Water Resource Delineation Report

16.7 Acres, Parma Park Boulevard
Parma, Cuyahoga County, Ohio

EXHIBIT N

August 2019

Prepared for:
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DAVEY Resource Group

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Executive Summary

The 16.7-acre site is located east of Parma Park Boulevard in Parma, Cuyahoga County, Ohio. A water resources delineation was performed by Todd Crandall on May 25, 2018 and August 15, 2019.

Three wetlands totaling 2.258 acres are found within the study area (Table 1). There is an intermittent stream with a length of 623 feet on the site (Table 2). A map showing the location and size of the water resources identified on the property is shown in Appendix A. The study area contains successional woods, lawn, emergent wetlands, and forested wetlands. A map showing general plant communities found on the site is in Appendix B.

Table 1. Wetlands Delineated on the Site

Wetlands	Cover Type	Connectivity to Waters of the U.S.[1]	Area (Acres)
A	emergent, forested	non-isolated	1.920
B	forested	non-isolated	0.033
C	forested	non-isolated	0.305
Total			2.258

[1] The final determination of a wetlands connectivity to Waters of the U.S. is made by the U.S. Army Corps of Engineers.

Table 2. Drainageways Delineated on the Site

Stream	Type	Length (Linear Feet)	Average Bankfull Width (Feet)
1	intermittent	623	4
Total			

Introduction

Study Area Description and Location

The 16.7-acre site is located in Parma, Cuyahoga County, Ohio (Appendix C). The property is bounded located east of Parma Park Boulevard (Appendix D).

The study area is located within the Big Creek 12-digit Hydrologic Unit Code (HUC) sub-watershed (HUC 04110002-06-03). This sub-watershed is a component of the larger Cuyahoga River 8-digit HUC sub-basin (HUC 04110002).

The property contains successional woods, lawn, emergent wetlands, and forested wetlands. Most of the property is lawn used for athletic events. Several buildings and athletic facilities are present on the site.

Secondary Source Information

The property is shown on the Berea Quadrangle of the United States Geological Survey (USGS) map (Appendix F). Elevations are approximately 870 feet across the site.

The National Wetlands Inventory (NWI) map (Berea Quadrangle) is in Appendix G. There are no NWI wetlands mapped on the site.

A map from the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey showing the soil types located on and adjacent to the site is found in Appendix H. *The Hydric Soils of the United States* (1991) was reviewed to determine potential hydric soils identified within the study area. No hydric soils were identified but Mahoning silt loam with 0–2 percent slopes has been identified as having hydric inclusions when occurring within depressions. Table 3 provides a list of soil types mapped for the site.

Table 3. Soil Types Mapped for the Site

Map Unit	Soil Description	Hydric Determination[1]
MgA	Mahoning silt loam, 0–2 percent slopes	non-hydric with hydric inclusions
MmB	Mahoning-Urban land complex, 2–6 percent slopes	non-hydric

[1]As determined by The Hydric Soils of the United States 1991.

Methodology

The Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (U.S. Army Corps of Engineers 2012) were used in delineating wetlands within the study area. The water resources were delineated and surveyed on May 25, 2018 and August 15, 2019. The water resources delineation fieldwork, boundary mapping, and data analysis were performed by Todd Crandall. Ken Christensen prepared the wetlands maps using AutoCAD® Map 2016 software. Shawn Bruzda prepared the maps included in Appendices C–H using ArcGIS® v.10.2. Greg Snowden provided technical oversight and quality control.

Streams are identified as linear, flowing water features with a defined bed and bank. Streams are classified as ephemeral, intermittent, or perennial based upon flow regime. Ephemeral streams have flowing water only during, and for a short duration after, precipitation events. Intermittent streams have flowing water during certain times of the year, when groundwater and rainfall provide water for stream flow. During dry periods, intermittent streams may not have flowing water.

Perennial streams have flowing water year-round, receiving water from groundwater and rainfall runoff. Wetlands are identified based on three criteria: vegetation, soils, and hydrology. An area must meet all three criteria to be considered a jurisdictional wetland. Four sampling points were established in the field to determine wetlands boundaries. Data sheets reporting the results of vegetation, soils, and hydrology analyses were completed for each sample point and are located in Appendix K.

Soil samples were obtained to determine the extent of hydric soils on the site. A standard Munsell soil color chart was used to determine the chroma, hue, and value of each soil sample. Soil samples were taken to a depth to adequately make a hydric soil determination. Criteria established by the National Technical Committee for Hydric Soils (1991) were used to determine hydric soils.

Wetland hydrology was characterized during this water resources delineation. Inundation and/or soil saturation were noted for each sample point. Other primary or secondary hydrological indicators, including watermarks, drift lines, sediment deposits, wetlands drainage patterns, blackened leaves, morphological indicators, iron/manganese concretions, and oxidized root zones within the upper soil layers, were documented, if observed.

Quantitative vegetation data were collected at each sampling point. Dominance was estimated by percent areal cover. Four strata were considered for each sample point—trees, saplings/shrubs, herbs, and woody vines. Trees were defined as any woody plant having a diameter at breast height (DBH) greater than 3.0 inches. Saplings and shrubs were those woody plants with a DBH of less than 3.0 inches and greater than 3.2 feet in height. For each stratum, plant species within a plot were identified and percent areal cover was estimated for each species. Thirty-foot-radius plots were used for trees and vines; 15-foot-radius plots were used for saplings and shrubs; and 5-foot-radius plots were used for herbs.

Any species within a stratum comprising 20% or more of the total plot areal cover was considered to be dominant. Dominant species within all strata were then added to determine the percentage of wetlands vegetation for each sample point. The wetlands vegetation criterion was met if greater than 50% of the dominant vegetation was indicative of wetlands conditions.

Species identifications were based on Braun (1989) and Gleason and Cronquist (1991). Lichvar et al. (2016) was used to assign indicator statuses to each identified species. Plants with an indicator status of obligate (OBL), facultative wetland (FACW), or facultative (FAC) were considered to be indicative of wetlands conditions. Plants with an indicator status of facultative upland (FACU) or upland (UPL) were considered to be indicative of upland conditions. Plants that could only be identified to genus were sometimes assigned an indicator status based on the professional judgment of Davey Resource Group. These plants were classified as wetlands indicator species (WIS) or upland indicator species (UIS). See Appendix I for a more detailed explanation of wetlands vegetation indicator statuses.

Marking flags were placed at necessary points around each wetland to accurately depict the wetland upland boundary. The location of each flag was mapped using a GeoXH™ Trimble® GeoExplorer® 6000 series Dual-frequency Global Navigation Satellite System or GNSS (GPS, GLONASS, SBAS [WAAS]) receiver and antenna with Everest™ multipath rejection technology and Floodlight technology with 220 channels, running professional TerraSync™ software capable of decimeter (10–75cm) accuracy after differential correction. Accuracy and reliability may be subject to anomalies due to multipath, obstructions, satellite geometry, and atmospheric conditions and as such a specific accuracy cannot be guaranteed in those situations.

Trimble® GPS Pathfinder® Office software was used for postprocessing the GNSS field collected data incorporating Trimble® DeltaPhase™ differential correction technology using GPS data collected from an appropriate base station.

The corrected GPS latitude-longitude positions were exported into a compatible coordinate system as an AutoCAD® drawing interchange file (DXF). The vegetation, soils, and wetlands maps included in this report were prepared using AutoCAD Map® 2015 software.

Wetlands that are hydrologically connected to traditional navigable waters of the United States are non-isolated and fall under the federal jurisdiction of the U.S. Army Corps of Engineers (USACE). All hydrologically isolated wetlands that lack connectivity to other surface waters are regulated by Ohio Environmental Protection Agency (EPA).

Results

Streams

A small stream flows from east to west across the site. This stream flows into storm sewers, eventually flowing into Big Creek approximately 0.5 mile north of the site. Big Creek is a tributary to the Cuyahoga River. The Cuyahoga River has a watershed area of 810 square miles and debouches into Lake Erie at Cleveland.

Wetland Vegetation

A map showing the locations of vegetative communities present on the property is in Appendix B. The site contains successional woods, lawn, emergent wetlands, and forested wetlands. Photographs showing water resources identified on the site are included in Appendix J.

Successional Woods. Small areas of successional woods are found on the site. These areas contain *Acer rubrum* (red maple, FAC), *A. saccharum* (sugar maple, FACU), *Frangula alnus* (glossy false buckthorn, FAC), *Fraxinus pennsylvanica* (green ash, FACW), *Rosa multiflora* (multiflora rose, FACU), *Rubus allegheniensis* (Allegheny blackberry, FACU), *Toxicodendron radicans* (poison ivy, FAC), and *Ulmus americana* (American elm, FACW).

