# Item 3

## Wetlands and Other Waters Delineation Report

### Photographs (Appendix B)

### Ohio Rapid Assessment Method Forms (Appendix D)

### Stream Assessment Forms (Appendix E)

# Wetlands and Other Waters

# Delineation Report

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for the :

**Line 285 – 2015 Replacement**
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Project No. 6893

Date: November 4, 2014

## STATEMENT OF CERTIFICATION

*The analyses, opinions and conclusions in this report are based entirely on EnviroScience's unbiased, professional judgment. EnviroScience's compensation is not in any way contingent on any action or event resulting from this study. Neither EnviroScience nor any EnviroScience employee has any vested interest in the property examined in this study.*

**TABLE OF CONTENTS**

LIST OF TABLES ..... iii
LIST OF APPENDICES ..... iii
EXECUTIVE SUMMARY ..... iv
2.0 METHODS ..... 1
2.1 WETLANDS ..... 2
2.1.1 Determination ..... 2
2.1.1.1 Vegetation ..... 3
2.1.1.2 Hydrology ..... 4
2.1.1.3 Soils ..... 5
2.1.2 ORAM Categorization ..... 5
2.1.3 Cowardin Wetland Classification ..... 6
2.2 OTHER WATERS ..... 6
2.2.1 Ponds and Lakes ..... 7
2.2.2 Streams and Rivers ..... 7
2.2.3 HHEI and QHEI ..... 8
3.0 LITERARURE REVIEW ..... 8
3.1 USGS TOPOGRAPHIC MAP ..... 8
3.2 NWI MAP ..... 9
3.3 COUNTY SOIL SURVEY ..... 9
3.4 U.S. FISH AND WILDLIFE SERVICE ..... 9
3.5 AERIAL PHOTOGRAPHY ..... 10
4.0 RESULTS ..... 11
4.1 NONWETLANDS ..... 11
4.2 WETLANDS ..... 12
4.4 PONDS AND LAKES ..... 13
5.0 REGULATORY JURISDICTION ..... 13
5.1 AGENCY COORDINATION ..... 15
6.0 ASSUMPTIONS AND DISCLAIMERS ..... 15
REFERENCES ..... 17

## LIST OF TABLES

LIST OF APPENDICES.....iii
Table 1. Wetland Communities (Cowardin *et al.* 1979). ..... 3
Table 2. Disturbed and Successional Nonwetland Communities. ..... 3
Table 3. Vegetative Strata. ..... 3
Table 4. Plant Indicators. ..... 4
Table 5. ORAM Scores and Categories. ..... 5
Table 6. Soil Types mapped in the Project Area. ..... 9
Table 7. Sample Plot Results. ..... 11
Table 8. Wetland Results within the Project Area. ..... 12
Table 9. Stream Results within the Project Area. ..... 13

## LIST OF APPENDICES

Appendix A: Figures

Figure 1. Location of Site on Highway Map of Cuyahoga County, Ohio.
Figure 2. USGS 7.5-minute Topographic Map of Cleveland South and Broadview Heights Quadrangles.
Figure 3. NWI Map of Site (Cleveland South and Broadview Heights Quadrangles).
Figure 4. Soil Map of Cuyahoga County, Ohio.
Figure 5. Site Map of Wetlands and Other Water Resources.
Figure 6. Ohio Historic Preservation Map.

Appendix B: Photographs

Appendix C: Routine Wetland Determination Data Forms

Appendix D: Ohio Rapid Assessment Method for Wetlands v 5.0 Rating Forms

Appendix E: Stream Habitat Forms

## EXECUTIVE SUMMARY

EnviroScience, Inc. performed a delineation of wetlands and other waters in September 2014 for the East Ohio Gas Company (EOG) at the location of the Line 285 - 2015 Replacement project located in the City of Independence (Independence Township), Cuyahoga County, Ohio. The project area includes two sections within the existing pipeline right-of-way (ROW) of 60 feet wide (30 feet on each side of the pipeline). The northern section of the project is located north of Selig Road and west of Elmwood Park and is approximately 300 feet in length. The southern section begins north of Brookside Road immediately east of Interstate 77 (I-77) and extends south approximately 2,745 feet. The purpose of this project is to replace approximately 2,800 feet of 30-inch diameter natural gas pipeline.

Six wetlands were identified within the project area, accounting for 0.929 acres. Three intermittent streams and one ephemeral stream cross the project area, accounting for an additional 301 linear feet (0.035 acres) of waterway within the project area. No open water aquatic resources were identified within the project area. The wetlands and waterbodies are under the jurisdiction of the Ohio EPA or U.S. Army Corps of Engineers (USACE). No filling may occur within these areas without their written permission. If impacts to onsite water resources are proposed, these activities would follow those authorized in the USACE 2012 Nationwide Permits for a Nationwide Permit (NWP) #12 (Utility Line Activities). However, if all onsite water resources are avoided, a USACE NWP or Ohio EPA Water Quality Certification will not be required for this project.

If wetlands or streams are impacted for this project, U.S. Fish and Wildlife Service (USFWS) coordination will be initiated by the USACE. If no wetland or stream impacts are proposed, this project would fall under EOG's Categorical Exclusion Agreement with the USFWS dated January 16, 2014. Coordination with the Ohio Department of Natural Resources is recommended to ensure compliance with the Endangered Species Act.

If the proposed ground disturbance for a project is over one acre, the following must be prepared and submitted before construction: a Notice of Intent through the Ohio EPA, a Stormwater Pollution Prevention Plan, and project notification to the Cuyahoga County Soil and Water Conservation District. The total size the proposed project area is approximately 4.0 acres and therefore, the above submittals would be required unless the ground disturbance is minimized.

## 1.0 INTRODUCTION AND SITE DESCRIPTION

EnviroScience, Inc. performed a delineation of wetlands and other waters in September 2014 for EOG at the location of the Line 285 - 2015 Replacement project located in the City of Independence (Independence Township), Cuyahoga County, Ohio. The project area includes two sections within the existing pipeline ROW of 60 feet wide (30 feet on each side of the pipeline). The northern section of the project is located north of Selig Road and west of Elmwood Park and is approximately 300 feet in length. The southern section begins north of Brookside Road immediately east of I-77 and extends south approximately 2,745 feet. The purpose of this project is to replace approximately 2,800 feet of 30-inch diameter natural gas pipeline.

Three distinct vegetative communities were identified within the project area, including one wetland community type. Upland plant communities exist primarily as maintained ROW with lawn and new field vegetation. The surrounding area exists as residential and forested land. The project area crosses six wetlands, three intermittent streams, and one ephemeral stream.

The project area is located in the Cuyahoga River drainage basin (Hydrologic # 04110002) which drains approximately 2,596 square miles in northeast Ohio. It is within the Erie Drift Plain ecoregion (Woods *et al.* 1998) of Ohio. The project area is located within the area covered by the Northcentral and Northeast Regional Supplement (USACE 2012) and associated plant list (Lichvar 2012). The project area is regulated by the USACE Buffalo District.

## 2.0 METHODS

Government agencies regulate coastal and inland waters for commerce, flood control and water quality. These water bodies provide numerous functions and values necessary to protect and sustain our quality of life. Wetlands comprise a significant portion of regulated waters. The U.S. Army Corps of Engineers (Corps) and Environmental Protection Agency (EPA) jointly define wetlands as:

> "Those 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."

The remaining deepwater aquatic habitats (open waters) are defined by the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) as:

> ". . . areas that are permanently inundated at mean annual water depths >6.6 ft or permanently inundated areas <6.6 ft in depth that do not support rooted emergent or woody plant species."

The methods used for determining and delineating wetlands and open waters strictly adhere to those found in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (USACE 2012). Wetlands and open water boundaries were determined by the disappearance of one or more of their diagnostic characteristics.

Ordinary high water marks (OHWM) defined the outermost regulatory boundaries of ephemeral and open waters.

Each sample plot and the perimeter of each wetland and other water was surveyed and marked in the field with plain pink flags and pink "wetland boundary" flags, respectively. A global positioning system (GPS) unit with submeter accuracy was used, in conjunction with aerial photography and topographic figures, for the survey. Computer Aided Design (CAD) software was used to determine wetland dimensions and produce a map of the project area showing wetlands and other waters.

## 2.1 WETLANDS

### 2.1.1 Determination

A review of secondary literature sources was performed to find known wetlands and other significant ecological resources and areas with high potential for wetlands in or near the proposed project area. Resources included some or all of the following:

1. U.S. Geological Survey (USGS) topographic maps;
2. National Wetlands Inventory (NWI) maps;
3. Web Soil Survey; and
4. Aerial Photographs.

A field inspection of the project area was then completed to identify major plant communities and to visually locate potential wetlands. The routine, onsite (Level 2) wetland determination was used to perform the delineation. Wetland communities were classified according to the classification scheme of Cowardin *et al.* (1979) (Table 1). Mature nonwetland communities that had reached a stable equilibrium were classified according to Anderson (1982) and Gordon (1966, 1969). Disturbed and successional nonwetland communities were classified as one of the categories described in Table 2.

**Table 1. Wetland Communities (Cowardin *et al.* 1979).**

| Community | Description |
|---|---|
| PEM | Palustrine Emergent |
| PSS | Palustrine Scrub-Shrub |
| PFO | Palustrine Forested |
| POW | Palustrine Open Water |

**Table 2. Disturbed and Successional Nonwetland Communities.**

| Community | | Description |
|---|---|---|
| Disturbed | Urban | regularly maintained land; residential; industrial |
| | Agricultural | land used for producing crops or raising livestock; cropland; pastureland |
| | Cleared | disturbed areas devoid of most vegetation from recent clearing, grading or filling |
| Successional | Open Field | herbaceous community without woody vegetation |
| | Old Field | herbaceous community having woody vegetation coverage of <50% |
| | Scrub-Shrub | community dominated by woody vegetation <6 m (20 ft) tall |
| | Forest | community dominated by woody vegetation >6 m (20 ft) tall |

Sample plots were established within each natural community and potential wetland within the study area. Complete data for each sample plot were collected and recorded on the USACE's Routine Wetland Determination Data Forms contained in the applicable USACE Regional Supplement (USACE 2012). Vegetation, hydrology and soils were evaluated at each sample plot.

#### 2.1.1.1 Vegetation

To detect the presence or absence of hydrophytic vegetation, four plant strata were evaluated within specific radii of the plot center. Each stratum was ranked by aerial cover in descending order of abundance. Table 3 provides information on each vegetative stratum.

**Table 3. Vegetative Strata.**

| Stratum | Definition | Survey Area |
|---|---|---|
| Tree | woody plants > or equal to 3 in. (7.6 cm) dbh, regardless of height | 30 ft (9.1 m) radius |
| Sapling/shrub | woody plants <3 in. (7.6 cm) dbh and ≥3.28 ft (1 m) tall | 15 ft (4.6 m) radius |
| Herbaceous | herbs and woody plants less than 3.28 ft (1 m) in height | 5 ft (1.5 m) radius |
| Woody vines | woody vines >3.28 ft (1 m) in height | 30 ft (9.1 m) radius |

Percent dominance was obtained for each species and within each stratum. Dominant species are those which cumulatively totaled in order of abundance immediately exceed 50% and also include any individual species with an abundance of 20% or more (USACE 2012). Dominant taxa were identified using recognized local guides: nomenclature follows the *National List of Scientific Plant Names* (USDA 1982). Following the identification of each plant species present within the plot, all dominant species within each stratum were assigned a wetland indicator status according to Lichvar (2012). Indicators are summarized in Table 4.

**Table 4. Plant Indicators.**

| Indicator | Category | Definition |
|---|---|---|
| OBL | Obligate Wetland | almost exclusively (>99% of occurrences) found in wetlands |
| FACW | Facultative Wetland | most likely found in wetlands (67-99% of occurrences) |
| FAC | Facultative | equally likely found in wetlands or nonwetlands (34-66%) |
| FACU | Facultative Upland | most likely found in nonwetlands (1-33% occurrence in wetlands) |
| UPL | Obligate Upland | almost exclusively found in nonwetlands (<1% occurrence in wetlands) |

An 'NI' (no indicator) designation represents species where not enough information is available to assign an indicator; an 'NL' (no listing) designation is given to species whose identification was not determined sufficiently enough to assign an indicator. Once the indicator status is assigned to each dominant species, the evaluator can perform the percent dominance test according to the protocol outlined within the applicable Regional Supplement (USACE 2012) to determine if the plot meets the criterion for hydrophytic vegetation.

#### 2.1.1.2 Hydrology

To detect the presence or absence of wetland hydrology, surface and subsurface hydrologic indicators were evaluated at the sample plot and throughout the adjacent community. Primary sources of wetland hydrology include direct precipitation, headwater flooding, backwater flooding, groundwater or any combination of these. When obtaining data at each sample plot, the evaluator observes evidence of hydrology. Primary indicators of hydrology (only one of these is necessary to indicate sufficient wetland hydrology) include the presence of surface water, water marks, sediment deposits, drift deposits, etc. (USACE 2012). Secondary indicators of hydrology (which requires two or more at each sample plot) include surface soil cracks, drainage patterns, crayfish burrows, etc. (USACE 2012).

#### 2.1.1.3 Soils

The upper horizons of the soil at each sample plot were examined to detect the presence or absence of hydric soils indicators. Current USACE guidance requires the evaluator to assess the upper 20 inches of soil for hydric soil characteristics. Most indicators of hydric soils require an assessment of soil matrix color and mottle characteristics (Environmental Laboratory 1987, USACE 2012) for each horizon. These characteristics were determined by comparing a moist sample with *Munsell Soil Color Chart* (Munsell Color 2009) or *The Globe Soil Color Book* (Visual Color Systems 2004).

### 2.1.2 ORAM Categorization

Each wetland system was categorized in accordance with version 5.0 of the Ohio EPA's Ohio Rapid Assessment Method for Wetlands (ORAM) (Mack 2001). Field scoring forms are contained in Appendix D.

Ohio EPA has established three primary and three intermediate categories of wetland quality which are based on a wetland's size, its hydrologic function, the types of plant communities present, the physical structure of the wetland plant community and the wetland's level of disturbance (OAC 3745-1-54). The relationship between the various wetland categories and their respective ORAM scores is presented in Table 5. ES also evaluated the project area for the presence of state threatened and endangered species as part of the ORAM evaluation.

