y
Are vegetation [ ], soil [ ], or hydrology [ ] naturally problematic? | (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N	Corps-regulated?:	
Indicators of wetland hydrology present?	N	Wetland Type:	

Remarks: (Explain alternative procedures here or in a separate report.)
Fill material present

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Acer negundo*	40	Y	FAC
2 *Fraxinus pennsylvanica*	10	Y	FACW
3			
4			
5			
	50	= Total Cover	

Sapling/Shrub stratum (Plot size: 15 ft)			
1 *Acer negundo*	20	Y	FAC
2			
3			
4			
5			
	20	= Total Cover	

Herb stratum (Plot size: 5 ft)			
1 *Acer negundo*	20	Y	FAC
2			
3			
4			
5			
6			
7			
8			
9			
10			
	20	= Total Cover	

Woody vine stratum (Plot size: 30 ft)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across all Strata: 4 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	80	x 3 =	240
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	90 (A)		260 (B)

Prevalence Index = B/A = 2.89

Hydrophytic Vegetation Indicators:

[ ] Rapid Test for Hydrophytic Vegetation
[X] Dominance test is >50%
[X] Prevalence index is ≤3.0*
[ ] Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
[ ] Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)
Mostly bare ground

SOIL

Sampling Point: W1-up1

Soil Series: _____ Series Drainage Class: _____

Taxonomy (Subgroup): _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Horizon	Matrix Color (moist)	Matrix %	Mottles Color (moist)	Mottles %	Mottles Type*	Mottles Loc**	Texture	Remarks
0-26		10YR 2/2						loamy fill	inclusions of clayey material and woody vegetation, mixed colors
26-34		10YR mixed						clayey fill	dense, compacted
34-40		7.5YR 4/4						mucky peat	origjnal surface horizon

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ☐ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K,L,R)**
- ☐ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Check here if indicators are not present: ☐

Restrictive Layer (if observed):

Type: _____ Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (not tilled) (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted of Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Check here if indicators are not present: ☐

Field Observations:

Surface water present?	Yes	☐	No	☑	Depth (inches):	
Water table present?	Yes	☑	No	☐	Depth (inches):	36
Saturation present? (includes capillary fringe)	Yes	☑	No	☐	Depth (inches):	36

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Commons | City/County: Plymouth | Sampling Date: 4/19/2016
Applicant/Owner: TCO Design | State: MN | Sampling Point: W1-up2
Investigator(s): Matthew Summers, Wenck Asspociates, inc | Section, Township, Range: S24 T118 R22
Landform (hillslope, terrace, etc.): rise | Local relief (concave, convex, none): convex
Slope (%): 5 | Lat: -93.40348 | Long: 45.01596 | Datum: NAD83
Soil Map Unit Name: L50A Houghton and Muskego, depressional | NWI Classification: PFO1A, Type 1
Subregion (MLRA or LRR): M | Are climatic/hydrologic conditions of the site typical for this time of the year? Y
Are vegetation [ ], soil [ ], or hydrology [ ] significantly disturbed? | Are "normal circumstances" present? Y
Are vegetation [ ], soil [ ], or hydrology [ ] naturally problematic? | (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N	Corps-regulated?:	
Indicators of wetland hydrology present?	N	Wetland Type:	

Remarks: (Explain alternative procedures here or in a separate report.)
Fill material present

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: 30 ft)			
1 *Acer negundo*	70	Y	FAC
2 *Fraxinus pennsylvanica*	20	Y	FACW
3			
4			
5			
	90	= Total Cover	
Sapling/Shrub stratum (Plot size: 15 ft)			
1 *Acer negundo*	20	Y	FAC
2			
3			
4			
5			
	20	= Total Cover	
Herb stratum (Plot size: 5 ft)			
1 *Fraxinus pennsylvanica*	20	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	20	= Total Cover	
Woody vine stratum (Plot size: 30 ft)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across all Strata: 4 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet
Total % Cover of:

OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	90	x 3 =	270
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	130 (A)		350 (B)

Prevalence Index = B/A = 2.69

Hydrophytic Vegetation Indicators:
[ ] Rapid Test for Hydrophytic Vegetation
[X] Dominance test is >50%
[X] Prevalence index is ≤3.0*
[ ] Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
[ ] Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)
Mostly bare ground