Emergent Wetlands. A small portion of Wetland A is emergent. Common species include *Carex* sp. (sedge), *Juncus effusus* (soft rush, OBL), and *Onoclea sensibilis* (sensitive fern, FACW).

Forested Wetlands. Wetlands B and C and most of Wetland A are covered with a forested plant community. These wetlands contain *Acer rubrum* (red maple, FAC), *Toxicodendron radicans* (poison ivy, FAC), and *Ulmus americana* (American elm, FACW).

Wetland Soils

None of the soils mapped for this site were identified as hydric on the *Hydric Soils of the United States* but Mahoning silt loam, 0-2 percent slopes has been identified on this list as having hydric inclusions when found within depressions. The soils within the wetlands meet the depleted matrix (F3) hydric soil indicator.

Wetland Hydrology

Wetland hydrology indicators observed in the wetlands include blackened leaves, sediment deposits, drainage patterns, and soil saturation. Surface water runoff is the source of hydrology for the wetlands. All of the wetlands are adjacent to and show evidence of surface water flow from the wetlands to Stream 1. Stream 1 flows into Big Creek which is a tributary to the Cuyahoga River, a traditional navigable water (TNW). Because of this connection to a TNW, the wetlands are non-isolated and under the jurisdiction of USACE.

Conclusions

A map showing the location and size of the water resources identified on the property, along with the locations of sample points, is shown in Appendix A. Three wetlands totaling 2.258 acres are found within the study area. There are 623 linear feet of intermittent stream (Appendix K).

Davey Resource Group, Inc. is confident that all jurisdictional wetlands and drainageways were identified on this site. No unusual or problem areas were found. All water resource studies conducted by Davey Resource Group are objective and based strictly on professional judgment. Davey Resource Group and its employees have no vested interest in this property or the proposed project. Appendix L contains references used in the creation of this report, and Appendix M provides profiles of all Davey Resource Group personnel who contributed to this report.

All wetlands delineations must be verified by the U.S. Army Corps of Engineers to be considered official. This wetlands delineation is reflective of environmental conditions at the time the fieldwork was performed. Wetlands are dynamic natural systems; therefore, boundaries may change slightly over time.

Appendix A
Water Resources Map

Appendix A
Water Resources Map

Meadowbrook Drive

Prepared for
Neff and Associates
16.7 Acres, Parma Park Boulevard
Parma
Cuyahoga County, Ohio

Prepared by
DAVEY RESOURCE GROUP

Data used to produce this map were collected on May 25, 2018 and August 15, 2019

NOTE: Wetlands sizes and stream lengths could change upon overlay of a boundary survey, especially where these features extend outside of or are in close proximity to the shown study limits. Wetlands acreage and stream lengths are calculated for the portion that occurs in the shown study limits.

Parma Park Boulevard

Orchard Boulevard

existing culvert

existing culvert

Wetland B (0.033 acre)

Wetland C (0.305 acre)

Stream 1 (623 linear feet, average bankfull width 4 feet)

Wetland A (1.920 acres)

1

2

3

4

Oakdale Drive

= Approximate study area

= Intermittent stream (623 linear feet)

① = Sample point location

= Areas of wetlands delineated within study area (2.258 acres)

N

W

E

S

GRAPHIC SCALE
0 100 200
(IN FEET)

The information presented is not a survey or engineering product, and should not be used for any purpose provided by applicable law or regulation that requires a surveying or engineering license.

Aerial imagery source: SOOIT OGRIP OSIP III 2017

Appendix B
Plant Communities Map

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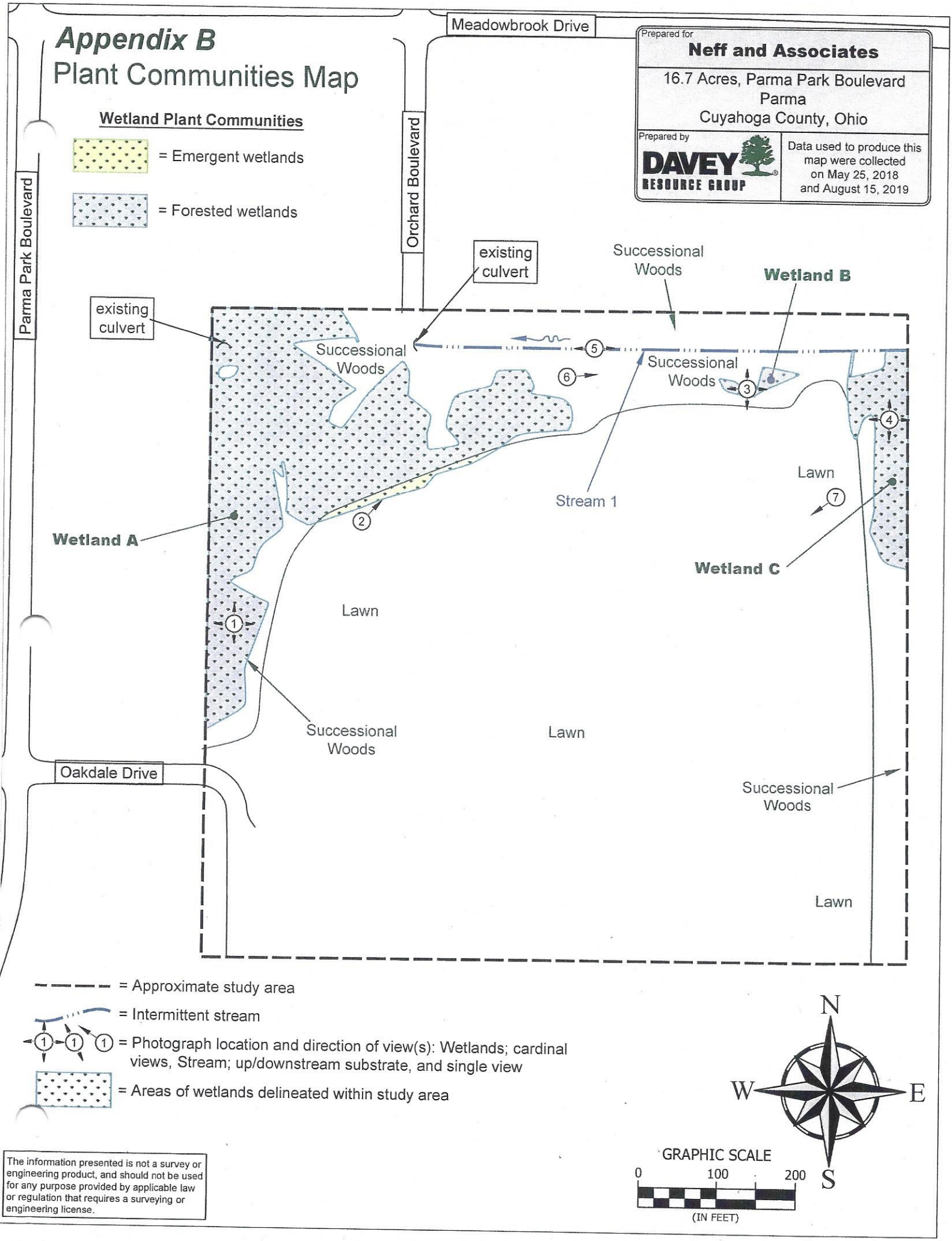
Plant Communities Map

Prepared for
Neff and Associates
16.7 Acres, Parma Park Boulevard
Parma
Cuyahoga County, Ohio