**Table 5. ORAM Scores and Categories.**

| ORAM Score | ORAM Category | Description |
|---|---|---|
| 0-29.9 | Category 1 | Lowest quality, and are generally characterized by hydrological isolation, lack of plant species diversity, insufficient habitat availability, and limited potential to perform major wetland functions. |
| 30-34.9 | Category 1 or 2 (Gray Zone) | ORAM score is insufficient to categorize wetland. In absence of a nonrapid method such as VIBI, assign the wetland to the higher functional category (Category 2) |
| 35-44.9 | Modified Category 2 | Category 2 wetlands that may be of lower quality or degraded but have reasonable potential to be restored. |
| 45-59.9 | Category 2 | Wetlands that have the capability to support a moderate wildlife community or maintain mid-level hydrological functions. |
| 60-64.9 | Category 2 or 3 (Gray Zone) | ORAM score is insufficient to categorize wetland. In absence of a nonrapid method such as VIBI, assign the wetland to the higher functional category (Category 3) |
| 65-100 | Category 3 | Highest quality, generally characterized by a high level of biological diversity and topographical variation, threatened or endangered species, large numbers of native species, or a high level of functional importance to its surroundings. |

Category 3 wetlands have the highest quality, and are generally characterized by a high level of biological diversity and topographical variation, large numbers of native species, or a high level of functional importance to its surroundings. Category 2 wetlands have the capability to support a moderate wildlife community or maintain mid-level hydrological functions. Category 2 also includes wetlands that may be of lower quality or degraded but have reasonable potential to be restored (Modified Category 2). Category 1 wetlands are of the lowest quality, and are generally characterized by hydrological isolation, lack of plant species diversity, insufficient habitat availability, and limited potential to perform major wetland functions (OAC 3745-1-54).

Since the ORAM is a rapid assessment method, there are certain wetland scores which fail to clearly differentiate the wetland's functional category. The so-called "gray zone" wetlands fall between the definite scoring breaks between the categories. Ohio EPA requires that "gray zone" wetlands be considered as the higher category unless more detailed functional assessments such as the VIBI or AmphIBI are conducted on those wetlands. As a result of this requirement, wetlands whose scores fall between the breakpoints for Categories 1 and 2 (1 or 2 gray zone wetlands) wetlands will be considered as Category 2 wetland for purposes of this report. Wetlands whose scores fall between the breakpoints for Categories 2 and 3 wetlands (2 or 3 gray zone wetlands) will be considered a Category 3 wetland for purposes of this report.

### 2.1.3 Cowardin Wetland Classification

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory uses the *Classification of Wetlands and Deepwater Habitats of the United States* to classify wetland habitat types (Cowardin et al 1979). This classification system is hierarchical and defines five major systems – Marine, Estuarine, Riverine, Lacustrine, and Palustrine. The Palustrine system was the only type of wetland system identified within the study area and is defined as including all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean driven-derived salts is below 0.5 percent (Cowardin et al 1979).

## 2.2 OTHER WATERS

Other waters include ephemeral and open waters. These waters are broken down into two categories: 1) ponds and lakes; and 2) streams and rivers.

### 2.2.1 Ponds and Lakes

Palustrine systems other than wetlands, and lacustrine waters are addressed as ponds and lakes, respectively. These non-linear open waters may harbor important aquatic communities such as vegetated shallows (aquatic bed) and mud flats. They are classified according to Cowardin *et al.* (1979).

### 2.2.2 Streams and Rivers

Riverine systems are linear flowing waters bounded by a channel. Cowardin *et al.* (1979) divides these system into four groups, however, for the purpose of this report streams are placed into three regulatory types, listed below.

Ephemeral: An ephemeral stream only conveys runoff precipitation and meltwater. It is permanently located above the water table and is most often dry.

Intermittent: An intermittent stream is located below the water table for parts of the year, but does have dry periods.

Perennial: A perennial stream typically has flowing water throughout the entire year.

In addition to flow characteristics, the USACE has defined other regulatory categories that apply to streams, which are listed below (USACE and USEPA 2007).

<u>Traditional Navigable Waters (TNW)</u>: all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.

<u>Relatively Permanent Waters (RPW)</u>: non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months).

<u>Non-Relatively Permanent Waters (Non-RPW)</u>: non-navigable tributaries of traditional navigable waters that are not relatively permanent where the tributaries typically do not have continuous flow at least seasonally (e.g., typically three months).

The Corps and USEPA will assert jurisdiction under the Clean Water Act on Traditional Navigable Waters (TNWs) and all wetlands adjacent to them, non-navigable tributaries of TNWs that are Relatively Permanent Waters (RPW) [i.e., tributaries that typically flow year-round or have continuous flow at least seasonally]; and wetlands that directly abut such tributaries. In addition, the agencies will assert jurisdiction over every water body that is not an RPW if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW.

"A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands."

### 2.2.3 HHEI and QHEI

Data collection for all streams included the completion of either the Ohio EPA Headwater Habitat Evaluation Index (HHEI) for primary headwater habitat (PHWH) streams or the Qualitative Habitat Evaluation Index (QHEI) for larger streams. Biologists are Ohio EPA trained to assess streams using the QHEI and HHEI. Following the Ohio EPA guidance, any stream with a drainage area of less than or equal to one $mi^2$ (2.589 $km^2$) and pools with a maximum water depths less than or equal to 15.75 in (40 cm) were evaluated using the HHEI (Ohio EPA 2002). The QHEI was used to evaluate streams with drainage areas greater than one $mi^2$ and pools with maximum water depths greater than 15.75 in (40 cm). The assessment location is representative of the stream/headwater within the project area.

## 3.0 LITERATURE REVIEW

### 3.1 USGS TOPOGRAPHIC MAP

The U.S. Geological Survey (USGS) 7.5-minute topographic series (Cleveland South and Broadview Heights Quadrangles) is shown on Figure 2 (Appendix A). The northern portion of the project area is relatively flat and lies at the base of a slope west of Elwood Park. The southern portion of the project area has undulating topography and is shown just east of I-77. Three intermittent streams are shown crossing through the southern portion of the project area. Elevations range from approximately 870 feet above mean sea level (AMSL) to 1,020 feet AMSL.

### 3.2 NWI MAP

The National Wetlands Inventory (NWI) map (Cleveland South and Broadview Heights Quadrangles) of the project area is shown on Figure 3 in Appendix A. No wetland systems are depicted within the project area.

### 3.3 COUNTY SOIL SURVEY

The project area is found on the *Soil Survey of Cuyahoga County, Ohio* was accessed on the Soil Survey Geographic (SSURGO) Database (USDA Web Soil Survey 2011) (Figure 4; Appendix A). Four soil types are depicted within the project area and are listed in Table 6. All soil types are listed as predominantly non-hydric or not hydric within Cuyahoga County.

**Table 6. Soil Types mapped in the Project Area.**

| Symbol | Soil Type | Status | Percent Hydric | Acres in Project Area | Percent Within Project Area |
|---|---|---|---|---|---|
| EsC | Ellsworth-Urban land complex, rolling | Not Hydric | 0 | 0.640 | 16.0 |
| HrB | Hornell silt loam, 2 to 6 percent slopes | Predominantly Non-Hydric | 8 | 0.348 | 8.7 |
| HrC | Hornell silt loam, 6 to 12 percent slopes | Not Hydric | 0 | 2.197 | 55.1 |
| MtA | Mitiwanga silt loam, 0 to 2 percent slopes | Not Hydric | 0 | 0.801 | 20.1 |

### 3.4 U.S. FISH AND WILDLIFE SERVICE

EOG has a Categorical Exclusion Agreement with the USFWS (dated January 16, 2014). To qualify under this agreement and in order to receive a “no effect” determination, three conditions within EOG’s Categorical Exclusion Agreement with the USFWS dated January 16, 2014 must be followed. First, the Line 285-2015 Replacement project qualifies as a minor activity because it involves the replacement of existing pipeline within the permanent ROW (condition I.1.a). Second, temporary or permanent impacts to perennial streams or wetlands must not occur. In addition, the project must not impact the listed species or their habitat as listed below. If one of these conditions cannot be met, consultation with the USFWS is recommended.

The project area was examined for suitable habitat for federally listed species whose known range includes Cuyahoga County. These species are the federally endangered

Indiana bat (*Myotis sodalis*), the potentially endangered northern long-eared bat (*Myotis septentrionalis*), the federally endangered Kirtland's warbler (*Dendroica* kirtlandii), the federally endangered piping plover (*Charadrius melodus*), the proposed threatened rufa red knot (*Calidris canutus rufa*), and the federal species of concern bald eagle (*Haliaeetus leucocephalus*).

Living or dead trees with shedding or peeling bark or cavities may serve as roosting trees for the Indiana bat and/or the northern long-eared bat. In addition, sheds and barns may serve as roosting habitat for the northern long-eared bat. Thirteen potential habitat trees exist within the project area. These potential roost trees (PRTs) are northern white oak (*Quercus alba*), northern red oak (*Quercus rubra*), shagbark hickory (*Carya ovata*), black cherry (*Prunus serotina*), and standing dead trees with diameters at breast height (dbh) measurements ranging from 8 to 48 inches. The PRTs have 60 to 100% solar exposure, peeling bark, holes and/or crevices. Because of the size and solar exposure, two of these trees may be considered potential maternity roost trees (PMRTs) by the USFWS. If these trees must be cleared for the project activities, formal consultation with USFWS should be conducted.

In order for the EOG Categorical Exclusion Agreement with the USFWS dated January 16, 2014 to apply in regards to the Kirtland's warbler, the project must not impact scrub/shrub or forest habitat within three miles of the Lake Erie shoreline. The Line 285–2015 Replacement project area is approximately nine miles from the Lake Erie Shoreline.

Preferred habitat for the piping plover is sand or pebble beaches along the shores of Lake Erie. No habitat for the piping plover exists within the project area. In addition, this project is not located in or near any of the designated critical habitat areas for this species.

Preferred habitat for the rufa red knot is sand, gravel, or cobble beaches and mudflats along the shore of Lake Erie. No habitat for this species exists within the project area.

The bald eagle nests in large trees near water. No bald eagle habitat was observed within the project area. Moreover, according to the EOG Categorical Exclusion Agreement with USFWS dated January 16, 2014, Independence Township in Summit County has no known occurrences of bald eagle nesting sites. Therefore, further coordination with the USFWS in regard to the bald eagle is not required for this project.

### 3.5 AERIAL PHOTOGRAPHY

A recent aerial photograph of the project area is shown on Figure 5 (Appendix A). The northern portion of the project is depicted as a maintained pipeline ROW surrounded by

a forest and parkland. The southern portion of the project area is depicted as a maintained ROW between I-77, residential property, and forested land.

## 4.0 RESULTS

Six sample plots were established within three natural communities. One of these communities is considered wetland. Table 7 summarizes the sample plot data.

**Table 7. Sample Plot Results.**

| Sample Plot | Photo* | Community** | Hydrophytic Vegetation | Wetlands Hydrology | Hydric Soil | Status | Location |
|---|---|---|---|---|---|---|---|
| 1 | 1 | PEM | X | X | X | Wetland | W-1 |
| 2 | 2 | New Field | X | | | Non-Wetland | SP-2 |
| 3 | 3 | Maintained Lawn | | | | Non-Wetland | SP-3 |
| 4 | 4 | PEM | X | X | X | Wetland | W-2 |
| 5 | 5 | New Field | | | | Non-Wetland | SP-5 |
| 6 | 6 | PEM | X | X | X | Wetland | W-5 |

*photos are in Appendix B
** PEM =Palustrine Emergent

Each sample plot, delineated wetland, and other waters are illustrated on Figure 5 (Appendix A). The following section describes general conditions found within each plant community and summarizes relevant information from the data forms, located in Appendix C.

### 4.1 NONWETLANDS

Two upland communities, maintained lawn and open field, exist within the project area. The new field plant community is represented by Sample Plots 2 and 5. Dominant species found in the new field communities include large barnyard grass (*Echinochloa frumentacea*, FAC), Queen Anne's lace (*Daucus carota*, UPL), and white heath American-aster (*Symphiotrichum ericoides*, FACU).

The maintained lawn community, represented by Sample Plot 3 is dominated by Kentucky bluegrasss (*Poa pratensis*, FACU), southern crab grass (*Digitaria cilaris*, FACU), ground ivy (*Glechoma hederacea*, FACU), and English plantain (*Plantago lanceolata*, FACU).

## 4.2 WETLANDS

Six wetlands were identified and delineated within the project area. Wetland W-1 is located within the northern portion of the project area. Wetlands W-2, W-3, W-4, W-5, and W-6 are located within the southern portion of the project area. The results are given in Table 8 and are briefly described in the following section. The wetlands were categorized using the Ohio Rapid Assessment Method for Wetlands v.5.0 (ORAM); the scoring form is included in Appendix D. Wetland size has been determined for areas within the project area. Wetlands are illustrated on Figure 5 (Appendix A) and photographs of each wetland are in Appendix B.

**Table 8. Wetland Results within the Project Area.**

| Wetland | Photo | Cowardin Classification | ORAM Score | ORAM Category | Size within Project Area (acres) | Length of Wetland Crossing (feet) |
|---|---|---|---|---|---|---|
| W-1 | 7 | PEM | 40.5 | Modified 2 | 0.328 | 276 |
| W-2 | 8 | PEM | 27.5 | 1 | 0.038 | 46 |
| W-3 | 9 | PEM | 25 | 1 | 0.099 | 137 |
| W-4 | 10 | PEM | 22 | 1 | 0.001 | 11 |
| W-5 | 11 | PEM | 36 | Modified 2 | 0.362 | 515 |
| W-6 | 12 | PEM | 28 | 1 | 0.101 | 178 |
| **Total Wetlands** | | | | | **0.929** | **1,163** |

*photos are located in Appendix B

All of the wetlands within the project area were dominated by palustrine emergent (PEM) vegetation. Sample Plots 1, 4, and 6 represent onsite PEM communities. Vegetation within the onsite PEM wetlands includes rice cut grass (*Leersia oryzoides*, OBL), fringed sedge (*Carex crinita*, OBL), deer-tongue rosette grass (*Dichanthelium clandestinum*, FACW), arrow-leaf tearthumb (*Persicaria sagittata*, FACW), sensitive fern (*Onoclea sensibilis*, FACW), creeping-Jenny (*Lysimachia nummularia,* FACW), soft-stem club-rush (*Schoenoplectus tabernaemontani*, OBL), cut-leaf water-horehound (*Lycopus americanus*, OBL), narrow-leaf cattail (*Typha latifolia,* OBL), field horsetail (*Equisetum arvense*, FAC), Devil's pitchfork (*Bidens frondosa*, FACW), common fox sedge (*Carex vulpinoidea*, OBL), and chufa (*Cyperus esculentus*, FACW) in the herbaceous layer.