SOIL

Sampling Point: W1-up2

Soil Series: _____ Series Drainage Class: _____

Taxonomy (Subgroup):

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Horizon	Matrix Color (moist)		%	Mottles Color (moist)		%	Type*	Loc**	Texture	Remarks
0-14		10YR	2/2							loamy fill	inclusions of clayey material and woody vegetation, mixed colors
14-28		10YR	3/1							loamy fill	same as above
28-32		7.5YR	4/4	98	7.5YR	5/6	2	C	M	clay	dense
32-40		10YR	2/1							muck	original surface horizon

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ☐ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K,L,R)**
- ☐ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Check here if indicators are not present: ☐

Restrictive Layer (if observed):
Type: _____ Depth (inches): _____

Hydric soil present? N

Remarks:
32" of fill

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (not tilled) (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted of Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Check here if indicators are not present: ☐

Field Observations:

Surface water present?	Yes	☐	No	☑	Depth (inches):	
Water table present?	Yes	☑	No	☐	Depth (inches):	32
Saturation present? (includes capillary fringe)	Yes	☑	No	☐	Depth (inches):	32

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Commons | City/County: Plymouth | Sampling Date: 4/19/2016
Applicant/Owner: TCO Design | State: MN | Sampling Point: W2-wet1
Investigator(s): Matthew Summers, Wenck Asspociates, inc | Section, Township, Range: S24 T118 R22
Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): none
Slope (%): <2 | Lat: -93.40408 | Long: 45.01704 | Datum: NAD83
Soil Map Unit Name: L36A Hamel overwash, Hamel complex | NWI Classification: PEM1Ad, Type 1
Subregion (MLRA or LRR): M | Are climatic/hydrologic conditions of the site typical for this time of the year? Y
Are vegetation [ ], soil [ ], or hydrology [ ] significantly disturbed? | Are "normal circumstances" present? Y
Are vegetation [ ], soil [ ], or hydrology [ ] naturally problematic? | (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? Y
Indicators of wetland hydrology present? Y

Is the sampled area within a wetland? Y
Corps-regulated?:
Wetland Type: Fresh wet meadow, Type 2

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size: 15 ft)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size: 5 ft)			
1 *Phalaris arundinacea*	70	Y	FACW
2 *Carex lacustris*	25	Y	OBL
3			
4			
5			
6			
7			
8			
9			
10			
	95 = Total Cover		
Woody vine stratum (Plot size: 30 ft)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across all Strata: 2 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	25	x 1 =	25
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	95 (A)		165 (B)

Prevalence Index = B/A = 1.74

Hydrophytic Vegetation Indicators:

[ ] Rapid Test for Hydrophytic Vegetation
[X] Dominance test is >50%
[X] Prevalence index is ≤3.0*
[ ] Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
[ ] Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: W2-wet1

Soil Series: _____ Series Drainage Class: _____

Taxonomy (Subgroup):

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Horizon	Matrix Color (moist)	Matrix %	Mottles Color (moist)	Mottles %	Mottles Type*	Mottles Loc**	Texture	Remarks
0-19		10YR 2/1						clay loam	
19-40		2.5Y 5/1						clay loam	dry

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☑ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ☐ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K,L,R)**
- ☐ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Check here if indicators are not present: ☐

Restrictive Layer (if observed):

Type: _____ Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (not tilled) (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☑ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted of Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Check here if indicators are not present: ☐

Field Observations:

Surface water present?	Yes	☐	No	☑	Depth (inches):	
Water table present?	Yes	☑	No	☐	Depth (inches):	15
Saturation present? (includes capillary fringe)	Yes	☑	No	☐	Depth (inches):	11