Prepared by
DAVEY RESOURCE GROUP

Data used to produce this map were collected on May 25, 2018 and August 15, 2019



Appendix C
Location of Cuyahoga County on Ohio County Map

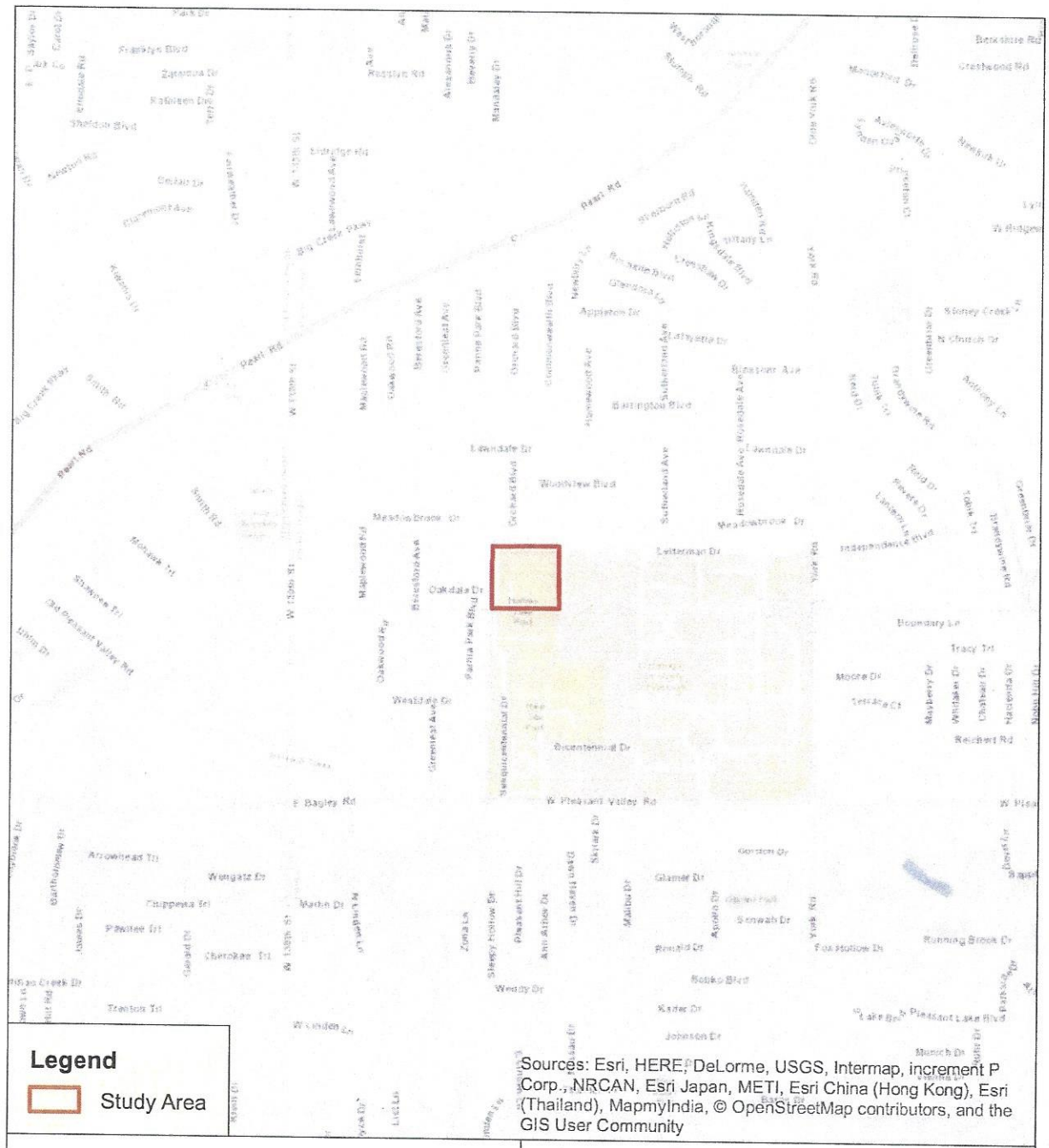
Appendix C
Location of Cuyahoga County on Ohio County Map

Site Location: 16.7 Acres, Parma Park Boulevard
Parma Heights
Cuyahoga County, Ohio

Source: Esri
Redlands, California

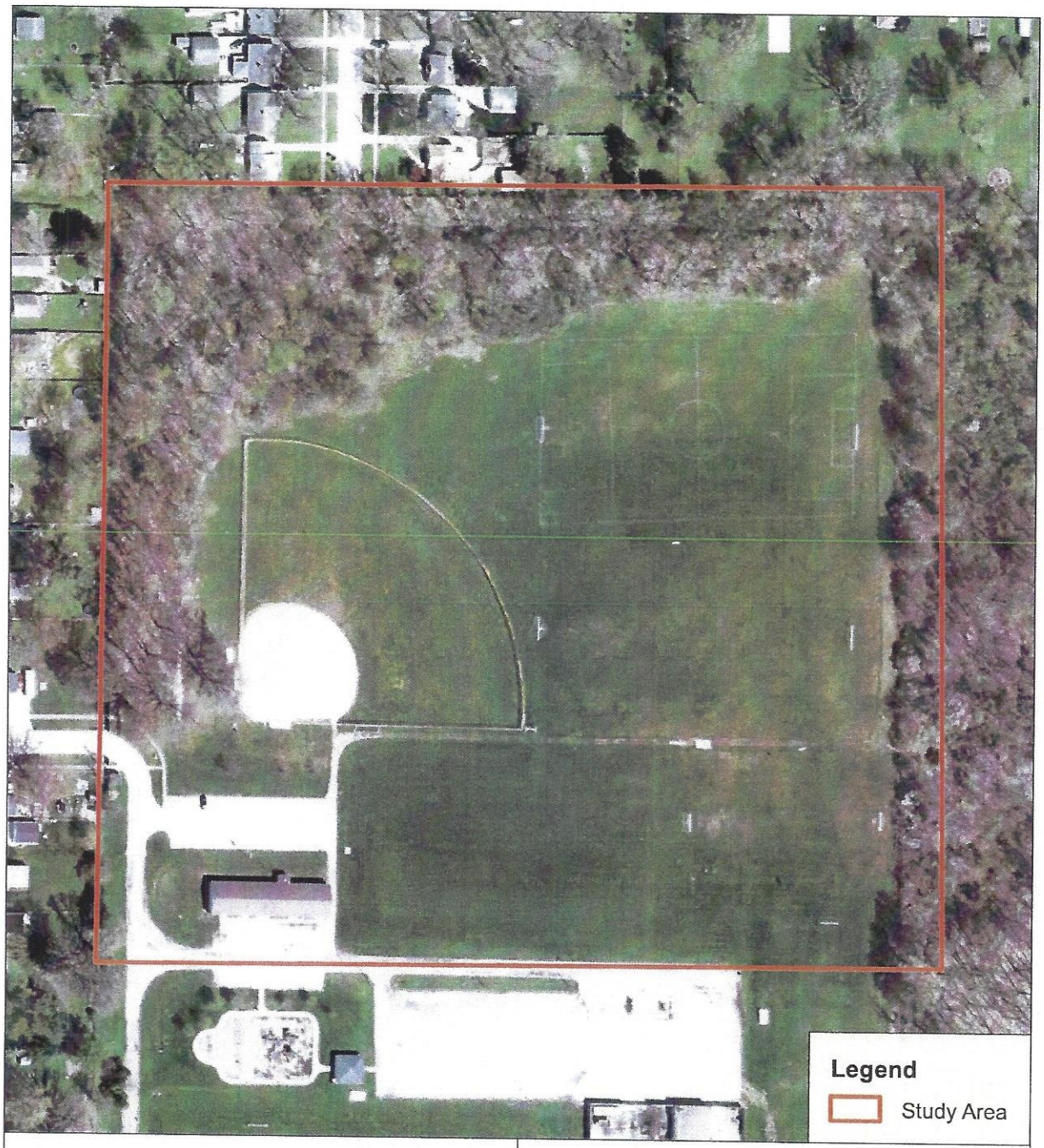
Appendix D
Location of Study Area on Highway Map