Wetlands W-2, W-3, W-4, and W-6 fall within the range for Category 1 wetlands. These wetlands are small with apparent modifications to hydrology and habitat. Wetlands W-1

and W-5 fall within the range for Modified Category 2 wetlands. These wetlands are larger in size and, although modifications are apparent, they are not as extensive. All onsite wetlands lost points due to the presence of invasive species.

### 4.3 Streams and Rivers

Three intermittent streams and one ephemeral stream were identified and delineated within the project area. The results are depicted in Table 9 and illustrated on Figure 5 (Appendix A). The streams were assessed using the Headwater Habitat Evaluation Index (HHEI); scoring forms are included in Appendix E.

**Table 9. Stream Results within the Project Area.**

| Stream | Photos* | Type | Bankfull Width (feet) | Depth at Time of Survey (inch) | Length Within Project Area (linear feet) | Area Within Project Area (acres) | QHEI Score |
|---|---|---|---|---|---|---|---|
| S-1 | 13-15 | Intermittent | 4 | 9 | 62 | 0.006 | 48 |
| S-2 | 16-18 | Ephemeral | 1 | 9 | 66 | 0.002 | 24 |
| S-3 | 19-21 | Intermittent | 10 | 3 | 92 | 0.021 | 56 |
| S-4 | 22-24 | Intermittent | 3 | 3 | 81 | 0.006 | 40 |
| **Total Stream** | | | | | **301** | **0.035** | |

*photos are located in Appendix B

All of the onsite streams are located in the southern portion of the project area and flow from west to east across the ROW. These streams flow to the northeast offsite, eventually draining in to the Cuyahoga River. The assessment of Streams S-1 and S-3 resulted in HHEI scores of 48 and 56 respectively, which places these streams within the range of Class II Primary Headwater Habitat (PHWH) streams. Streams S-2 and S-3 scored a 24 and 40 respectively, classifying these streams as Class I PHWH streams.

### 4.4 Ponds and Lakes

No open water aquatic resources were identified within the project area.

## 5.0 REGULATORY JURISDICTION

The wetlands and waterbodies are under the jurisdiction of the Ohio EPA or Corps. No filling may occur within these areas without their written permission. Please contact the Ohio EPA Division of Surface Water at (614) 644-2001 or the Buffalo District, U.S. Army Corps of Engineers, at (716) 879-4335 before working in these areas. Based on the site plans for the Mt. Pleasant Street Betterment project, the proposed activities would follow

those authorized in the USACE 2012 Nationwide Permits for a NWP #12 (Utility Line Activities) if impacts to onsite water resources are proposed. However, if all onsite water resources are avoided, a U.S. Army Corps of Engineers NWP or Ohio EPA Water Quality Certification will not be required for this project.

The following information is excepted and summarized from the 2007 *U.S. Army Corps Of Engineers Jurisdictional Determination Form Instructional Guidebook.*

> "In 2001, the … U.S. Supreme Court's decision in the *Solid Waste Agency of Northern Cook County (SWANCC) v. Corps* held that isolated, intrastate, non-navigable waters could not be regulated under the CWA based solely on the presence of migratory birds. Following the SWANCC decision it generally was believed that a water body (including a wetland) was subject to CWA jurisdiction if the water body was part of the U.S. territorial seas, or a traditional navigable water, or any tributary to a traditional navigable water, or a wetland adjacent to any one of the above. In addition, isolated wetlands and other waters might be considered jurisdictional where they had the necessary link to either navigable waters or interstate commerce."

In the state of Ohio, the Ohio EPA isolated wetland permitting program was legislatively created in response to the 2001 SWANC decision. On July 17, 2001, House Bill 231 was signed into law, establishing a permanent permitting process for isolated wetlands. The provisions of House Bill 231 were incorporated in Sections 6111.021 through 6111.029 of the Ohio Revised Code.

> "In 2006, the Supreme Court once again addressed the jurisdictional scope of Section 404 of the CWA, specifically the term "the waters of the U.S.," in *Rapanos v. U.S*. and in *Carabell v. U.S*. (hereafter referred to as Rapanos).
>
> The decision provides two new analytical standards for determining whether water bodies that are not traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction: (1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or (2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs. CWA jurisdiction over TNWs and their adjacent wetlands was not in question in this case, and, therefore, was not affected by the Rapanos decision. In addition, at least five of the Justices in Rapanos agreed that CWA jurisdiction exists over all TNWs and over all wetlands adjacent to TNWs.
>
> The Memo states that the [Corps and USEPA] will assert jurisdiction over the following categories of water bodies: TNWs; all wetlands adjacent to TNWs; non-navigable tributaries of TNWs that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally); and wetlands that directly abut such tributaries. In addition, the agencies will assert jurisdiction over every water body that is not an RPW if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water body that are subject to CWA jurisdiction only if such a significant nexus is demonstrated are: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW.

> Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands."

### 5.1 AGENCY COORDINATION

If wetlands or streams are impacted for this project, USFWS coordination will be initiated by the USACE. If no wetland or stream impacts are proposed, this project would fall under EOG's Categorical Exclusion Agreement with the USFWS dated January 16, 2014. Coordination with the Ohio Department of Natural Resources is recommended to ensure compliance with the Endangered Species Act.

This project will result in an earth disturbance of approximately 4.0 acres assuming disturbance is limited to the project area (2,800 feet) within the 60-foot wide ROW. The National Pollution Discharge Elimination System (NPDES) General Construction Site Stormwater Permit OHC000004 through the Ohio EPA is required for projects resulting in earth disturbance greater than one acre. In addition, a Stormwater Pollution Prevention Plan (SWPPP) should be prepared in accordance the Ohio Rain Water and Land Development Manual for projects with earth disturbance greater than one acre. The Cuyahoga County Soil and Water Conservation District and the City of Independence also require notification for projects disturbing more than one acre. In order to stay below the one acre threshold for the above notifications, 15.5 foot wide earth disturbance limits would need to be maintained along the installation of 2,800 feet of pipe. Therefore, if earth disturbance is anticipated to be greater than 15.5 feet wide along the 2,800 foot replacement, the above submittals, would not need to be submitted.

No historic resources are listed within the project area (Figure 6; Attachment A). The USACE and the Ohio Historical Preservation Office (OHPO) do not require a formal Section 106 consultation be completed for pipeline replacement/repair projects due to previous ground disturbance unless historical properties will be impacted by the project. However, if PCN will be submitted to USACE for temporary impacts to wetlands or perennial streams the USACE will take the lead with regards to Section 106. Any additional coordination with OHPO will be determined by the USACE at that time.

## 6.0 ASSUMPTIONS AND DISCLAIMERS

The constant influence of human activity on the project area can result in a rapid change of ecological boundaries. Over time, natural succession and changes in hydrology can also affect their boundaries. Precision of GPS collected data is subject to variation caused by canopy cover, atmospheric interference and satellite configuration. Because slight inaccuracies are possible, all acreages and derived boundaries presented in this report are approximate.

The results and conclusions contained in this report apply to the year and date in which the data were collected. This report is not considered officially valid until it is approved by the Corps. The report is then valid for a period of five years. Refer to the Corps' Regulatory Guidance Letter # 94-1 (23 May 1994).

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# Appendix A:

# Figures

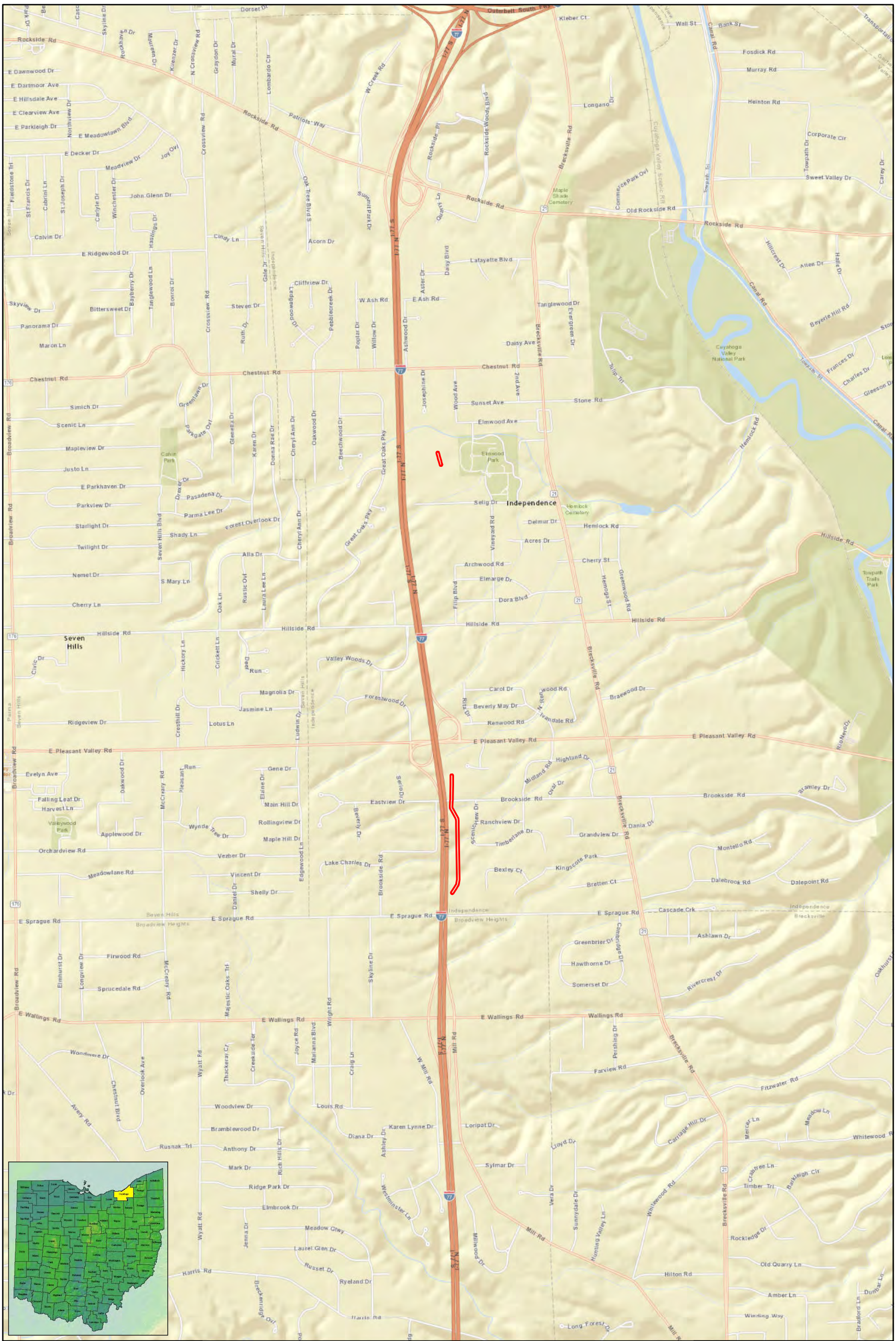


Figure 1. Location of Site on Highway Map of Cuyahoga County, Ohio. Line 285 - 2015 Replacement.

Path: P:\Ecological Survey\DominionEI_Non_PIR\Line 285 - 2015 Replacement\GIS\Map1_Location.mxd

Date: 10/29/2014

Basemap courtesy of ESRI.

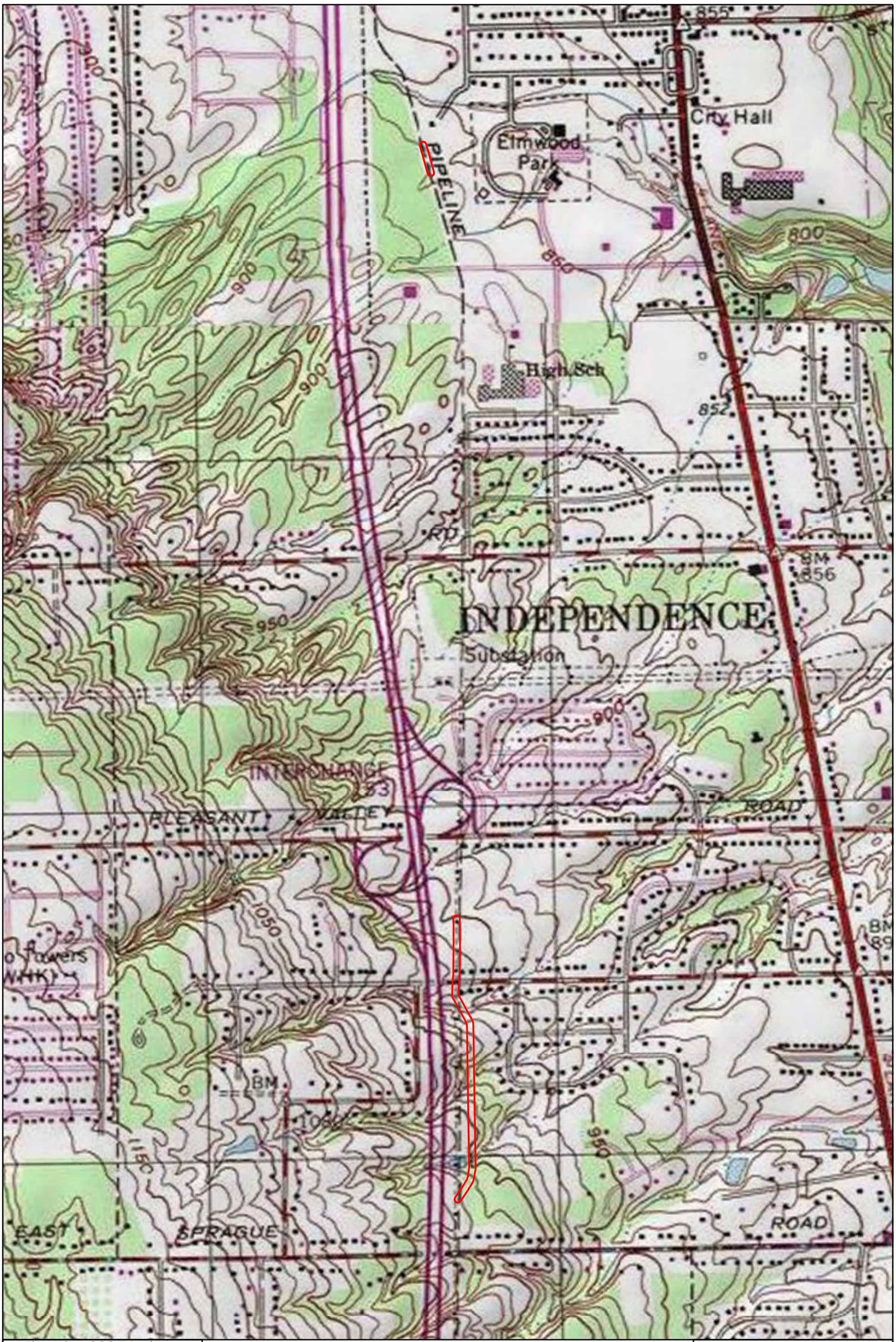


Figure 2. USGS 7.5-minute Topographic Map of Cleveland South and Broadview Heights Quadrangles. Lien 285 - 2015 Replacement.