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Commons | City/County: Plymouth | Sampling Date: 4/19/2016
Applicant/Owner: TCO Design | State: MN | Sampling Point: W2-up1
Investigator(s): Matthew Summers, Wenck Asspociates, inc | Section, Township, Range: S24 T118 R22
Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): convex
Slope (%): 2 to 5 | Lat: -93.40401 | Long: 45.01705 | Datum: NAD83
Soil Map Unit Name: L36A Hamel overwash, Hamel complex | NWI Classification: PEM1Ad, Type 1
Subregion (MLRA or LRR): M | Are climatic/hydrologic conditions of the site typical for this time of the year? Y
Are vegetation [ ], soil [ ], or hydrology [ ] significantly disturbed? | Are "normal circumstances" present? Y
Are vegetation [ ], soil [ ], or hydrology [ ] naturally problematic? | (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	Y	Corps-regulated?:	
Indicators of wetland hydrology present?	N	Wetland Type:	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size: 15 ft)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size: 5 ft)			
1 *Phalaris arundinacea*	80	Y	FACW
2 *Arctium minus*	20	Y	FACU
3			
4			
5			
6			
7			
8			
9			
10			
	100 = Total Cover		
Woody vine stratum (Plot size: 30 ft)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across all Strata: 2 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet
Total % Cover of:

OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column totals	100 (A)		240 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:
[ ] Rapid Test for Hydrophytic Vegetation
[ ] Dominance test is >50%
[X] Prevalence index is ≤3.0*
[ ] Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
[ ] Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: W2-up1

Soil Series: _____ Series Drainage Class: _____

Taxonomy (Subgroup):

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Horizon	Matrix Color (moist)		%	Mottles Color (moist)		%	Type*	Loc**	Texture	Remarks
0-19		10YR	2/1							clay loam	
19-40		2.5Y	5/1							clay loam	dry

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☑ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ☐ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K,L,R)**
- ☐ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Check here if indicators are not present: ☐

Restrictive Layer (if observed):

Type: _____ Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (not tilled) (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted of Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Check here if indicators are not present: ☐

Field Observations:

Surface water present?	Yes	☐	No	☑	Depth (inches): _____
Water table present?	Yes	☐	No	☑	Depth (inches): _____
Saturation present? (includes capillary fringe)	Yes	☐	No	☑	Depth (inches): _____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Boring hole dry to 40", wetland point 15 feet west had water at 15".

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Commons | City/County: Plymouth | Sampling Date: 4/19/2016
Applicant/Owner: TCO Design | State: MN | Sampling Point: W3-wet1
Investigator(s): Matthew Summers, Wenck Asspociates, inc | Section, Township, Range: S24 T118 R22
Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): concave
Slope (%): <2 | Lat: -93.40271 | Long: 45.01562 | Datum: NAD83
Soil Map Unit Name: U1A Urban land-Udorthents, wet substratum | NWI Classification: PEM1C, Type III
Subregion (MLRA or LRR): M | Are climatic/hydrologic conditions of the site typical for this time of the year? Y
Are vegetation [ ], soil [ ], or hydrology [✓] significantly disturbed? | Are "normal circumstances" present? Y
Are vegetation [ ], soil [ ], or hydrology [ ] naturally problematic? | (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y	Corps-regulated?:	
Indicators of wetland hydrology present?	Y	Wetland Type:	Shallow march, Type III

Remarks: (Explain alternative procedures here or in a separate report.)
Disturbed soils from construction and grading. Stormwater basin.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size: 15 ft)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size: 5 ft)			
1 *Typha angustifolia*	100	Y	OBL
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100 = Total Cover		
Woody vine stratum (Plot size: 30 ft)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across all Strata: 1 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet
Total % Cover of:

OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		100 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:
[ ] Rapid Test for Hydrophytic Vegetation
[X] Dominance test is >50%
[X] Prevalence index is ≤3.0*
[ ] Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
[ ] Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: W3-wet1

Soil Series: _____ Series Drainage Class: _____

Taxonomy (Subgroup):

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Horizon	Matrix Color (moist)		%	Mottles Color (moist)		%	Type*	Loc**	Texture	Remarks
0-10		10YR	2/1							clay loam	saturated
10-15		10YR	5/1	95	7.5YR	5/6	5	C	M	clay loam	saturated
15-19		10YR	5/1	95	7.5YR	5/6	5	C	M	clay	not saturated
19-26		10YR	2/2							muck	original surface horizon, dry

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- [ ] Histisol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] 2 cm Muck (A10)
- [ ] Depleted Below Dark Surface (A11)
- [x] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] 5 cm Mucky Peat or Peat (S3)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- [ ] Coast Prairie Redox (A16) **(LRR K, L, R)**
- [ ] Dark Surface (S7) **(LRR K, L)**
- [ ] Iron-Manganese Masses (F12) **(LRR K,L,R)**
- [ ] Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Check here if indicators are not present: [ ]