Appendix D
Location of Study Area on Highway Map



Appendix E
Location of Study Area on Aerial Photograph

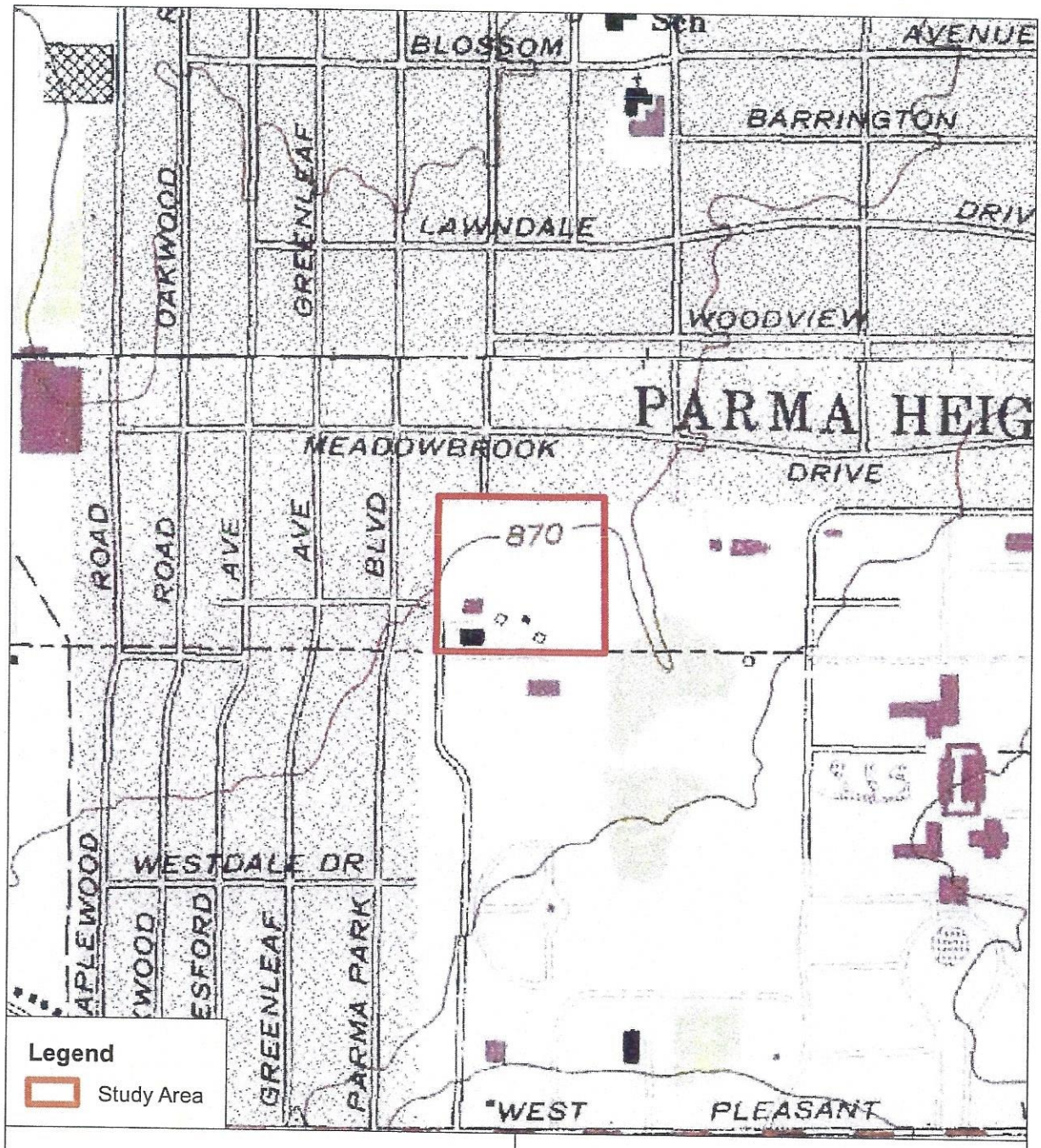
Appendix E
Location of Study Area on Aerial Photograph



Site Location: 16.7 Acres, Parma Park Boulevard
Parma Heights
Cuyahoga County, Ohio
Source: SOOIT OGRIP OSIP III
Columbus, Ohio
Aerial imagery dated 2017

Appendix F
Location of Study Area on USGS 7.5-Minute Topographic Map (Berea Quadrangle)

Appendix F
Location of Study Area on USGS 7.5-Minute Topographic Map (Berea Quadrangle)

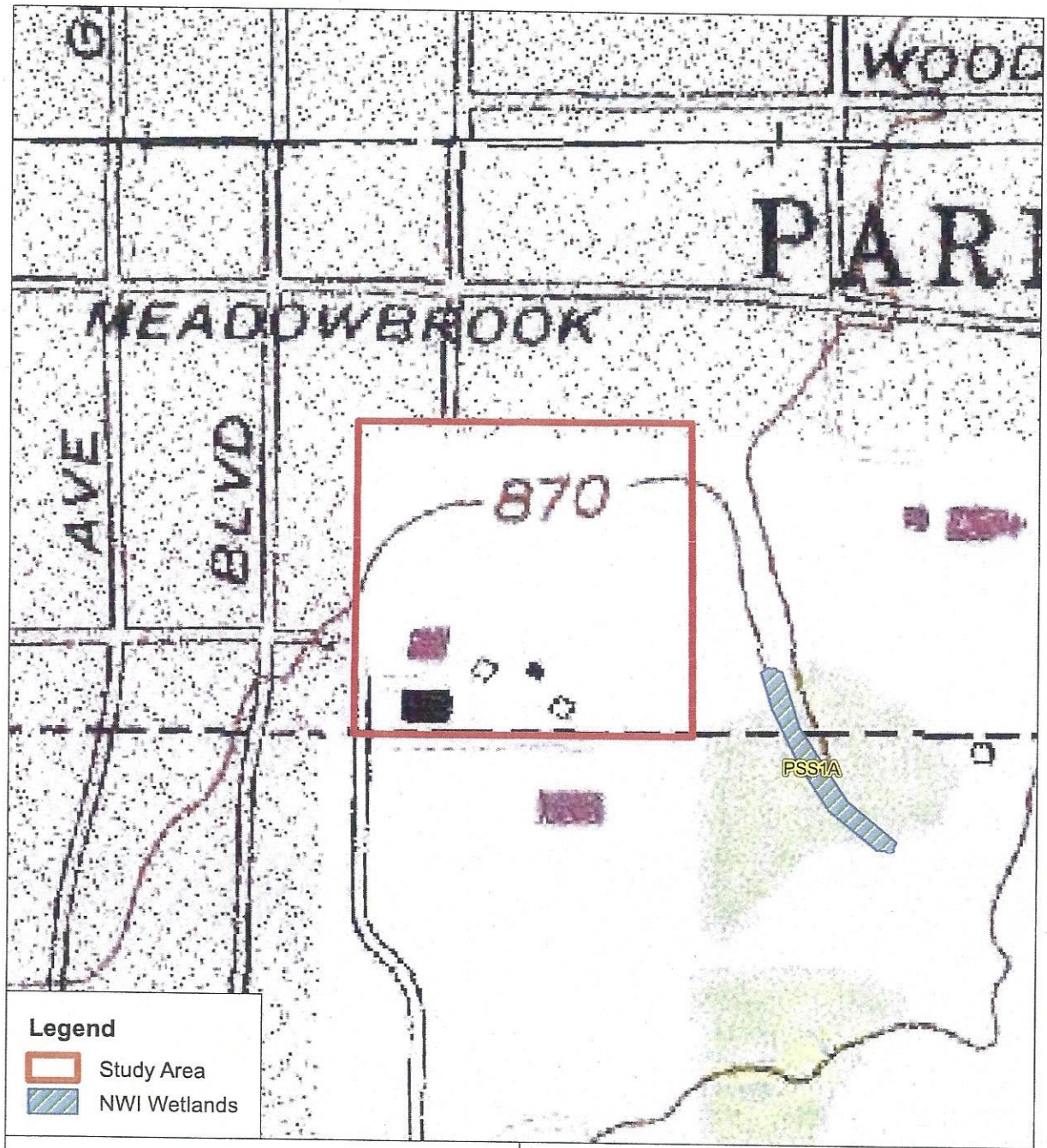


Site Location: 16.7 Acres, Parma Park Boulevard
Parma Heights
Cuyahoga County, Ohio

Source: U.S. Department of the Interior
U.S. Geological Survey
Reston, Virginia
Photorevised 1984

Appendix G
Location of Study Area on National Wetland Inventory Map (Berea Quadrangle)

Appendix G
Location of Study Area on National Wetlands Inventory Map (Berea Quadrangle)



Appendix H
Location of Study Area on Cuyahoga County Soil Survey Map

Appendix H
Location of Study Area on Cuyahoga County Soil Survey Map

Site Location: 16.7 Acres, Parma Park Boulevard
Parma Heights
Cuyahoga County, Ohio

Source: U.S. Department of Agriculture
Natural Resources Conservation Service
Web Soil Survey
SOOIT OGRIP OSIP III
Aerial imagery dated 2017

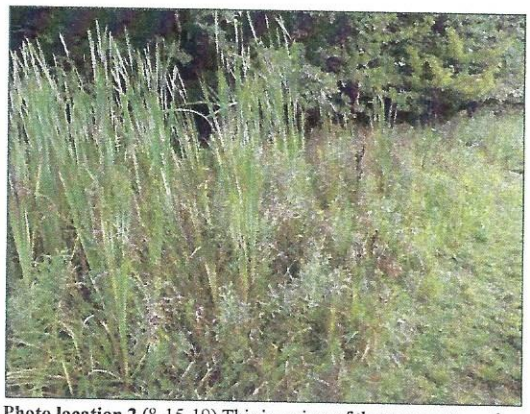


Photo location 2 (8-15-19) This is a view of the emergent portion of Wetland A.

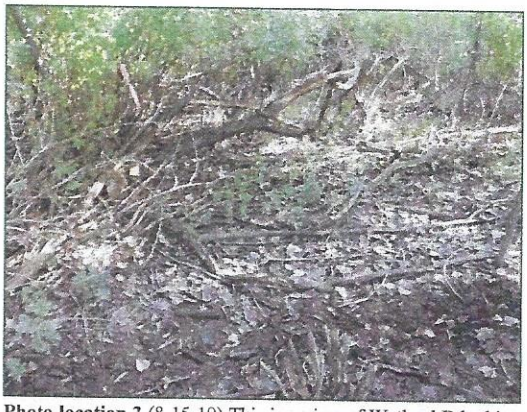


Photo location 3 (8-15-19) This is a view of Wetland B looking north.