Project Area

0 500 1,000 2,000 Feet

0 150 300 600 Meters

EnviroScience
Excellence In Any Environment

Path: P:\Ecological Survey\Dominion\EI_Non_PIR\Line 285 - 2015 Replacement\GIS\Map2_Topo.mxd

Date: 10/29/2014

Basemap courtesy of National Geographic Society (2013).

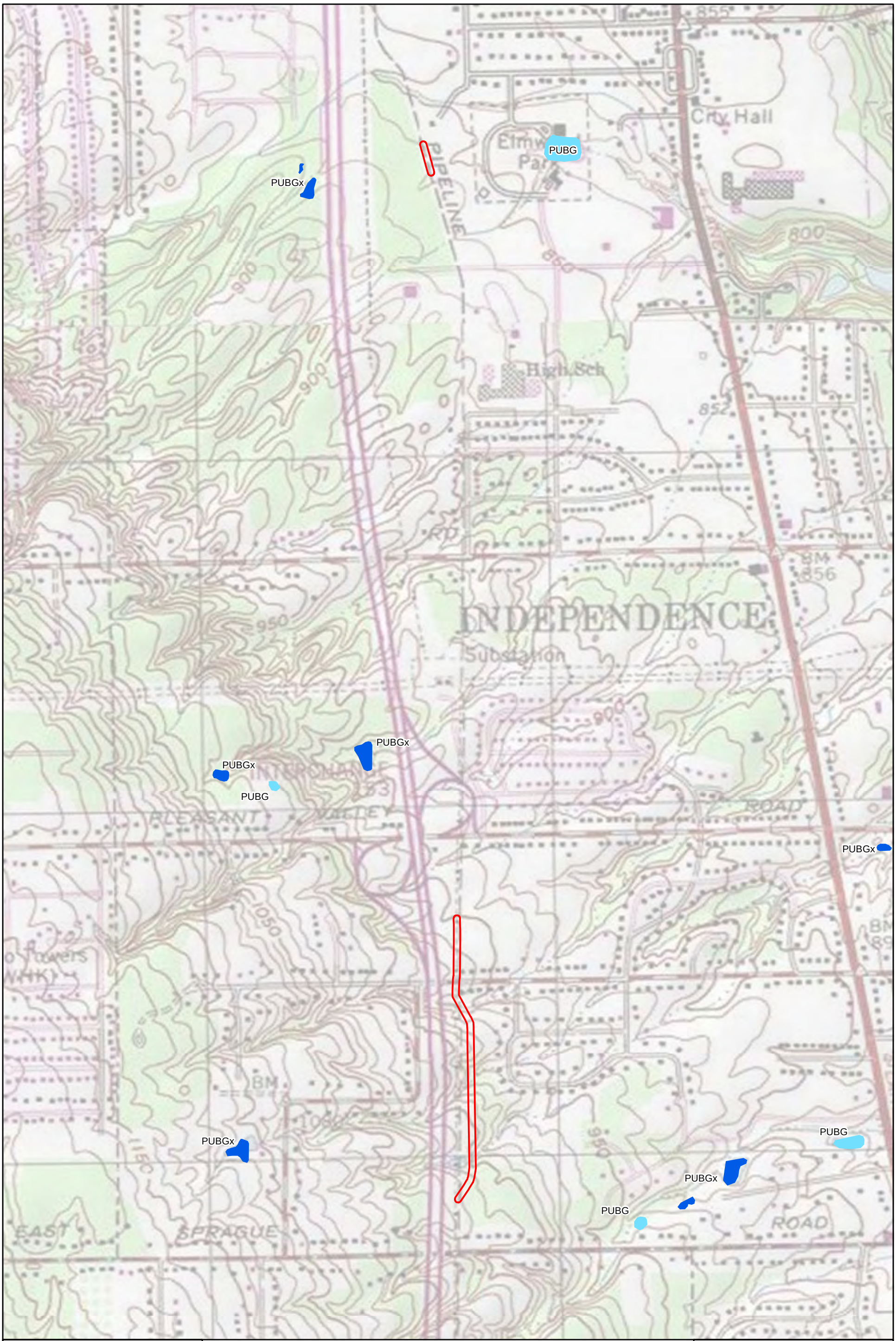


Figure 3.
NWI Map of Site
(Cleveland South and
Broadview Heights Quadrangle).
Line 285 - 2015 Replacement.

Project Area

0 500 1,000 2,000 Feet

0 150 300 600 Meters

EnviroScience
Excellence In Any Environment

Path: P:\Ecological Survey\Dominion\EI_Non_PIR\Line 285 - 2015 Replacement\GIS\Map3_NWI.mxd

Date: 10/29/2014

Basemap courtesy of National Geographic Society (2013). NWI data courtesy of USFWS (current as of May 2014).

Figure 4.
Soil Map of Site in
Cuyahoga County, Ohio.
Line 285 - 2015 Replacement.

Project Area

0 500 1,000 2,000 Feet

0 150 300 600 Meters

EnviroScience
Excellence In Any Environment

Path: P:\Ecological Survey\Dominion\EI_Non_PIR\Line 285 - 2015 Replacement\GIS\Map4_Soil.mxd

Date: 10/29/2014

Basemap courtesy of ESRI. Soil data courtesy of SSURGO.

Figure 5. Site Map Overview of Wetlands and Other Water Resources. Line 285 - 2015 Replacement.

Pipeline
Project Area

0 500 1,000 2,000 Feet
0 150 300 600 Meters

EnviroScience
Excellence In Any Environment

Path: P:\Ecological Survey\Dominion\EI_Non_PIR\Line 285 - 2015 Replacement\GIS\Map5_Overview.mxd

Date: 10/29/2014

Basemap courtesy of ESRI.

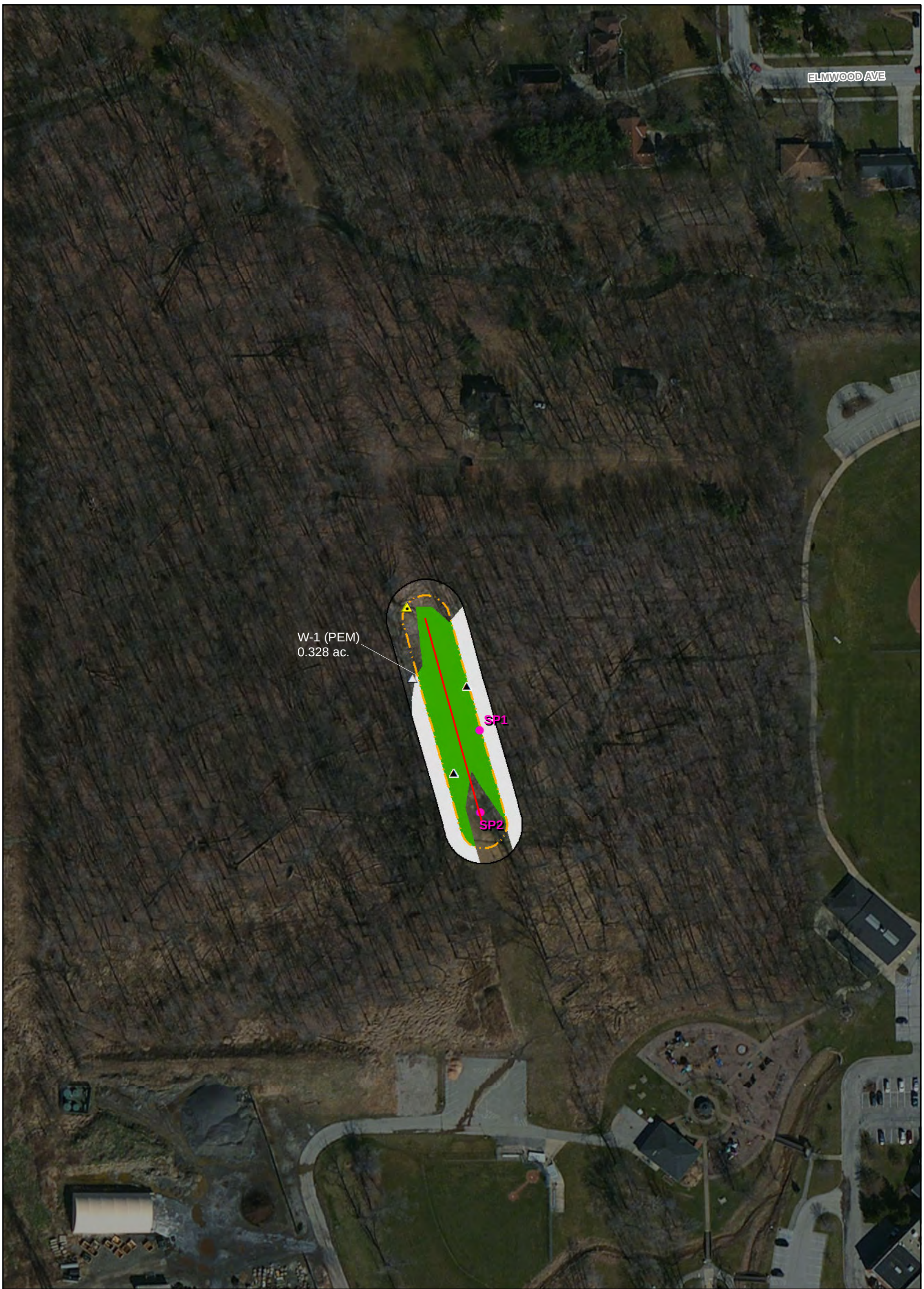

Figure 5.01. Site Map of Wetlands and Other Water Resources.
Line 285 - 2015.

PMRT
PRT
PRT (Offsite)
Sample Plot
Culvert
Inlet
Pipeline
Stream (Ephemeral)
Stream (Intermittent)
Stream (Offsite)
Wetland (PEM)
Wetland (Offsite)
Project Area (60' wide)
Project Area Buffer (80' wide)

0 50 100 200 Feet

0 15 30 60 Meters

5.01

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Date: 10/31/2014 Path: P:\Ecological Survey\Dominion\EI_Non_PIR\Line 285 - 2015 Replacement\GIS\Map5_Site.mxd

Basemap courtesy of ESRI.

Figure 5.02. Site Map of Wetlands and Other Water Resources.
Line 285 - 2015.

PMRT
PRT
PRT (Offsite)
Sample Plot
Culvert
Inlet
Pipeline
Stream (Ephemeral)
Stream (Intermittent)
Stream (Offsite)
Wetland (PEM)
Wetland (Offsite)
Project Area (60' wide)
Project Area Buffer (80' wide)

0 50 100 200 Feet

0 15 30 60 Meters

5.02

EnviroScience
Excellence In Any Environment

Date: 10/31/2014 Path: P:\Ecological Survey\Dominion\EI_Non_PIR\Line 285 - 2015 Replacement\GIS\Map5_Site.mxd

Basemap courtesy of ESRI.

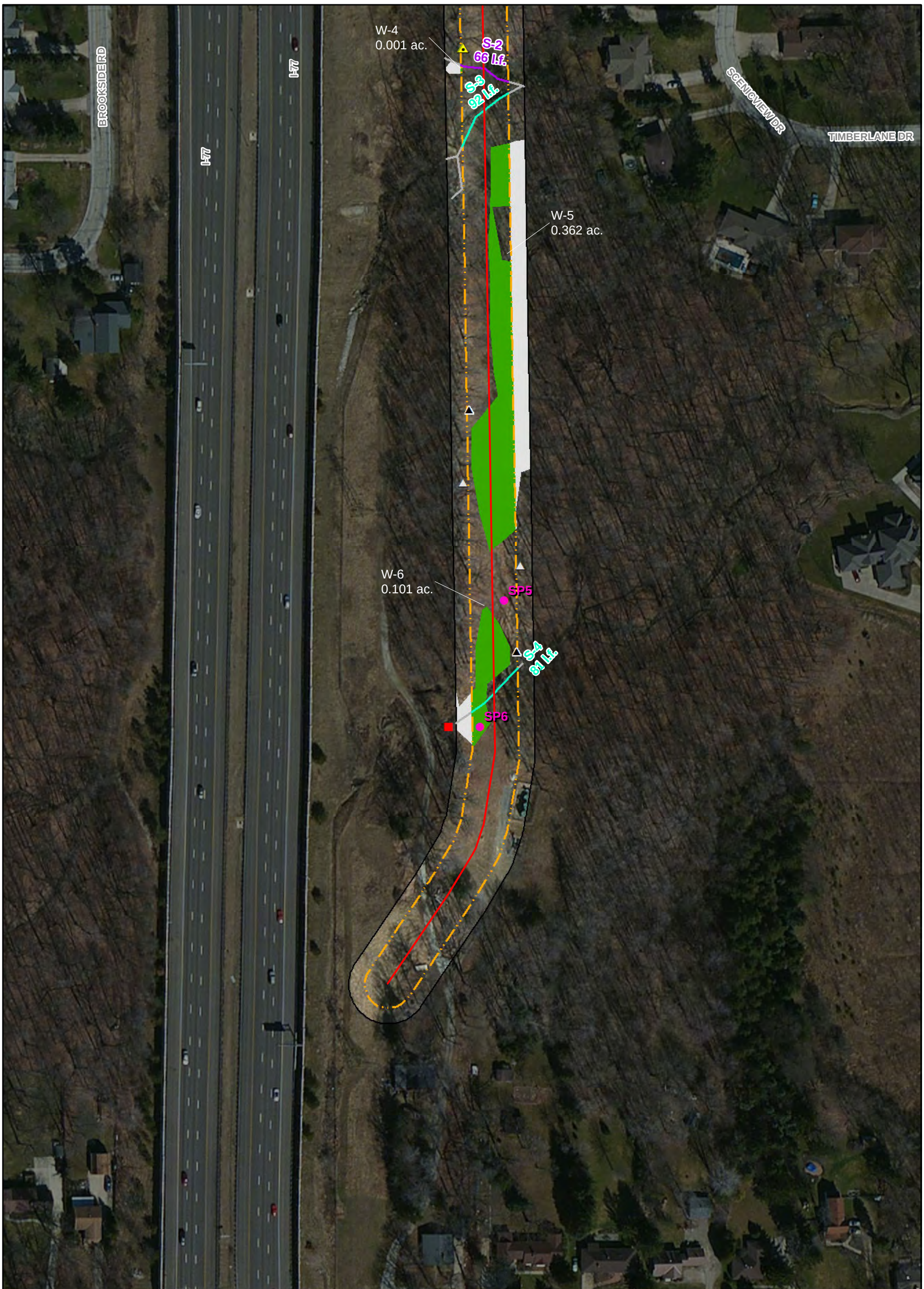


Figure 5.03. Site Map of Wetlands and Other Water Resources.
Line 285 - 2015.