Restrictive Layer (if observed):
Type: claypan Depth (inches): 15

Hydric soil present? Y

Remarks:
er perched over clay fill. Basin has experienced enough prolonged saturation to create redox features and hydric soil profile within the fill mate

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (not tilled) (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6
- [ ] Thin Muck Surface (C7)
- [ ] Gauge or Well Data (D9)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Drainage Patterns (B10)
- [ ] Dry Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted of Stressed Plants (D1)
- [x] Geomorphic Position (D2)
- [x] FAC-Neutral Test (D5)

Check here if indicators are not present: [ ]

Field Observations:

					Depth (inches):
Surface water present?	Yes	[x]	No	[ ]	2
Water table present?	Yes	[x]	No	[ ]	0
Saturation present? (includes capillary fringe)	Yes	[x]	No	[ ]	0-15"

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Perched saturation

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Commons | City/County: Plymouth | Sampling Date: 4/19/2016
Applicant/Owner: TCO Design | State: MN | Sampling Point: W3-up1
Investigator(s): Matthew Summers, Wenck Asspociates, inc | Section, Township, Range: S24 T118 R22
Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): none
Slope (%): <2 | Lat: -93.40264 | Long: 45.01562 | Datum: NAD83
Soil Map Unit Name: U1A Urban land-Udorthents, wet substratum | NWI Classification: none
Subregion (MLRA or LRR): M | Are climatic/hydrologic conditions of the site typical for this time of the year? Y
Are vegetation [✓], soil [✓], or hydrology [ ] significantly disturbed? | Are "normal circumstances" present? Y
Are vegetation [ ], soil [ ], or hydrology [ ] naturally problematic? | (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N	Corps-regulated?:	
Indicators of wetland hydrology present?	N	Wetland Type:	

Remarks: (Explain alternative procedures here or in a separate report.)
Disturbed soils from construction and grading. Closely mowed lawn.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0 = Total Cover		

Sapling/Shrub stratum (Plot size: 15 ft)			
1			
2			
3			
4			
5			
	0 = Total Cover		

Herb stratum (Plot size: 5 ft)			
1 *Closely mowed lawn*	100	Y	n/a
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100 = Total Cover		

Woody vine stratum (Plot size: 30 ft)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet
Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across all Strata: 1 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet
Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	0	(A)	0	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
___ Rapid Test for Hydrophytic Vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: W3-up1

Soil Series: _____ Series Drainage Class: _____

Taxonomy (Subgroup):

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Horizon	Matrix Color (moist)	Matrix %	Mottles Color (moist)	Mottles %	Mottles Type*	Mottles Loc**	Texture	Remarks
0-20		10YR mixed						clayey fill	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ☐ Histisol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ☐ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K,L,R)**
- ☐ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Check here if indicators are not present: ☐

Restrictive Layer (if observed):

Type: claypan Depth (inches): 15

Hydric soil present? N

Remarks:

Disturbed soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (not tilled) (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted of Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Check here if indicators are not present: ☐

Field Observations:

Surface water present?	Yes	☐	No	☑	Depth (inches):
Water table present?	Yes	☐	No	☑	Depth (inches):
Saturation present? (includes capillary fringe)	Yes	☐	No	☑	Depth (inches):

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B

Soil Survey Data

Map Unit Description (MN)

Hennepin County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

L22C2--Lester loam, morainic, 6 to 12 percent slopes, eroded

Lester, eroded

Extent: 60 to 80 percent of the unit
Landform(s): hills on moraines
Slope gradient: 6 to 12 percent
Parent material: till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .32
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 7 in	Loam	moderate	1.42 to 1.56 in	5.6 to 7.3
Bt -- 7 to 38 in	Clay loam	moderate	4.67 to 5.91 in	5.1 to 7.3
Bk -- 38 to 60 in	Loam	moderate	3.25 to 4.11 in	7.4 to 8.4
C -- 60 to 80 in	Loam	moderate	3.01 to 3.81 in	7.4 to 8.4