Photo location 3 (8-15-19) This is a view of Wetland B looking east.

Photo location 3 (8-15-19) This is a view of Wetland B looking south.

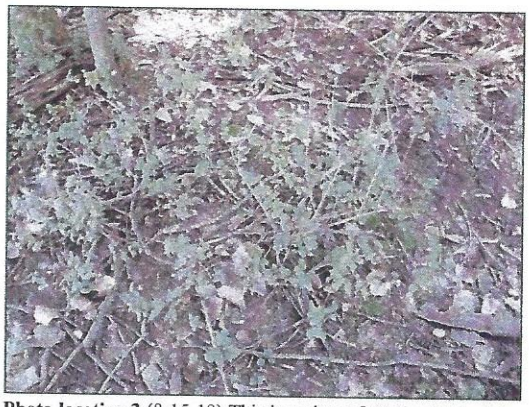


Photo location 3 (8-15-19) This is a view of Wetland B looking west.

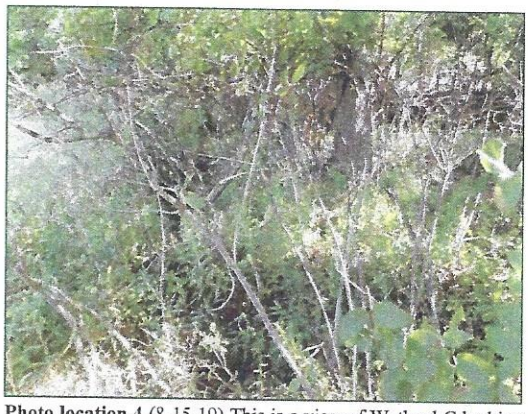


Photo location 4 (8-15-19) This is a view of Wetland C looking north.

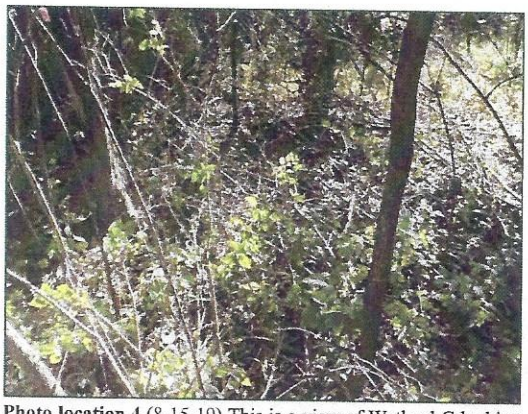


Photo location 4 (8-15-19) This is a view of Wetland C looking east.

Photo location 4 (8-15-19) This is a view of Wetland C looking south.

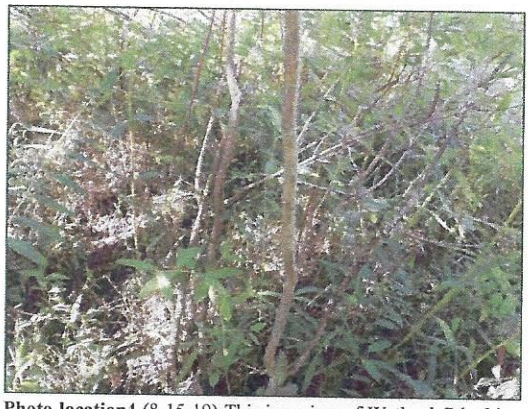


Photo location4 (8-15-19) This is a view of Wetland C looking west.

Photo location 5 (2-27-17) This is a view of Stream 1 looking upstream.

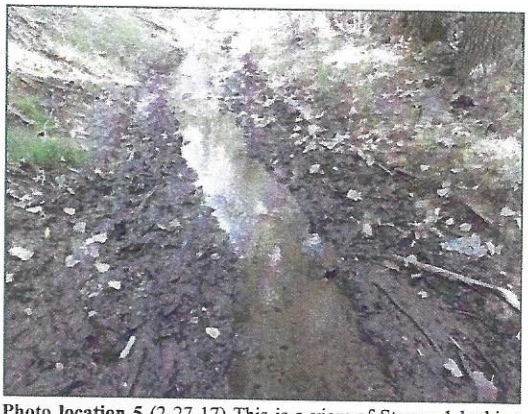


Photo location 5 (2-27-17) This is a view of Stream 1 looking downstream.

Photo location 5 (2-27-17) This is a view of the substrates of Stream 1.

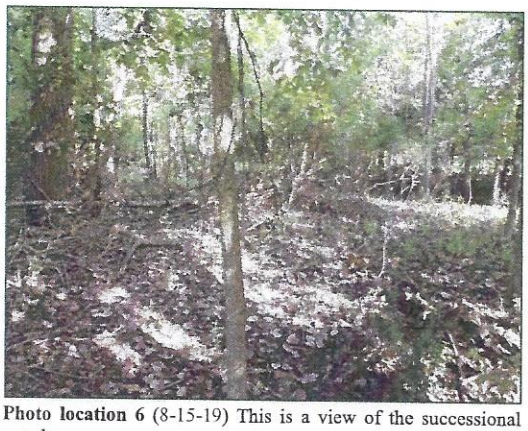


Photo location 6 (8-15-19) This is a view of the successional woods.

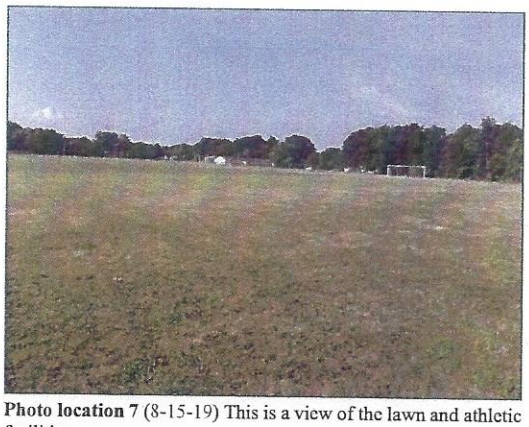


Photo location 7 (8-15-19) This is a view of the lawn and athletic facilities.

Appendix I
Definition of Wetlands Vegetation Indicator Status (from Lichvar et al. 2016)

Obligate Wetlands (OBL). Almost always is a hydrophyte, rarely in uplands.

Facultative Wetlands (FACW). Usually is a hydrophyte but occasionally found in uplands.

Facultative (FAC). Commonly occurs as either a hydrophyte or non-hydrophyte.

Facultative Upland (FACU). Occasionally is a hydrophyte but usually occurs in uplands.

Obligate Upland (UPL). Rarely is a hydrophyte, almost always in uplands.

Species for which little or no information was available to base an indicator status were assigned a no indicator (NI) status. An asterisk (*) after the indicator status indicates that the indicator status was based on limited ecological information.

The wetlands indicator categories should not be equated to degrees of wetness. Many obligate wetlands species occur in permanently or semi-permanently flooded wetlands, but a number of obligates also occur, and some are restricted to wetlands that are only temporarily or seasonally flooded. The facultative upland species include a diverse collection of plants that range from weedy species adapted to exist in a number of environmentally stressful or disturbed sites (including wetlands), to species in which a portion of the gene pool (an ecotype) always occurs in wetlands. Both the weedy and ecotype representatives of the facultative upland category occur in seasonally and semi-permanently flooded wetlands.

Davey Resource Group has added two additional indicators for situations when plants can only be identified to genus. A Wetlands Indicator Species (WIS) is a plant that is most likely obligate wetlands, facultative wetlands, or facultative. An Upland Indicator Species (UIS) is a plant that is most likely indicative of upland or facultative upland conditions. These additional indicators are used when species identification is not possible. A variety of factors are part of the UIS and WIS assignments. Indicator statuses of all locally occurring members of the genus in question are considered, as are the health and size of the population and the indicator status of nearby plants.

Appendix J
Photographs of Site

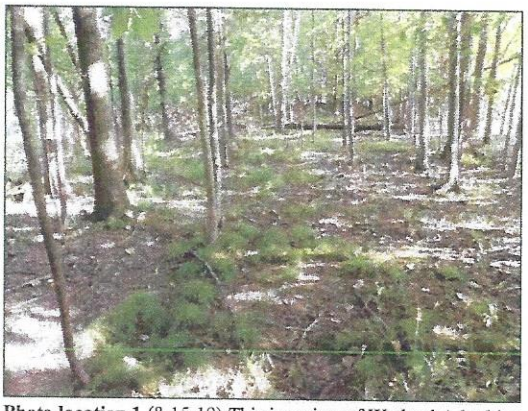


Photo location 1 (8-15-19) This is a view of Wetland A looking north.

Photo location 1 (8-15-19) This is a view of Wetland A looking south.