PMRT
PRT
PRT (Offsite)
Sample Plot
Culvert
Inlet
Pipeline
Stream (Ephemeral)
Stream (Intermittent)
Stream (Offsite)
Wetland (PEM)
Wetland (Offsite)
Project Area (60' wide)
Project Area Buffer (80' wide)

0 50 100 200 Feet

0 15 30 60 Meters

5.03

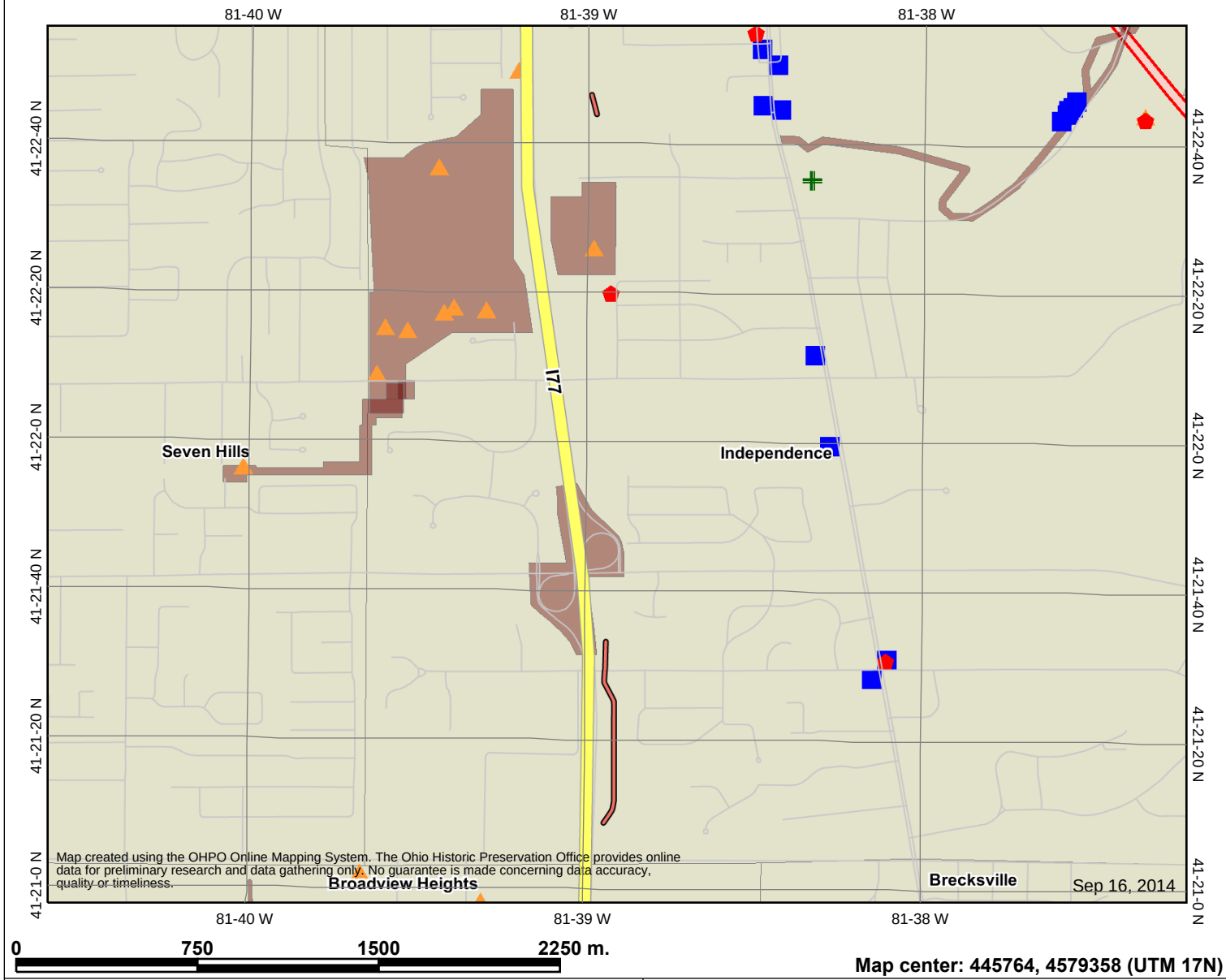
EnviroScience
Excellence In Any Environment

Date: 10/31/2014 Path: P:\Ecological Survey\Dominion\EI_Non_PIR\Line 285 - 2015 Replacement\GIS\Map5_Site.mxd

Basemap courtesy of ESRI.

Ohio Historic Preservation Office

# Figure 6. OHPO Map, Line 285 - 2015 Replacement.




Map center: 445764, 4579358 (UTM 17N)

## Legend

- Line 285 - 2015 Replacement
- NR Determinations of Eligibility
- National Road
- Highways
- Roads
- National Historic Landmarks
- National Register Listings
- Archaeological Sites
- Historic Structures
- OGS Cemeteries
- Phase 1
- Phase 2
- Phase 3
- National Register Boundaries
- Cities
- Counties

N

Scale: 1:25,398

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: Line 285 - 2015 Replacement (Cleveland South and Broadview Heights Quadrangles, Cuyahoga County).

Date Created: 9/16/2014

# Appendix B:

# Photographs

Photo 1. Sample Plot 1 within Wetland W-1.

Photo 2. Sample Plot 2 representing new field.

Photo 3. Sample Plot 3, representing maintained lawn.

Photo 4. Sample Plot 4 within Wetland W-2.

Photo 5. Sample Plot 5 representing new field.

Photo 6. Sample Plot 6 within Wetland W-5.

Photo 7. Wetland W-1 facing north.

Photo 8. Wetland W-2 facing north.

Photo 9. Wetland W-3 facing north.

Photo 10. Wetland W-4 facing west.

Photo 11. Wetland W-5 facing northeast.

Photo 12. Wetland W-6 facing west.

Photo 13. Stream S-1 facing west upstream.

Photo 14. Stream S-1 facing east downstream.

Photo 15. Stream S-1 substrate.

Photo 16. Stream S-2 facing west upstream.

Photo 17. Stream S-2 facing east downstream.

Photo 18. Stream S-2 substrate.

Photo 19. Stream S-3 facing west upstream.

Photo 20. Stream S-3 facing east downstream.

Photo 21. Stream S-3 substrate.

Photo 22. Stream S-4 facing west upstream.

Photo 23. Stream S-4 facing east downstream.

Photo 24. Stream S-4 substrate.

Photo 25. Typical potential roost tree within project area.

Photo 26. Typical potential maternal roost tree within the project area.

# Appendix C:

# Routine Wetland Determination Data Forms

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Line 285 - 2015 Replacement City/County: Independence, Cuyahoga Sampling Date: 09/12/2014

Applicant/Owner: EOG State: OH Sampling Point: 1

Investigator(s): Laura Sayre, Ann Gilmore Section, Township, Range: Independence

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): LRR R Lat: 41.379224 Long: -81.649437 Datum: NAD 83

Soil Map Unit Name: MtA - Mitiwanga silt loam NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X | No ____ | **Is the Sampled Area within a Wetland?** **Yes** X **No** ____ |
| Hydric Soil Present? | Yes X | No ____ | If yes, optional Wetland Site ID: |
| Wetland Hydrology Present? | Yes X | No ____ | |

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

### HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ____ 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)
- X Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on 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 two 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)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ____ | No X | Depth (inches): ____ |
| Water Table Present? | Yes ____ | No X | Depth (inches): ____ |
| Saturation Present? (includes capillary fringe) | Yes X | No ____ | Depth (inches): 2" |

**Wetland Hydrology Present?** **Yes** X **No** ____

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

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: 1

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Sapling/Shrub Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Herb Stratum (Plot size: 5' ) | | | |
|---|---|---|---|
| 1. *Leersia oryzoides* | 70 | Yes | OBL |
| 2. *Carex crinita* | 20 | No | OBL |
| 3. *Dichanthelium clandestinum* | 10 | No | FACW |
| 4. *Polygonum sagittatum* | 10 | No | OBL |
| 5. *Onoclea sensibilis* | 10 | No | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 120 | =Total Cover | |

| Woody Vine Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | | =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: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 100 | x 1 = | 100 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 120 (A) | | 140 (B) |

Prevalence Index = B/A = 1.17

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - 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 or equal to 3.28 ft (1 m) tall.

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

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

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

## SOIL

Sampling Point: 1

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10YR 4/1 | 75 | 5YR 4/6 | 25 | RM | | Loamy/Clayey | |
| 5-6 | 10YR 3/1 | 80 | 2.5YR 3/3 | 20 | RM | | Loamy/Clayey | |
| 6-9 | 2.5Y 4/2 | 60 | 10YR 5/6 | 40 | RM | | Loamy/Clayey | |

[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 Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

**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**)
- ___ 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: Rock Fill

Depth (inches): 9

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

Data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://soils.usda.gov/use/hydric)

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Line 285 - 2015 Replacement City/County: Independence, Cuyahoga Sampling Date: 09/12/2014

Applicant/Owner: EOG State: OH Sampling Point: 2

Investigator(s): Laura Sayre, Ann Gilmore Section, Township, Range: Independence

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR or MLRA): LRR R Lat: 41.378939 Long: -81.649435 Datum: NAD 83

Soil Map Unit Name: MtA - Mitiwanga silt loam NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X | No ____ | **Is the Sampled Area within a Wetland?** **Yes** ____ **No** X |
| Hydric Soil Present? | Yes ____ | No X | If yes, optional Wetland Site ID: ____ |
| Wetland Hydrology Present? | Yes ____ | No X | |

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

### 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)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on 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 two 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)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ____ | No X | Depth (inches): ____ |
| Water Table Present? | Yes ____ | No X | Depth (inches): ____ |
| Saturation Present? (includes capillary fringe) | Yes ____ | No X | Depth (inches): ____ |

**Wetland Hydrology Present?** **Yes** ____ **No** X

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

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: 2

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Sapling/Shrub Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Herb Stratum (Plot size: 5' ) | | | |
|---|---|---|---|
| 1. *Echinochloa crus-galli* | 60 | Yes | FAC |
| 2. *Plantago major* | 5 | No | FACU |
| 3. *Trifolium pratense* | 5 | No | FACU |
| 4. *Persicaria pensylvanica* | 5 | No | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 75 | =Total Cover | |

| Woody Vine Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | | =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: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 5 | x 2 = | 10 |
| FAC species | 60 | x 3 = | 180 |
| FACU species | 10 | x 4 = | 40 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 75 (A) | | 230 (B) |

Prevalence Index = B/A = 3.07

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - 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 or equal to 3.28 ft (1 m) tall.

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

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

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

## SOIL

Sampling Point: 2

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2 | 2.5Y 5/4 | 100 | | | | | | fill dirt |

[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 Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

**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**)
- ___ 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: Rocky fill

Depth (inches): 2

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

Data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://soils.usda.gov/use/hydric)

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Line 285 - 2015 Replacement City/County: Independence, Cuyahoga Sampling Date: 09/12/2014

Applicant/Owner: EOG State: OH Sampling Point: 3

Investigator(s): Laura Sayre, Ann Gilmore Section, Township, Range: Independence

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR or MLRA): LRR R Lat: 41.358332 Long: -81.648932 Datum: NAD 83

Soil Map Unit Name: MtA - Mitiwanga silt loam NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X | **Is the Sampled Area within a Wetland?** **Yes** ____ **No** X |
| Hydric Soil Present? | Yes ____ | No X | If yes, optional Wetland Site ID: ____ |
| Wetland Hydrology Present? | Yes ____ | No X | |

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

### 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)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on 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 two 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)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ____ | No X | Depth (inches): ____ |
| Water Table Present? | Yes ____ | No X | Depth (inches): ____ |
| Saturation Present? (includes capillary fringe) | Yes ____ | No X | Depth (inches): ____ |

**Wetland Hydrology Present?** **Yes** ____ **No** X

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

Remarks:

**VEGETATION** – Use scientific names of plants. Sampling Point: 3

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Sapling/Shrub Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Herb Stratum (Plot size: 5' ) | | | |
|---|---|---|---|
| 1. *Poa pratensis* | 35 | Yes | FACU |
| 2. *Plantago lanceolata* | 25 | Yes | FACU |
| 3. *Digitaria ciliaris* | 20 | Yes | FACU |
| 4. *Echinochloa crus-galli* | 10 | No | FAC |
| 5. *Taraxacum officinale* | 8 | No | FACU |
| 6. *Prunella vulgaris* | 2 | No | FAC |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 100 | =Total Cover | |

| Woody Vine Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | | =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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 12 | x 3 = | 36 |
| FACU species | 88 | x 4 = | 352 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 100 (A) | | 388 (B) |

Prevalence Index = B/A = 3.88

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - 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 or equal to 3.28 ft (1 m) tall.