Angus

Extent: 10 to 20 percent of the unit
Landform(s): hills on moraines
Slope gradient: 2 to 5 percent
Parent material: till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .24
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	Loam	moderate	1.57 to 1.73 in	5.6 to 7.3
Bt -- 8 to 35 in	Clay loam	moderate	4.07 to 5.16 in	5.1 to 7.3
BC -- 35 to 40 in	Clay loam	moderate	0.72 to 0.97 in	6.1 to 7.8
C -- 40 to 80 in	Loam	moderate	5.96 to 7.56 in	7.4 to 8.4

L22C2--Lester loam, morainic, 6 to 12 percent slopes, eroded

Terril

Extent: 5 to 20 percent of the unit
Landform(s): hills on moraines
Slope gradient: 0 to 4 percent
Parent material: colluvium over till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1 -- 0 to 27 in	Loam	moderate	5.43 to 5.98 in	6.1 to 7.3
A2,BA -- 27 to 40 in	Loam	moderate	2.21 to 2.47 in	6.1 to 7.3
Bw -- 40 to 63 in	Loam	moderate	3.65 to 4.11 in	6.1 to 7.3
C -- 63 to 80 in	Loam	moderate	2.54 to 3.22 in	7.4 to 8.4

Hamel

Extent: 0 to 5 percent of the unit
Landform(s): drainageways on moraines
Slope gradient: 1 to 3 percent
Parent material: colluvium over till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A,AB -- 0 to 24 in	Loam	moderate	4.80 to 5.76 in	5.6 to 7.3
Btg -- 24 to 46 in	Clay loam	moderately slow	3.53 to 4.19 in	5.6 to 7.3
Cg -- 46 to 80 in	Loam	moderate	5.08 to 6.43 in	7.4 to 8.4

L36A--Hamel, overwash-Hamel complex, 1 to 4 percent slopes

Hamel, overwash

Extent: 40 to 60 percent of the unit
Landform(s): drainageways on moraines
Slope gradient: 1 to 4 percent
Parent material: colluvium over till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2w
Hydric soil: no
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 13 in	Loam	moderate	2.60 to 3.12 in	5.6 to 7.3
A -- 13 to 29 in	Clay loam	moderate	3.23 to 3.87 in	5.6 to 7.3
Btg -- 29 to 50 in	Clay loam	moderately slow	3.34 to 3.96 in	5.6 to 7.3
Cg -- 50 to 80 in	Loam	moderate	4.49 to 5.69 in	7.4 to 8.4

Hamel

Extent: 30 to 55 percent of the unit
Landform(s): drainageways on moraines
Slope gradient: 1 to 3 percent
Parent material: colluvium over till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A,AB -- 0 to 24 in	Loam	moderate	4.80 to 5.76 in	5.6 to 7.3
Btg -- 24 to 46 in	Clay loam	moderately slow	3.53 to 4.19 in	5.6 to 7.3
Cg -- 46 to 80 in	Loam	moderate	5.08 to 6.43 in	7.4 to 8.4

L36A--Hamel, overwash-Hamel complex, 1 to 4 percent slopes

Terril

Extent: 0 to 10 percent of the unit
Landform(s): hills on moraines
Slope gradient: 2 to 5 percent
Parent material: colluvium over till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1 -- 0 to 27 in	Loam	moderate	5.43 to 5.98 in	6.1 to 7.3
A2,BA -- 27 to 40 in	Loam	moderate	2.21 to 2.47 in	6.1 to 7.3
Bw -- 40 to 63 in	Loam	moderate	3.65 to 4.11 in	6.1 to 7.3
C -- 63 to 80 in	Loam	moderate	2.54 to 3.22 in	7.4 to 8.4

Glencoe

Extent: 0 to 5 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: colluvium over till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .24
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 13 in	Loam	moderate	2.34 to 2.86 in	6.1 to 7.8
A2,Bg1 -- 13 to 31 in	Clay loam	moderate	3.26 to 3.98 in	6.1 to 7.8
Bg2 -- 31 to 45 in	Loam	moderate	2.07 to 2.62 in	6.6 to 7.8
Cg -- 45 to 80 in	Loam	moderate	5.26 to 6.66 in	7.4 to 8.4