Photo location 1 (8-15-19) This is a view of Wetland A looking east.

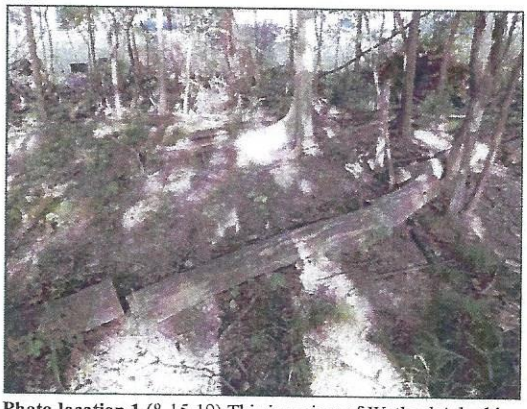


Photo location 1 (8-15-19) This is a view of Wetland A looking west.

Appendix K
Vegetation, Hydrology, and Soils Data Sheets

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 16.7 Acres, Parma Park Boulevard **City/County:** Parma, Cuyahoga County **Sampling Date:** 25-May-18

Applicant/Owner: Neff and Associates **State:** Ohio **Sampling Point:** 01

Investigator(s): Todd Crandall **Section, Township, Range:** S. T. R.

Landform (hillslope, terrace, etc.): Flat **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR R **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: Mahoning silt loam **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ◉ No ○

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

Forested wetland (Wetland A)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: 01

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	40	☑	FAC
2. *Quercus palustris*	60	☑	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Frangula alnus*	20	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	20	= Total Cover	

Herb Stratum (Plot size: 5 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Glyceria striata*	20	☑	OBL
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	20	= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	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: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20	
FACW species	60	x 2 =	120	
FAC species	60	x 3 =	180	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	140	(A)	320	(B)

Prevalence Index = B/A = 2.286

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 01

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2						Silt Loam	
4-18	10YR 4/2	90	10YR 5/6	10	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 16.7 Acres, Parma Park Boulevard **City/County:** Parma, Cuyahoga County **Sampling Date:** 25-May-18

Applicant/Owner: Neff and Associates **State:** Ohio **Sampling Point:** 02

Investigator(s): Todd Crandall **Section, Township, Range: S.** **T.** **R.**

Landform (hillslope, terrace, etc.): Flat **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR R **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: Mahoning silt loam **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

Is the Sampled Area within a Wetland? Yes ○ No ◉

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

Successional woods

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

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):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrological indicators

VEGETATION - Use scientific names of plants

Sampling Point: 02

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus palustris*	70	☑	FACW
2. *Acer rubrum*	30	☑	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 feet)			
1. *Frangula alnus*	30	☑	FAC
2. *Rosa multiflora*	10	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	= Total Cover	

Herb Stratum (Plot size: 5 feet)			
1. *Potentilla simplex*	10	☑	FACU
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	10	= Total Cover	

Woody Vine Stratum (Plot size:)		
1.	0	☐
2.	0	☐
3.	0	☐
4.	0	☐
	0	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	70	x 2 =	140	
FAC species	60	x 3 =	180	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column Totals:	150	(A)	400	(B)

Prevalence Index = B/A = 2.667

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 02

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-18	10YR	4/3	90	10YR	5/6	10	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 16.7 Acres, Parma Park Boulevard **City/County:** Parma, Cuyahoga County **Sampling Date:** 25-May-18

Applicant/Owner: Neff and Associates **State:** Ohio **Sampling Point:** 03

Investigator(s): Todd Crandall **Section, Township, Range:** S. T. R.

Landform (hillslope, terrace, etc.): Flat **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR R **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: Mahoning silt loam **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ◉	No ○	

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

Forested wetland (wetland D)

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 1	
Water Table Present?	Yes ○	No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: 03

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus palustris*	90	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	90	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 feet)			
1. *Frangula alnus*	40	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	= Total Cover	

Herb Stratum (Plot size: 5 feet)			
1. *Glyceria striata*	50	☑	OBL
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	50	= Total Cover	

Woody Vine Stratum (Plot size:)		
1.	0	☐
2.	0	☐
3.	0	☐
4.	0	☐
	0	= Total Cover

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50	
FACW species	90	x 2 =	180	
FAC species	40	x 3 =	120	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	180	(A)	350	(B)

Prevalence Index = B/A = 1.944

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 03

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	4/2						Silt Loam	
5-18	10YR	4/1	95	10YR	5/6	5	C	M	Silt Loam

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2] Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 16.7 Acres, Parma Park Boulevard **City/County:** Parma, Cuyahoga County **Sampling Date:** 25-May-18

Applicant/Owner: Neff and Associates **State:** Ohio **Sampling Point:** 04

Investigator(s): Todd Crandall **Section, Township, Range:** S. T. R.

Landform (hillslope, terrace, etc.): Flat **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR R **Lat.:** **Long.:** **Datum:**

Soil Map Unit Name: Mahoning silt loam **NWI classification:**

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ◉	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Wetland Hydrology Present?	Yes ○	No ◉	

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

Successional woods

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

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):	**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrological indicators

VEGETATION - Use scientific names of plants

Sampling Point: 04

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus palustris*	80	☑	FACW
2. *Ulmus americana*	10	☐	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	90	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 feet)			
1. *Ligustrum vulgare*	30	☑	FACU
2. *Frangula alnus*	40	☑	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	70	= Total Cover	

Herb Stratum (Plot size: 5 feet)			
1. *Fragaria virginiana*	20	☑	FACU
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	20	= Total Cover	

Woody Vine Stratum (Plot size:)		
1.	0	☐
2.	0	☐
3.	0	☐
4.	0	☐
	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: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	90	x 2 =	180	
FAC species	40	x 3 =	120	
FACU species	50	x 4 =	200	
UPL species	0	x 5 =	0	
Column Totals:	180	(A)	500	(B)

Prevalence Index = B/A = 2.778

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 04

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2						Silt Loam	
4-18	10YR 4/2	90	10YR 5/6	10	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

Appendix L
References

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Appendix M
Davey Resource Group Personnel Profiles

Amy Allen is a project manager with Davey Resource Group's Natural Resource Consulting team. Ms. Allen has five years of experience in the natural resources field and assists with preparing ecological survey and water resource delineation reports, bat habitat survey reports, Section 401/404 permits, watershed planning projects, and Environmental Assessments. She has also assisted with Categorical Exclusions for the Ohio Department of Transportation (ODOT). Ms. Allen is ODOT trained in environmental document preparation – Section 4(f) and Section 6(f). She has also completed Waterway Permits training through ODOT's Office of Environmental Services. Prior to joining Davey Resource Group, Ms. Allen worked for Indiana University's Office of Sustainability, where she coordinated and promoted sustainable practices within the workplace. Ms. Allen also worked as Operations Director for the nonprofit Bloomington Community Orchard, where she oversaw the installation and maintenance of ecologically sustainable vegetation and mitigation of pests and invasive plant species. She has a bachelor's degree in environmental management and nonprofit management from Indiana University.

Shawn Bruzda is a biologist with Davey Resource Group, having served in this capacity for 10 years. Mr. Bruzda focuses on ecological surveys involving fish and macroinvertebrate identification, amphibian surveys, and data analysis. He is proficient with the Index of Biotic Integrity (IBI), the Modified Index of Well-Being (MIWB), and the Invertebrate Community Index (ICI), all used by Ohio Environmental Protection Agency to set minimum criteria index scores for use designations in water quality standards. He works on large- and small-scale bat survey projects, assisting with mist-net surveys, habitat evaluations, and radio tracking studies to determine foraging patterns; endangered species and habitat studies; invasive species management; and water quality studies. Mr. Bruzda has completed training through Ohio Environmental Protection Agency for conducting the following: Qualitative Habitat Evaluation Index (QHEI); Ohio Rapid Assessment Method (ORAM) v.5; and Vegetation Index of Biotic Integrity (VIBI). Proficient with AutoCAD® 2012 and ArcGIS™ 10 software, Mr. Bruzda creates maps for a wide variety of natural resource projects. He is a Certified Commercial Pesticide Applicator in Ohio (ID# 119080). Mr. Bruzda is a graduate of Kent State University, having received a Bachelor of Science degree in biological sciences with an emphasis in aquatic ecology.