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

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** ___ **No** X

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

## SOIL

Sampling Point: 3

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10YR 4/3 | 100 | | | | | | |
| 5-10 | 10YR 5/3 | 80 | 10YR 6/4 | 20 | | | | |

[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 Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

**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**)
- ___ 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** X

Remarks:

Data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://soils.usda.gov/use/hydric)

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Line 285 - 2015 Replacement City/County: Independence, Cuyahoga Sampling Date: 09/12/2014

Applicant/Owner: EOG State: OH Sampling Point: 4

Investigator(s): Laura Sayre, Ann Gilmore Section, Township, Range: Independence

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 8

Subregion (LRR or MLRA): LRR R Lat: 41.356535 Long: -81.648343 Datum: NAD 83

Soil Map Unit Name: HrC - Hornell silt loam NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X | No ____ | **Is the Sampled Area within a Wetland?** **Yes** X **No** ____ |
| Hydric Soil Present? | Yes X | No ____ | If yes, optional Wetland Site ID: W-2 |
| Wetland Hydrology Present? | Yes X | No ____ | |

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland W-2

### HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ____ 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)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on 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 two required)

- ____ Surface Soil Cracks (B6)
- X 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)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ____ | No X | Depth (inches): ____ |
| Water Table Present? | Yes ____ | No X | Depth (inches): ____ |
| Saturation Present? (includes capillary fringe) | Yes X | No ____ | Depth (inches): 2" |

**Wetland Hydrology Present?** **Yes** X **No** ____

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

Remarks:
PEM

**VEGETATION** – Use scientific names of plants.

Sampling Point: 4

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Sapling/Shrub Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Herb Stratum (Plot size: 5' ) | | | |
|---|---|---|---|
| 1. *Leersia oryzoides* | 40 | Yes | OBL |
| 2. *Lysimachia nummularia* | 20 | Yes | FACW |
| 3. *Carex sp.* | 15 | No | |
| 4. *Juncus effusus* | 10 | No | OBL |
| 5. *Schoenoplectus tabernaemontani* | 10 | No | OBL |
| 6. *Lycopus americanus* | 5 | No | OBL |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 100 | =Total Cover | |

| Woody Vine Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | | =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: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 65 | x 1 = | 65 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 85 (A) | | 105 (B) |

Prevalence Index = B/A = 1.24

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - 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 or equal to 3.28 ft (1 m) tall.

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

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

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

## SOIL

Sampling Point: 4

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 5/2 | 85 | 10YR 5/8 | 15 | | | | |
| 6-12 | 10YR 6/1 | 80 | 10YR 6/6 | 20 | | | | |

[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 Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

**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**)
- ___ 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** X **No** ___

Remarks:

Data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://soils.usda.gov/use/hydric)

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Line 285 - 2015 Replacement City/County: Independence, Cuyahoga Sampling Date: 09/12/2014

Applicant/Owner: EOG State: OH Sampling Point: 5

Investigator(s): Laura Sayre, Ann Gilmore Section, Township, Range: Independence

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 10

Subregion (LRR or MLRA): LRR R Lat: 41.353842 Long: -81.648294 Datum: NAD 83

Soil Map Unit Name: HrC - Hornell silt loam NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X | **Is the Sampled Area within a Wetland?** **Yes** ____ **No** X |
| Hydric Soil Present? | Yes ____ | No X | If yes, optional Wetland Site ID: ____ |
| Wetland Hydrology Present? | Yes ____ | No X | |

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

### 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)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on 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 two 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 X | Depth (inches): ____ |
| Water Table Present? | Yes ____ | No X | Depth (inches): ____ |
| Saturation Present? (includes capillary fringe) | Yes ____ | No x | Depth (inches): ____ |

**Wetland Hydrology Present?** **Yes** ____ **No** X

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

Remarks:
PEM

**VEGETATION** – Use scientific names of plants.

Sampling Point: 5

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Sapling/Shrub Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Herb Stratum (Plot size: 5' ) | | | |
|---|---|---|---|
| 1. *Glechoma hederacea* | 35 | Yes | FACU |
| 2. *Daucus carota* | 25 | Yes | UPL |
| 3. *Symphyotrichum ericoides* | 20 | Yes | FACU |
| 4. *Cirsium arvense* | 15 | No | FACU |
| 5. *Apocynum cannabinum* | 10 | No | FAC |
| 6. *Trifolium repens* | 10 | No | FACU |
| 7. *Dichanthelium clandestinum* | 10 | No | FACW |
| 8. *Bidens frondosa* | 5 | No | FACW |
| 9. *Cichorium intybus* | 2 | No | FACU |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 132 | =Total Cover | |

| Woody Vine Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | | =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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 15 | x 2 = | 30 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 82 | x 4 = | 328 |
| UPL species | 25 | x 5 = | 125 |
| Column Totals: | 132 (A) | | 513 (B) |

Prevalence Index = B/A = 3.89

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - 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 or equal to 3.28 ft (1 m) tall.

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

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** ___ **No** X

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

## SOIL

Sampling Point: 5

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2 | 2.5Y 5/2 | 60 | 10YR 5/4 | 40 | | | | |

[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 Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

**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**)
- ___ 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: Compacted soils

Depth (inches): 2"

**Hydric Soil Present?** **Yes** ___ **No** X

Remarks:

Data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://soils.usda.gov/use/hydric)

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Line 285 - 2015 Replacement City/County: Independence, Cuyahoga Sampling Date: 09/12/2014

Applicant/Owner: EOG State: OH Sampling Point: 6

Investigator(s): Laura Sayre, Ann Gilmore Section, Township, Range: Independence

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): LRR R Lat: 41.353404 Long: -81.64841 Datum: NAD 83

Soil Map Unit Name: HrC - Hornell silt loam NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X | No ____ | **Is the Sampled Area within a Wetland?** **Yes** X **No** ____ |
| Hydric Soil Present? | Yes X | No ____ | |
| Wetland Hydrology Present? | Yes X | No ____ | If yes, optional Wetland Site ID: W-5 |

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland W-5

### HYDROLOGY

**Wetland Hydrology Indicators:**

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

- ____ 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)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on 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 two 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 X | Depth (inches): ____ |
| Water Table Present? | Yes ____ | No X | Depth (inches): ____ |
| Saturation Present? (includes capillary fringe) | Yes X | No ____ | Depth (inches): 0-8" |

**Wetland Hydrology Present?** **Yes** X **No** ____

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

Remarks:
PEM, surface ponding

**VEGETATION** – Use scientific names of plants.

Sampling Point: 6

| Tree Stratum (Plot size: ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Sapling/Shrub Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | =Total Cover | |

| Herb Stratum (Plot size: 5' ) | | | |
|---|---|---|---|
| 1. *Leersia oryzoides* | 40 | Yes | OBL |
| 2. *Typha latifolia* | 20 | Yes | OBL |
| 3. *Equisetum arvense* | 20 | Yes | FAC |
| 4. *Bidens frondosa* | 10 | No | FACW |
| 5. *Carex vulpinoidea* | 5 | No | OBL |
| 6. *Cyperus esculentus* | 1 | No | FACW |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 96 | =Total Cover | |

| Woody Vine Stratum (Plot size: ) | | | |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | | =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 | 65 | x 1 = | 65 |
| FACW species | 11 | x 2 = | 22 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 96 (A) | | 147 (B) |

Prevalence Index = B/A = 1.53

**Hydrophytic Vegetation Indicators:**

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - 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 or equal to 3.28 ft (1 m) tall.

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

**Woody vines** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

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

## SOIL

Sampling Point: 6

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2 | 2.5Y 5/2 | 100 | | | | | | |
| 2-6 | 5YR 5/1 | 85 | 7.5YR 5/6 | 15 | | | | |

[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 Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

**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**)
- ___ 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** X **No** ___

Remarks:

Data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://soils.usda.gov/use/hydric)

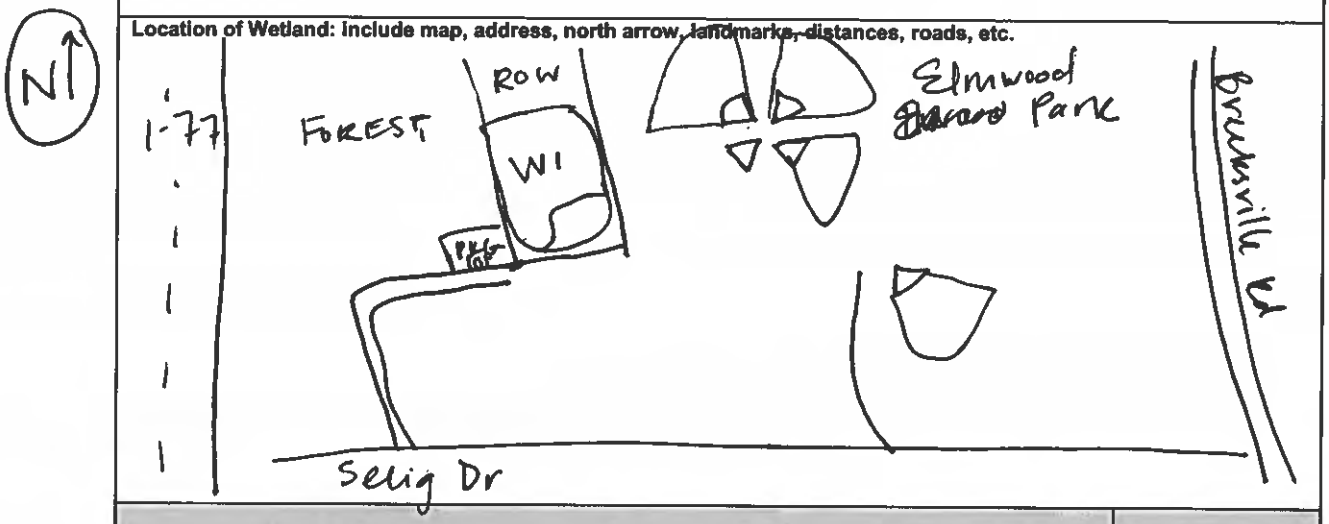
# Appendix D:

# Ohio Rapid Assessment Method for Wetlands v. 5.0 Rating Forms

# Background Information

| | |
|---|---|
| Name: | ANN GILMORE |
| Date: | 09/12/2014 |
| Affiliation: | ENVIROSCIENCE, INC |
| Address: | 5070 STOW RD, STOW, OH |
| Phone Number: | 330-688-0111 |
| e-mail address: | agilmore@EnviroScienceInc.com |
| **Name of Wetland:** | W1 |
| Vegetation Communit(ies): | PEM |
| HGM Class(es): | |

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

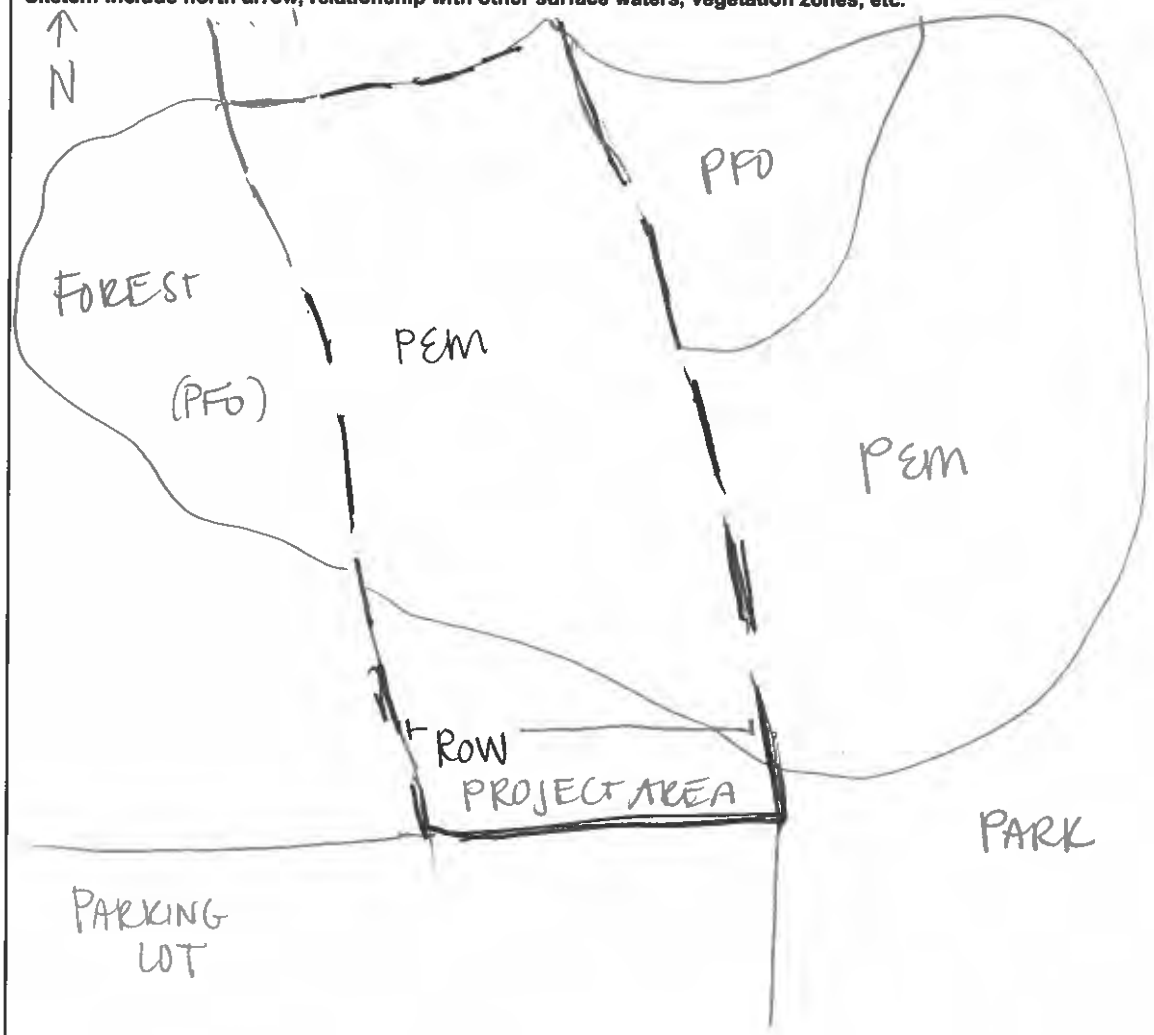



| | |
|---|---|
| Lat/Long or UTM Coordinate 41.379277N -81.649561E | |
| USGS Quad Name CLEVELAND SOUTH | |
| County CUYAHOGA | |
| Township INDEPENDENCE | |
| Section and Subsection | |
| Hydrologic Unit Code 04110002 | |
| Site Visit #1 | |
| National Wetland Inventory Map CLEVELAND SOUTH QUAD | V |
| Ohio Wetland Inventory Map | |
| Soil Survey CUYAHOGA COUNTY SOIL SURVEY | V |
| Delineation report/map | V |

**Name of Wetland:** W-1

**Wetland Size (acres, hectares):** 0.328 acres

**Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.**




**Comments, Narrative Discussion, Justification of Category Changes:**

Project area = PEM w/in mowed ROW.