L37B--Angus loam, morainic, 2 to 5 percent slopes

Angus, morainic

Extent: 50 to 90 percent of the unit
Landform(s): hills on moraines
Slope gradient: 2 to 5 percent
Parent material: till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .24
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	Loam	moderate	1.57 to 1.73 in	5.6 to 7.3
Bt -- 8 to 35 in	Clay loam	moderate	4.07 to 5.16 in	5.1 to 7.3
BC -- 35 to 40 in	Clay loam	moderate	0.72 to 0.97 in	6.1 to 7.8
C -- 40 to 80 in	Loam	moderate	5.96 to 7.56 in	7.4 to 8.4

Angus, eroded

Extent: 5 to 40 percent of the unit
Landform(s): hills on moraines
Slope gradient: 2 to 5 percent
Parent material: till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .24
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	Loam	moderate	1.57 to 1.73 in	5.6 to 7.3
Bt -- 8 to 35 in	Clay loam	moderate	4.07 to 5.16 in	5.1 to 7.3
Bk -- 35 to 58 in	Loam	moderate	3.43 to 4.34 in	7.4 to 8.4
C -- 58 to 80 in	Loam	moderate	3.31 to 4.19 in	7.4 to 8.4

L37B--Angus loam, morainic, 2 to 5 percent slopes

Le Sueur

Extent: 5 to 15 percent of the unit
Landform(s): moraines
Slope gradient: 1 to 3 percent
Parent material: till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 1
Hydric soil: no
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2,AB -- 0 to 17 in	Loam	moderate	3.39 to 4.06 in	5.6 to 7.3
Bt -- 17 to 36 in	Clay loam	moderate	2.83 to 3.59 in	5.1 to 7.3
Bk -- 36 to 46 in	Loam	moderate	1.54 to 1.94 in	7.4 to 8.4
C -- 46 to 80 in	Loam	moderate	5.08 to 6.43 in	7.4 to 8.4

Cordova

Extent: 0 to 10 percent of the unit
Landform(s): drainageways on moraines
Slope gradient: 0 to 2 percent
Parent material: till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,AB -- 0 to 13 in	Loam	moderate	2.34 to 2.86 in	6.1 to 7.3
Btg -- 13 to 33 in	Clay loam	moderately slow	3.01 to 3.81 in	5.1 to 6.5
Cg -- 33 to 80 in	Loam	moderate	7.03 to 8.90 in	7.4 to 8.4

L50A--Houghton and Muskego soils, depressional, 0 to 1 percent slopes

Houghton, surface drained

Extent: 20 to 60 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: organic material
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 6w
Hydric soil: yes
Hydrologic group: A/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa -- 0 to 80 in	Muck	moderately rapid	27.97 to 35.96 in	

Muskego, surface drained

Extent: 20 to 60 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: organic material over coprogenous earth
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 1
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 6w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa1 -- 0 to 9 in	Muck	moderately rapid	3.17 to 4.07 in	
Oa2 -- 9 to 36 in	Muck	moderately rapid	9.37 to 12.05 in	
Lco -- 36 to 60 in	Coprogenous earth	slow	4.32 to 5.76 in	

L50A--Houghton and Muskego soils, depressional, 0 to 1 percent slopes

Klossner, drained

Extent: 0 to 20 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: organic material over till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 1
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
Op,Oa --	0 to 26 in	Muck	moderately rapid	9.09 to 12.47 in	
2A1 --	26 to 36 in	Mucky silty clay loam	moderate	2.17 to 2.56 in	
2A2 --	36 to 48 in	Silty clay loam	moderate	2.20 to 2.69 in	
2Cg --	48 to 80 in	Loam	moderate	4.78 to 6.06 in	

Mineral soil, drained

Extent: 0 to 20 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: loamy colluvium over loamy till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .24
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap --	0 to 13 in	Loam	moderate	2.34 to 2.86 in	6.1 to 7.8
A2,Bg1 --	13 to 31 in	Clay loam	moderate	3.26 to 3.98 in	6.1 to 7.8
Bg2 --	31 to 45 in	Clay loam	moderate	2.07 to 2.62 in	6.6 to 7.8
Cg --	45 to 80 in	Loam	moderate	5.26 to 6.66 in	7.4 to 8.4

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