Ana Burns, M.S.E.S., is a biologist and coordinator of ecological services for Davey Resource Group's Natural Resource Consulting group. Ms. Burns has 13 years of experience in the natural resources and environmental planning fields and at Davey Resource Group is responsible for overseeing all ecological surveys and environmental planning studies, as well as the specialized management of ecological and wetlands permitting projects, mitigation bank planning and monitoring projects, and natural resource restoration design projects. She is knowledgeable of state and federal stream and wetlands regulations, all aspects of Section 401 and 404 permitting, isolated wetlands regulations, and the federal mitigation rule for compensatory mitigation and its application to mitigation banking. Ms. Burns has managed multiple Section 401 and 404 permitting projects along with numerous natural resource inventories and planning projects. She has completed the Vegetation Index of Biotic Integrity (VIBI) training through Ohio Environmental Protection Agency. In addition, Ms. Burns has provided assistance with grant writing and managing grant-funded projects. Ms. Burns has coordinated and facilitated public meetings and hearings and has assisted in the development of various planning documents including greenways planning, watershed planning, and urban forestry management plans. With a background in urban and rural planning, she is well versed in working with planning commissions, steering committees, and local political groups and has given many presentations at a variety of venues.

Ms. Burns is a board member and secretary of the Tinkers Creek Watershed Partnership and active in the Ohio Lake Management Society. Ms. Burns graduated from Indiana University with a Bachelor of Science degree in biology and holds a Master of Science degree in environmental science from IU's School of Public and Environmental Affairs.

Ken Christensen is a senior biologist with more than 30 years of experience in the natural resource field. Mr. Christensen is involved in all aspects of wetlands and stream restoration projects, including design, planting, and implementation. He is also involved with monitoring of mitigation and restoration projects to ensure that such endeavors reach a successful conclusion. Mr. Christensen assists in plant surveys and wetlands delineations and in the field identification of vertebrate populations, especially amphibians, reptiles, and mammals. Proficient with AutoCAD® software, Mr. Christensen is responsible for managing the Global Navigation Satellite System (GNSS) data collection and AutoCAD® mapping operations for all natural resource studies. As an International Society of Arboriculture Certified Arborist (OH-0690A), he performs tree appraisals and inventories and also develops tree preservation plans. Mr. Christensen is a LEED® Accredited Professional and has received the following training: American Ecological Engineering Society Wetland Mitigation Design from Virginia Polytechnic Institute and State University; AutoCAD® for Stream Restoration and Monitoring from North Carolina Cooperative Extension; North Carolina Stream Restoration Institute's Stream Classification and Assessment Program and Stream Restoration Design Principles. Mr. Christensen is prequalified by the Ohio Department of Transportation for wetland mitigation. He has also completed training through Ohio Environmental Protection Agency for conducting the following: Headwater Habitat Evaluation Index (HHEI); Qualitative Habitat Evaluation Index (QHEI); Ohio Rapid Assessment Method (ORAM) v.5; and Vegetation Index of Biotic Integrity (VIBI). He is a member of the International Society of Arboriculture, Ecological Landscaping Association, and Northern Ohio Association of Herpetologists. Mr. Christensen holds a Bachelor of Science degree in conservation from Kent State University.

Todd Crandall, M.En., is a senior wetlands scientist with 22 years of experience performing wetlands delineations in Ohio and adjacent states. Mr. Crandall also performs ecological surveys, vegetation cover mapping, plant identification, and Section 401/404 and isolated wetlands permitting. He also contributes to the planning and design of restoration wetlands and prepares wetland mitigation reports. Mr. Crandall is responsible for vegetation monitoring at numerous wetlands mitigation sites throughout Ohio.

He has completed large-scale wetlands and natural resource inventories for the Cuyahoga Valley National Park, as well as Cuyahoga, Medina, Portage, and Summit Counties in Northeast Ohio. He is certified to perform wetlands studies by the U.S. Army Wetlands Delineator Certification Program and is a certified Professional Wetland Scientist through the Society of Wetland Scientists. He has completed the 40-hour OSHA health and safety training (OSHA Standard 29 CFR 1910.120). Mr. Crandall has successfully completed the Ohio Department of Transportation's (ODOT) Ecological Training hosted by the Office of Environmental Services. He is ODOT prequalified for ecological surveys and wetland mitigation. Mr. Crandall has also completed training through the Ohio Environmental Protection Agency for the following: Headwater Habitat Evaluation Index (HHEI); Qualitative Habitat Evaluation Index (QHEI); Ohio Rapid Assessment Method (ORAM) v.5; and Vegetation Index of Biotic Integrity (VIBI). He holds a Bachelor of Science degree from Hiram College in biology and a Master's degree in environmental science from Miami University.

Greg Snowden, M.S., P.W.S., is a biologist and project manager with Davey Resource Group's Natural Resource Consulting Team. He specializes in aquatic resource regulation related to wetland and stream permitting and compensatory mitigation.

Mr. Snowden manages complex projects from inception to completion, ensuring clients are provided with innovative solutions to meet their project's goals and needs. He regularly prepares Section 404/401 and Ohio isolated wetland permit applications for projects in the residential, commercial, healthcare, and transportation sectors, along with annual compensatory mitigation monitoring reports, compensatory mitigation monitoring plans, and National Environmental Policy Act compliance documents. Mr. Snowden has extensive experience and knowledge of the 2008 Federal mitigation rule related to the establishment and operation of in-lieu fee programs and mitigation banks. He has prepared numerous in-lieu fee program instruments and coordinated their review and approval with the state and federal natural resource agencies on the Ohio Interagency Review Team. In addition to project management and report writing, Mr. Snowden also routinely performs several types of ecological fieldwork, including: wetland and stream delineations and assessments; Ohio DOT ecological surveys; endangered species surveys; restoration project construction oversight; vegetation surveys; and compensatory mitigation project monitoring. He has presented on Clean Water Act regulatory issues at numerous professional meetings at the local, regional, and national levels. Mr. Snowden has successfully completed the following training courses: Ohio Rapid Assessment Method (ORAM) for wetlands v. 5.0 and Headwater Habitat Evaluation Index (HHEI) through Ohio Environmental Protection Agency (EPA), Qualitative Habitat Evaluation Index (QHEI) through the Midwest Biodiversity Institute, Hydric Soils Training through Wetlands and Soil Consulting Services, and Categorical Exclusion, Purpose and Need, Waterway Permits, and Ecological Survey courses through ODOT's Office of Environmental Services. He is a Professional Wetland Scientist from the Society of Wetland Scientists, is ODOT prequalified for Ecological Surveys, Stream and Wetland Mitigation, Waterway Permits, and Environmental Document Preparation – CE, and is an Ohio EPA Level 2 Qualified Data Collector in its Surface Water Credible Data Program. Mr. Snowden graduated from Ohio University's Honors Tutorial College with a bachelor's degree in environmental and plant biology. He also holds a master's degree in biological sciences (ecology, evolution, and the environment) from the University of Notre Dame.

Primary Headwater Habitat Evaluation Form

Ohio Environmental Protection Agency

Version 4.0, October 2018 HHEI Score (sum of metrics 1, 2, 3): **41**

SITE NAME / LOC. Nathan Hale Park, Parma, Ohio

SITE NUMBER _____ RIVER BASIN Cuyahoga Drainage Area (mi^2) <0.1

Length of Stream Reach (f 200 ft Lat. 41.3729 Long. -81.7729 RIVER MILE _____

DATE 8/15/2019 SCORER Todd Crandall COMMENTS modified small drainage warmwater stream

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☑ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0%	☐	SILT [3 pts]	25%
☐	BOULDER (>256 mm) [16 pts]	0%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐	BEDROCK [16 pts]	0%	☐	FINE DETRITUS [3 pts]	5%
☐	COBBLE (65-256 mm) [12 pts]	0%	☐	CLAY or HARDPAN [0 pts]	0%
☐	GRAVEL (2-64 mm) [9 pts]	10%	☐	MUCK [0 pts]	30%
☑	SAND (<2 mm) [6 pts]	30%	☐	ARTIFICIAL [3pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0% (A) **6**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: **5** (B)

HHEI Metric Points

Substrate Max = 40

11

A + B

2. Maximum Pool Depth (*Measure the maximum pool depth within the 61 meter (200 ft)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes). (Check ONLY one box):

- ☐ >30 centimeters [20 pts]
- ☐ >22.5 - 30 cm [30 pts]
- ☐ >10 - 22.5 cm [25 pts]
- ☑ >5 cm - 10 cm [15 pts]
- ☐ <5 cm [5 pts]
- ☐ NO WATER/MOIST CHANNEL[0 pts]

COMMENTS: _____

MAXIMUM POOL DEPTH (centimeters) **9.0**

Pool Depth Max=30

15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ >4.0 meters (>13') [30 pts]
- ☐ >3.0-4.0 m (>9' 7"-13') [25 pts]
- ☐ >1.5-3.0 m (>4' 8"-9' 7") [20 pts]
- ☑ >1.0 m - 1.5 m (>3'3"-4'8") [15 pts]
- ☐ ≤1.0 m (≤ 3'3") [5 pts]

COMMENTS: _____

AVERAGE BANKFULL WIDTH (meters) **1.1**

Bankfull Width Max=30

15

This information must also be completed.

RIPARIAN ZONE AND FLOODPLAIN QUALITY *NOTE: River Left (L) and Right (R) as looking downstream.

RIPARIAN WIDTH (Per Bank) L	R	
☐	☐	Wide > 10 m
☑	☐	Moderate 5 - 10 m
☐	☑	Narrow < 5 m
☐	☐	None

(FLOODPLAIN QUALITY) (Most Predominant per Bank) L	R	
☐	☐	Mature Forest, Wetland
☐	☐	Immature Forest, Shrub or Old Field
☑	☑	Residential, Park, New Field
☐	☐	Fenced Pasture
☐	☐	Conservation Tillage
☐	☐	Urban or Industrial
☐	☐	Open Pasture, Row Crop
☐	☐	Mining or Construction

COMMENTS: _____

FLOW REGIME (*At Time of Evaluation*) (Check *ONLY* one box):

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water, (Ephemeral)

COMMENTS: _____

SINUOSITY (Number of bends per 200 ft (61 m) of channel) (Check *ONLY* one box):

- ☑ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ > 3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

Additional Stream Information (This Information Must Also Be Completed):

QHEI PERFORMED? ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S):

☑ WWH Name: Big Creek Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION.

USGS Quad Name: Berea NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Cuyahoga Township/City: Berea

MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of Last Precipitation: 13-Aug-19 Quantity: _____

Photograph Information: See Attached

Elevated Turbidity? (Y/N): N Canopy (% open): 0%

Were samples collected for water chemistry?(Y/N) N (Note lab sample no. or id. and attach results) Lab No.: _____

Field Measures: Temp (C) _____ Dissolved Oxygen (mg/l) _____ pH(S.U.) _____ Conductivity(µs) _____

Is the sampling reach representative of the stream (Y/N)? _____ If not, please explain: _____

Additional comments/description pollution impacts: _____

BIOLOGICAL OBSERVATIONS

(Record all Observations below)

Fish Observed? (Y/N) _____ Species observed (if known): _____

Frogs/Tadpoles Observed? (Y/N) _____ Species observed (if known): _____

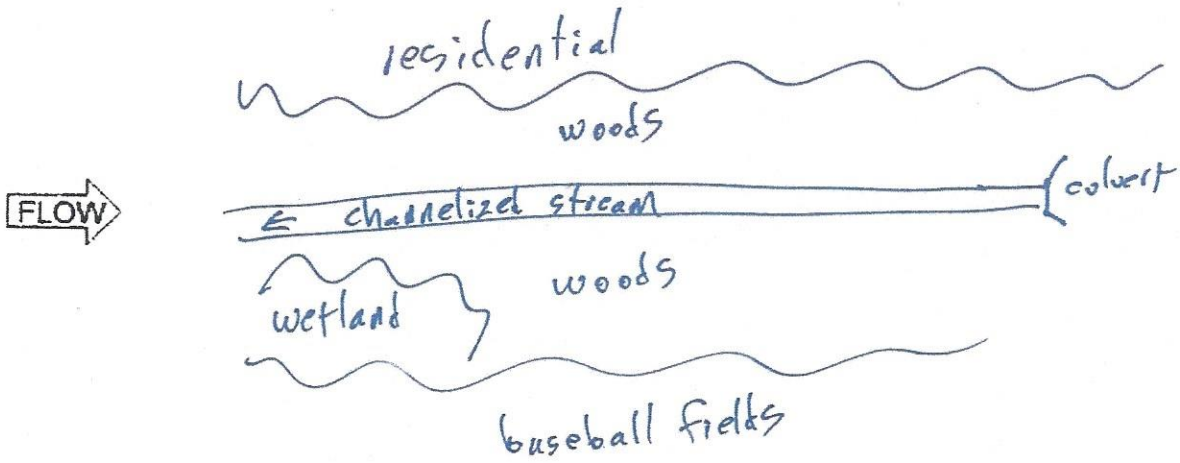
Salamanders Observed? (Y/N) _____ Species observed (if known): _____

Aquatic Macroinvertebrates Observed? (Y/N) _____ Species observed (if known): _____

Comments Regrading Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other featurs of interest for site evaluation and a narrative description of the stream's location.



Location/Stream Name: Nathan Hale Park, Parma, Ohio **Date:** 8/15/2019

PHWH STREAM BIOLOGICAL CHARACTERISTICS FIELD SHEET:

1. **Fish:** Voucher Specimens Retained? (Y/N) N/A Time Spent (Minutes): _____
   Sample Method: _____ Stream Length Assessed (meters): _____

Species	Number Caught	Notes
		0

2. **Salamanders:** Voucher Specimens Retained? (Y/N) N/A Time Spent (Minutes): 30
   Sample Method: Visual Encounter Survey Stream Length Assessed (meters): 65

Species (*Genus*)	# Larvae	# Juveniles / Adults	Total Number
Mtn. Dusky (*Desmognathus ochrophaeus*)			0
Northern Dusky (*Desmognathus fuscus*)			0
Two-lined (*Eurycea bislineata*)			0
Long-tailed (*Eurycea longicauda*)			0
Cave (*Eurycea lucifuga*)			0
Red (*Pseudotriton ruber*)			0
Mud (*Pseudotriton montanus*)			0
Spring (*Gyrinophilus porphyriticus*)			0
Mole spp. (*Ambystoma spp.*)			0
Four-toed (*Hemidactylium scutalum*)			0
Other (name)			0
Total			0

Notes on Vertebrates: _____

Location/Stream Name: Nathan Hale Park, Parma, Ohio

3. Macroinvertebrate Scoring Sheet:

THE HEADWATER MACROINVERTEBRATE FIELD EVALUATION INDEX (HMFEI) SCORING SHEET

Indicate Abundance of Each Taxa Above each White Box.
Record HMFEI Scoring Value Points Within each Box.
For EPT taxa, also indicate the different taxa present.

Key: V = Very Abundant (> 50); **A** = Abundant (10 - 50); **C** = Common (3 - 9); **R** = Rare (< 3)

Sessile Animals **(Portifera, Cnidaria, Bryozoa)** (HMFEI pts= 1) 0	Crayfish (Decopoda) (HMFEI pts= 2) 0	Fishfly Larvae **(Corydalidae)** (HMFEI pts= 3) 0
Aquatic worms **(Turbellaria, Oligochaeta, Hirundinea)** (HMFEI pts= 1) 0	Dragonfly Nymphs **(Anisoptera)** (HMFEI pts= 2) 0	Water Penny Beetles **(Psephenidae)** (HMFEI pts= 3) 0
Sow Bugs **(Isopoda)** (HMFEI pts= 1) 0	Riffle Beetles **(Dryopidae, Elimidae, Ptilodactylidae)** (HMFEI pts= 2) 0	Cranefly Larvae **(Tipulidae)** (HMFEI pts= 3) 0
Scuds **(Amphipoda)** (HMFEI pts= 1) 0	Larvae of Other Flies **(Diptera) Name:** (HMFEI pts= 1) 0	**EPT TAXA*** Total No. EPT Taxa : 0
Water Mites **(Hydracarina)** (HMFEI pts= 1) 0	Midges **(Chironomidae)** (HMFEI pts= 1) 0	Mayfly Nymphs **(Ephemeroptera)** Taxa Present: _____
Damselfly Nymphs **(Zygoptera)** (HMFEI pts= 1) 0	Snails **(Gastropoda)** (HMFEI pts= 1) 0	[HMFEI pts= No. Taxa (x) 3] 0
Alderfly Larvae **(Sialidae)** (HMFEI pts= 1) 0	Clams **(Bivalvia)** (HMFEI pts= 1) 0	Stonefly Nymphs **(Plecoptera)** Taxa Present: _____
Other Beetles **(Coleoptera)** (HMFEI pts= 1) 0	Other Taxa: 0	[HMFEI pts= No. Taxa (x) 3] 0
Other Taxa: **(Hemiptera)** 0	Other Taxa: 0	Caddisfly Larvae **(Trichoptera)** Taxa Present: _____
Other Taxa: 0	Other Taxa: 0	[HMFEI pts= No. Taxa (x) 3] 0

*Note: EPT identification based upon Family or Genus level of taxonomy

Voucher Sample ID: _____

Time Spent (minutes): _____

Notes on Macroinvertebrates: (Predominant Organisms; Other Common Organisms; Diversity Estimate): _____

Final HMFEI Calculated Score (Sum of All White Box Scores) = **0**

If Final HMFEI Score is >19, then a Spring Water Stream is Indicated
If Final HMFEI Score is 7-19, then a Small Drainage Warm Water Stream is Indicated
If Final HMFEI Score is <7, then an Ephemeral Stream is Indicated