**Final score :** 40.5 **Category:** 2

# Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

| # | Steps in properly establishing scoring boundaries | done? | not applicable |
|---|---|---|---|
| Step 1 | Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc. | √ | |
| Step 2 | Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland. | √ | |
| Step 3 | Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary. | √ | |
| Step 4 | Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes. | √ | |
| Step 5 | In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately. | | √ |
| Step 6 | Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications. | √ | |

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

# Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

| # | Question | Circle one | |
|---|---|---|---|
| 1 | **Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 2 | NO<br><br>Go to Question 2 |
| 2 | **Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 3 | NO<br><br>Go to Question 3 |
| 3 | **Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 4 | NO<br><br>Go to Question 4 |
| 4 | **Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 5 | NO<br><br>Go to Question 5 |
| 5 | **Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation? | YES<br><br>Wetland is a Category 1 wetland<br><br>Go to Question 6 | NO<br><br>Go to Question 6 |
| 6 | **Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 7 | NO<br><br>Go to Question 7 |
| 7 | **Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 8a | NO<br><br>Go to Question 8a |
| 8a | **"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 8b | NO<br><br>Go to Question 8b |

| | | | |
|---|---|---|---|
| 8b | **Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh? | YES<br><br>Wetland should be evaluated for possible Category 3 status.<br><br>Go to Question 9a | NO<br><br>Go to Question 9a |
| 9a | **Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish? | YES<br><br>Go to Question 9b | NO<br><br>Go to Question 10 |
| 9b | Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 9c |
| 9c | Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation. | YES<br><br>Go to Question 9d | NO<br><br>Go to Question 10 |
| 9d | Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 10 | NO<br><br>Go to Question 9e |
| 9e | Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 10 |
| 10 | **Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality. | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 11 | NO<br><br>Go to Question 11 |
| 11 | **Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Complete Quantitative Rating | NO<br><br>Complete Quantitative Rating |

**Table 1. Characteristic plant species.**

| invasive/exotic spp | fen species | bog species | Oak Opening species | wet prairie species |
|---|---|---|---|---|
| *Lythrum salicaria* | *Zygadenus elegans var. glaucus* | *Calla palustris* | *Carex cryptolepis* | *Calamagrostis canadensis* |
| *Myriophyllum spicatum* | *Cacalia plantaginea* | *Carex atlantica var. capillacea* | *Carex lasiocarpa* | *Calamogrostis stricta* |
| *Najas minor* | *Carex flava* | *Carex echinata* | *Carex stricta* | *Carex atherodes* |
| *Phalaris arundinacea* | *Carex sterilis* | *Carex oligosperma* | *Cladium mariscoides* | *Carex buxbaumii* |
| *Phragmites australis* | *Carex stricta* | *Carex trisperma* | *Calamagrostis stricta* | *Carex pellita* |
| *Potamogeton crispus* | *Deschampsia caespitosa* | *Chamaedaphne calyculata* | *Calamagrostis canadensis* | *Carex sartwellii* |
| *Ranunculus ficaria* | *Eleocharis rostellata* | *Decodon verticillatus* | *Quercus palustris* | *Gentiana andrewsii* |
| *Rhamnus frangula* | *Eriophorum viridicarinatum* | *Eriophorum virginicum* | | *Helianthus grosseserratus* |
| *Typha angustifolia* | *Gentianopsis spp.* | *Larix laricina* | | *Liatris spicata* |
| *Typha xglauca* | *Lobelia kalmii* | *Nemopanthus mucronatus* | | *Lysimachia quadriflora* |
| | *Parnassia glauca* | *Schechzeria palustris* | | *Lythrum alatum* |
| | *Potentilla fruticosa* | *Sphagnum spp.* | | *Pycnanthemum virginianum* |
| | *Rhamnus alnifolia* | *Vaccinium macrocarpon* | | *Silphium terebinthinaceum* |
| | *Rhynchospora capillacea* | *Vaccinium corymbosum* | | *Sorghastrum nutans* |
| | *Salix candida* | *Vaccinium oxycoccos* | | *Spartina pectinata* |
| | *Salix myricoides* | *Woodwardia virginica* | | *Solidago riddellii* |
| | *Salix serissima* | *Xyris difformis* | | |
| | *Solidago ohioensis* | | | |
| | *Tofieldia glutinosa* | | | |
| | *Triglochin maritimum* | | | |
| | *Triglochin palustre* | | | |

**End of Narrative Rating. Begin Quantitative Rating on next page.**

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

| 2 | 2 |
|---|---|
| max 6 pts. | subtotal |

## Metric 1. Wetland Area (size).

Select one size class and assign score.

| | |
|---|---|
| | >50 acres (>20.2ha) (6 pts) |
| | 25 to <50 acres (10.1 to <20.2ha) (5 pts) |
| | 10 to <25 acres (4 to <10.1 ha) (4 pts) |
| | 3 to <10 acres (1.2 to <4 ha) (3 pts) |
| 2 | 0.3 to < 3 acres (012 to <1.2ha) (2 pts) |
| | 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt) |
| | <0.1 acres (0.04ha) (0 pts) |

| 8 | 10 |
|---|---|
| max 14 pts. | subtotal |

## Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

| | |
|---|---|
| | WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7) |
| 4 | MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) |
| | NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) |
| | VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) |

2b. Intensity of surrounding land use. Select one or double check and average.

| | |
|---|---|
| | VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) |
| 5 | LOW. Old field (>10 years), shrubland, young second growth forest. (5) |
| 3 | MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) |
| | HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) |

| 11 | 21 |
|---|---|
| max 30 pts. | subtotal |

## Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

| | |
|---|---|
| | High pH groundwater (5) |
| | Other groundwater (3) |
| 1 | Precipitation (1) |
| | Seasonal/Intermittent surface water (3) |
| | Perennial surface water (lake or stream (5) |

3b. Connectivity. Score all that apply.

| | |
|---|---|
| | 100 year floodplain (1) |
| | Between stream/lake and other human use (1) |
| 1 | Part of wetland/upland (e.g. forest), complex (1) |
| | Part of riparian or upland corridor (1) |

3c. Maximum water depth. Select only one and assign score.

| | |
|---|---|
| | >0.7 (27.6in) (3) |
| | 0.4 to 0.7m (15.7 to 27.6in) (2) |
| 1 | <0.4m (<15.7in) (1) |

ı/saturation. Score one or dbl check.

| | |
|---|---|
| | Semi- to permanently inundated/saturated (4) |
| 3 | Regularly inundated/saturated (3) |
| | Seasonally inundated (2) |
| | Seasonally saturated in upper 30cm (12in) (1) |

3e. Modifications to natural hydrologic regime. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (12) |
| 7 | Recovered (7) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| | ditch | | point source (nonstormwater) |
| | tile | X | filling/grading |
| | dike | X | road bed/RR track |
| | weir | | dredging |
| | stormwater input | X | Other: Mowed Easement |

| 11.5 | 32.5 |
|---|---|
| max 20 pts. | subtotal |

## Metric 4. Habitat Alternation and Development.

4a. Substrate disturbance. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (4) |
| 3 | Recovered (3) |
| | Recovering (2) |
| | Recent or no recovery (1) |

4b. Habitat development. Select only one and assign score.

| | |
|---|---|
| | Excellent (7) |
| | Very good (6) |
| | Good (5) |
| 4 | Moderately good (4) |
| | Fair (3) |
| | Poor to fair (2) |
| | Poor (1) |

4c. Habitat alteration. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (9) |
| 6 | Recovered (6) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| X | mowing | X | shrub/sapling removal |
| | grazing | | herbaceous/aquatic bed removal |
| X | clearcutting | | sedimentation |
| X | selective cutting | | dredging |
| | woody debris removal | | farming |
| | toxic pollutants | | nutrient enrichment |

| 32.5 |
|---|
| subtotal this page |

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

32.5
subtotal first page

## Metric 5. Special Wetlands.

| max 10 pts. | subtotal |
|---|---|
| 0 | 32.5 |

Check all that apply and score as indicated.

| | |
|---|---|
| | Bog (10) |
| | Fen (10) |
| | Old growth forest (10) |
| | Mature forested wetland (5) |
| | Lake Erie coastal/tributary wetland -unrestricted hydrology (10) |
| | Lake Erie coastal/tributary wetland-restricted hydrology (5) |
| | Lake Plain Sand Prairies (Oak Openings) (10) |
| | Relict Wet Prairies (10) |
| | Known occurrence state/federal threatened or endangered species (10) |
| | Significant migratory songbird/water fowl habitat or usage (10) |
| | Category 1 Wetland. See Question 1 Qualitative Rating (-10) |

## Metric 6. Plant communities, interspersion, microtopography.

| max 20 pts. | subtotal |
|---|---|
| 8 | 40.5 |

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

| | |
|---|---|
| | Aquatic bed |
| 2 | Emergent |
| | Shrub |
| 2 | Forest |
| | Mudflats |
| | Open Water |
| | Other_____ |

6b. Horizontal (plan view) Interspersion.
Score only one.

| | |
|---|---|
| | High (5) |
| | Moderately high (4) |
| | Moderate (3) |
| 2 | Moderately low (2) |
| | Low (1) |
| | None (0) |

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

| | |
|---|---|
| | Extensive >75% cover (-5) |
| | Moderate 25-75% cover (-3) |
| -1 | Sparse 5-25% cover (-1) |
| | Nearly absent <5% cover (0) |
| | Absent (1) |

6d. Microtopography.
Score all present using 0 to 3 scale.

| | |
|---|---|
| 0 | Vegetated hummucks/tussucks |
| 1 | Coarse woody debris >15cm (6in) |
| 2 | Standing dead >25cm (10in) dbh |
| 0 | Amphibian breeding pools |

**Vegatation Community Cover Scale**

| | |
|---|---|
| 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| 1 | Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality |
| 2 | Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality. |
| 3 | Present and comprises significant part, or more, of wetland's vegetation and is of high quality. |

**Narrative Description of Vegetation Quality**

| | |
|---|---|
| low | Low spp diversity and/or predominance of nonnative or disturbance tolerant native species |
| mod | Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp |
| high | A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp |

**Mudflat and Open Water Class Quality**

| | |
|---|---|
| 0 | Absent <0.1ha (0.247 acres) |
| 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) |
| 2 | Moderate 1 to <4ha (2.47 to 9.88 acres) |
| 3 | High 4ha (9.88 acres) or more |

**Microtopography Cover Scale**

| | |
|---|---|
| 0 | Absent |
| 1 | Present in very small amounts or if more common of marginal quality |
| 2 | Present in moderate amounts, but not of highest quality or in small amounts of highest quality |
| 3 | Present in moderate or greater amounts and of highest quality |

**40.5 GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

# ORAM Summary Worksheet

| | | circle answer or insert score | Result |
|---|---|---|---|
| Narrative Rating | Question 1 Critical Habitat | YES NO | If yes, Category 3. |
| | Question 2. Threatened or Endangered Species | YES NO | If yes, Category 3. |
| | Question 3. High Quality Natural Wetland | YES NO | If yes, Category 3. |
| | Question 4. Significant bird habitat | YES NO | If yes, Category 3. |
| | Question 5. Category 1 Wetlands | YES NO | If yes, Category 1. |
| | Question 6. Bogs | YES NO | If yes, Category 3. |
| | Question 7. Fens | YES NO | If yes, Category 3. |
| | Question 8a. Old Growth Forest | YES NO | If yes, Category 3. |
| | Question 8b. Mature Forested Wetland | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9b. Lake Erie Wetlands - Restricted | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9d. Lake Erie Wetlands – Unrestricted with native plants | YES NO | If yes, Category 3 |
| | Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 10. Oak Openings | YES NO | If yes, Category 3 |
| | Question 11. Relict Wet Prairies | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| Quantitative Rating | Metric 1. Size | 2 | |
| | Metric 2. Buffers and surrounding land use | 8 | |
| | Metric 3. Hydrology | 11 | |
| | Metric 4. Habitat | 11.5 | |
| | Metric 5. Special Wetland Communities | 0 | |
| | Metric 6. Plant communities, interspersion, microtopography | 8 | |
| | TOTAL SCORE | 40.5 | Category based on score breakpoints |

**Complete Wetland Categorization Worksheet.**

# Wetland Categorization Worksheet

| Choices | Circle one | | Evaluation of Categorization Result of ORAM |
|---|---|---|---|
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10 | YES<br><br>Wetland is categorized as a Category 3 wetland | NO | Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM |
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 1, 8b, 9b, 9e, 11 | YES<br><br>Wetland should be evaluated for possible Category 3 status | NO | Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category. |
| Did you answer "Yes" to<br><br>Narrative Rating No. 5 | YES<br><br>Wetland is categorized as a Category 1 wetland | NO | Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM |
| Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland? | YES<br><br>Wetland is assigned to the appropriate category based on the scoring range | NO | If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score. |
| Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands? | YES<br><br>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria | NO | Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C). |
| Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method? | YES<br><br>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form | NO<br><br>Wetland is assigned to category as determined by the ORAM. | A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided. |

**Final Category**

| Choose one | Category 1 | Category 2 | Category 3 |
|---|---|---|---|

## End of Ohio Rapid Assessment Method for Wetlands.

# Background Information

| | |
|---|---|
| **Name:** | Ann Gilmore |
| **Date:** | 8/8/2013 |
| **Affiliation:** | EnviroScience, Inc. |
| **Address:** | 5070 Stow Road, Stow Ohio 44224 |
| **Phone Number:** | 330-688-0111 |
| **e-mail address:** | AGilmore@EnviroScienceInc.com |
| **Name of Wetland:** | W-2 |
| **Vegetation Communit(ies):** | PEM |
| **HGM Class(es):** | Riverine |

**Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.**

Please refer to site wetlands and water resources map.

| | |
|---|---|
| Lat/Long or UTM Coordinate | 41.359751N, -81.6487897W |
| USGS Quad Name | Broadview Hts |
| County | Cuyahoga |
| Township | Independence |
| Section and Subsection | |
| Hydrologic Unit Code | 04110002 |
| Site Visit | 10/30/2014 |
| National Wetland Inventory Map | X |
| Ohio Wetland Inventory Map | |
| Soil Survey | X |
| Delineation report/map | X |

| | |
|---|---|
| **Name of Wetland:** W-2 | |
| **Wetland Size (acres, hectares):** 0.038 ac. onsite | |
| **Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.**<br><br>Please refer to site wetlands and water resources map. | |
| **Comments, Narrative Discussion, Justification of Category Changes:** | |
| **Final score :** 27.5 | **Category:** 1 |

# Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland*. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

| # | Steps in properly establishing scoring boundaries | done? | not applicable |
|---|---|---|---|
| **Step 1** | Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc. | X | |
| **Step 2** | Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland. | X | |
| **Step 3** | Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary. | X | |
| **Step 4** | Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes. | X | |
| **Step 5** | In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately. | | X |
| **Step 6** | Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications. | | X |

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

# Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

| # | Question | Circle one | |
|---|---|---|---|
| 1 | **Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 2 | NO<br><br>Go to Question 2 |
| 2 | **Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 3 | NO<br><br>Go to Question 3 |
| 3 | **Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 4 | NO<br><br>Go to Question 4 |
| 4 | **Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 5 | NO<br><br>Go to Question 5 |
| 5 | **Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation? | YES<br><br>Wetland is a Category 1 wetland<br><br>Go to Question 6 | NO<br><br>Go to Question 6 |
| 6 | **Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 7 | NO<br><br>Go to Question 7 |
| 7 | **Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 8a | NO<br><br>Go to Question 8a |
| 8a | **"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 8b | NO<br><br>Go to Question 8b |

| | | | |
|---|---|---|---|
| **8b** | **Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh? | YES<br><br>Wetland should be evaluated for possible Category 3 status.<br><br>Go to Question 9a | NO<br><br>Go to Question 9a |
| **9a** | **Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish? | YES<br><br>Go to Question 9b | NO<br><br>Go to Question 10 |
| **9b** | Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 9c |
| **9c** | Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation. | YES<br><br>Go to Question 9d | NO<br><br>Go to Question 10 |
| **9d** | Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 10 | NO<br><br>Go to Question 9e |
| **9e** | Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 10 |
| **10** | **Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality. | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 11 | NO<br><br>Go to Question 11 |
| **11** | **Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Complete Quantitative Rating | NO<br><br>Complete Quantitative Rating |

**Table 1. Characteristic plant species.**

| invasive/exotic spp | fen species | bog species | 0ak Opening species | wet prairie species |
|---|---|---|---|---|
| *Lythrum salicaria* | *Zygadenus elegans var. glaucus* | *Calla palustris* | *Carex cryptolepis* | *Calamagrostis canadensis* |
| *Myriophyllum spicatum* | *Cacalia plantaginea* | *Carex atlantica var. capillacea* | *Carex lasiocarpa* | *Calamogrostis stricta* |
| *Najas minor* | *Carex flava* | *Carex echinata* | *Carex stricta* | *Carex atherodes* |
| *Phalaris arundinacea* | *Carex sterilis* | *Carex oligosperma* | *Cladium mariscoides* | *Carex buxbaumii* |
| *Phragmites australis* | *Carex stricta* | *Carex trisperma* | *Calamagrostis stricta* | *Carex pellita* |
| *Potamogeton crispus* | *Deschampsia caespitosa* | *Chamaedaphne calyculata* | *Calamagrostis canadensis* | *Carex sartwellii* |
| *Ranunculus ficaria* | *Eleocharis rostellata* | *Decodon verticillatus* | *Quercus palustris* | *Gentiana andrewsii* |
| *Rhamnus frangula* | *Eriophorum viridicarinatum* | *Eriophorum virginicum* | | *Helianthus grosseserratus* |
| *Typha angustifolia* | *Gentianopsis spp.* | *Larix laricina* | | *Liatris spicata* |
| *Typha xglauca* | *Lobelia kalmii* | *Nemopanthus mucronatus* | | *Lysimachia quadriflora* |
| | *Parnassia glauca* | *Schechzeria palustris* | | *Lythrum alatum* |
| | *Potentilla fruticosa* | *Sphagnum spp.* | | *Pycnanthemum virginianum* |
| | *Rhamnus alnifolia* | *Vaccinium macrocarpon* | | *Silphium terebinthinaceum* |
| | *Rhynchospora capillacea* | *Vaccinium corymbosum* | | *Sorghastrum nutans* |
| | *Salix candida* | *Vaccinium oxycoccos* | | *Spartina pectinata* |
| | *Salix myricoides* | *Woodwardia virginica* | | *Solidago riddellii* |
| | *Salix serissima* | *Xyris difformis* | | |
| | *Solidago ohioensis* | | | |
| | *Tofieldia glutinosa* | | | |
| | *Triglochin maritimum* | | | |
| | *Triglochin palustre* | | | |

**End of Narrative Rating. Begin Quantitative Rating on next page.**

| Site: Line 285 - 2015 Replacement | Rater(s):A.Gilmore | Date: 10/30/14 |
|---|---|---|

| 0 | 0 |
|---|---|
| max 6 pts. | subtotal |

## Metric 1. Wetland Area (size).

Select one size class and assign score.

| | |
|---|---|
| | >50 acres (>20.2ha) (6 pts) |
| | 25 to <50 acres (10.1 to <20.2ha) (5 pts) |
| | 10 to <25 acres (4 to <10.1 ha) (4 pts) |
| | 3 to <10 acres (1.2 to <4 ha) (3 pts) |
| | 0.3 to < 3 acres (012 to <1.2ha) (2 pts) |
| | 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt) |
| 0 | <0.1 acres (0.04ha) (0 pts) |

| 3 | 3 |
|---|---|
| max 14 pts. | subtotal |

## Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

| | |
|---|---|
| | WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7) |
| | MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) |
| X | NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) |
| | VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) |

2b. Intensity of surrounding land use. Select one or double check and average.

| | |
|---|---|
| | VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) |
| | LOW. Old field (>10 years), shrubland, young second growth forest. (5) |
| X | MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) |
| X | HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) |

| 12.5 | 15.5 |
|---|---|
| max 30 pts. | subtotal |

## Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

| | |
|---|---|
| | High pH groundwater (5) |
| | Other groundwater (3) |
| 1 | Precipitation (1) |
| 3 | Seasonal/Intermittent surface water (3) |
| | Perennial surface water (lake or stream (5) |

3b. Connectivity. Score all that apply.

| | |
|---|---|
| | 100 year floodplain (1) |
| | Between stream/lake and other human use (1) |
| | Part of wetland/upland (e.g. forest), complex (1) |
| 1 | Part of riparian or upland corridor (1) |

3c. Maximum water depth. Select only one and assign score.

| | |
|---|---|
| | >0.7 (27.6in) (3) |
| | 0.4 to 0.7m (15.7 to 27.6in) (2) |
| 1 | <0.4m (<15.7in) (1) |

/saturation. Score one or dbl check.

| | |
|---|---|
| | Semi- to permanently inundated/saturated (4) |
| | Regularly inundated/saturated (3) |
| 1 | Seasonally inundated (2) |
| 1 | Seasonally saturated in upper 30cm (12in) (1) |

3e. Modifications to natural hydrologic regime. Score one or double check and average

| | |
|---|---|
| | None or none apparent (12) |
| 7 | Recovered (7) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| | ditch | | point source (nonstormwater) |
| | tile | X | filling/grading |
| | dike | X | road bed/RR track (I-77) |
| | weir | | dredging |
| | stormwater input | X | Other: Mowed Easement |

| 9 | 24.5 |
|---|---|
| max 20 pts. | subtotal |

## Metric 4. Habitat Alternation and Development.

4a. Substrate disturbance. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (4) |
| 3 | Recovered (3) |
| 2 | Recovering (2) |
| | Recent or no recovery (1) |

4b. Habitat development. Select only one and assign score.

| | |
|---|---|
| | Excellent (7) |
| | Very good (6) |
| | Good (5) |
| | Moderately good (4) |
| | Fair (3) |
| 2 | Poor to fair (2) |
| | Poor (1) |

4c. Habitat alteration. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (9) |
| 6 | Recovered (6) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| X | mowing | X | shrub/sapling removal |
| | grazing | | herbaceous/aquatic bed removal |
| | clearcutting | | sedimentation |
| | selective cutting | | dredging |
| | woody debris removal | | farming |
| | toxic pollutants | | nutrient enrichment |

| 24.5 |
|---|
| subtotal this page |

| Site: Line 285 - 2015 Replacement | Rater(s):A.Gilmore | Date: 10/30/14 |
|---|---|---|

24.5
subtotal first page

## Metric 5. Special Wetlands.

| max 10 pts. | subtotal |
|---|---|
| 0 | 24.5 |

Check all that apply and score as indicated.

| | |
|---|---|
| | Bog (10) |
| | Fen (10) |
| | Old growth forest (10) |
| | Mature forested wetland (5) |
| | Lake Erie coastal/tributary wetland -unrestricted hydrology (10) |
| | Lake Erie coastal/tributary wetland-restricted hydrology (5) |
| | Lake Plain Sand Prairies (Oak Openings) (10) |
| | Relict Wet Prairies (10) |
| | Known occurrence state/federal threatened or endangered species (10) |
| | Significant migratory songbird/water fowl habitat or usage (10) |
| | Category 1 Wetland. See Question 1 Qualitative Rating (-10) |

## Metric 6. Plant communities, interspersion, microtopography.

| max 20 pts. | subtotal |
|---|---|
| 3 | 27.5 |

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

| | |
|---|---|
| | Aquatic bed |
| 1 | Emergent |
| 1 | Shrub |
| | Forest |
| | Mudflats |
| | Open Water |
| | Other_____ |

6b. Horizontal (plan view) Interspersion.
Score only one.

| | |
|---|---|
| | High (5) |
| | Moderately high (4) |
| | Moderate (3) |
| 2 | Moderately low (2) |
| | Low (1) |
| | None (0) |

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

| | |
|---|---|
| | Extensive >75% cover (-5) |
| -3 | Moderate 25-75% cover (-3) |
| | Sparse 5-25% cover (-1) |
| | Nearly absent <5% cover (0) |
| | Absent (1) |

6d. Microtopography.
Score all present using 0 to 3 scale.

| | |
|---|---|
| 0 | Vegetated hummucks/tussucks |
| 1 | Coarse woody debris >15cm (6in) |
| 1 | Standing dead >25cm (10in) dbh |
| 0 | Amphibian breeding pools |

**Vegatation Community Cover Scale**

| | |
|---|---|
| 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| 1 | Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality |
| 2 | Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality. |
| 3 | Present and comprises significant part, or more, of wetland's vegetation and is of high quality. |

**Narrative Description of Vegetation Quality**

| | |
|---|---|
| low | Low spp diversity and/or predominance of nonnative or disturbance tolerant native species |
| mod | Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp |
| high | A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp |

**Mudflat and Open Water Class Quality**

| | |
|---|---|
| 0 | Absent <0.1ha (0.247 acres) |
| 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) |
| 2 | Moderate 1 to <4ha (2.47 to 9.88 acres) |
| 3 | High 4ha (9.88 acres) or more |

**Microtopography Cover Scale**

| | |
|---|---|
| 0 | Absent |
| 1 | Present in very small amounts or if more common of marginal quality |
| 2 | Present in moderate amounts, but not of highest quality or in small amounts of highest quality |
| 3 | Present in moderate or greater amounts and of highest quality |

27.5 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

# ORAM Summary Worksheet

| | | circle answer or insert score | Result |
|---|---|---|---|
| Narrative Rating | Question 1 Critical Habitat | YES NO | If yes, Category 3. |
| | Question 2. Threatened or Endangered Species | YES NO | If yes, Category 3. |
| | Question 3. High Quality Natural Wetland | YES NO | If yes, Category 3. |
| | Question 4. Significant bird habitat | YES NO | If yes, Category 3. |
| | Question 5. Category 1 Wetlands | YES NO | If yes, Category 1. |
| | Question 6. Bogs | YES NO | If yes, Category 3. |
| | Question 7. Fens | YES NO | If yes, Category 3. |
| | Question 8a. Old Growth Forest | YES NO | If yes, Category 3. |
| | Question 8b. Mature Forested Wetland | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9b. Lake Erie Wetlands - Restricted | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9d. Lake Erie Wetlands – Unrestricted with native plants | YES NO | If yes, Category 3 |
| | Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 10. Oak Openings | YES NO | If yes, Category 3 |
| | Question 11. Relict Wet Prairies | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| Quantitative Rating | Metric 1. Size | 0 | |
| | Metric 2. Buffers and surrounding land use | 3 | |
| | Metric 3. Hydrology | 12.5 | |
| | Metric 4. Habitat | 9 | |
| | Metric 5. Special Wetland Communities | 0 | |
| | Metric 6. Plant communities, interspersion, microtopography | 3 | |
| | TOTAL SCORE | 27.5 | Category based on score breakpoints 1 |

**Complete Wetland Categorization Worksheet**.

# Wetland Categorization Worksheet

| Choices | Circle one | | Evaluation of Categorization Result of ORAM |
|---|---|---|---|
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10 | YES<br><br>Wetland is categorized as a Category 3 wetland | NO | Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM |
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 1, 8b, 9b, 9e, 11 | YES<br><br>Wetland should be evaluated for possible Category 3 status | NO | Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category. |
| Did you answer "Yes" to<br><br>Narrative Rating No. 5 | YES<br><br>Wetland is categorized as a Category 1 wetland | NO | Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM |
| Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland? | YES<br><br>Wetland is assigned to the appropriate category based on the scoring range | NO | If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score. |
| Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands? | YES<br><br>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria | NO | Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C). |
| Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method? | YES<br><br>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form | NO<br><br>Wetland is assigned to category as determined by the ORAM. | A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided. |

**Final Category**

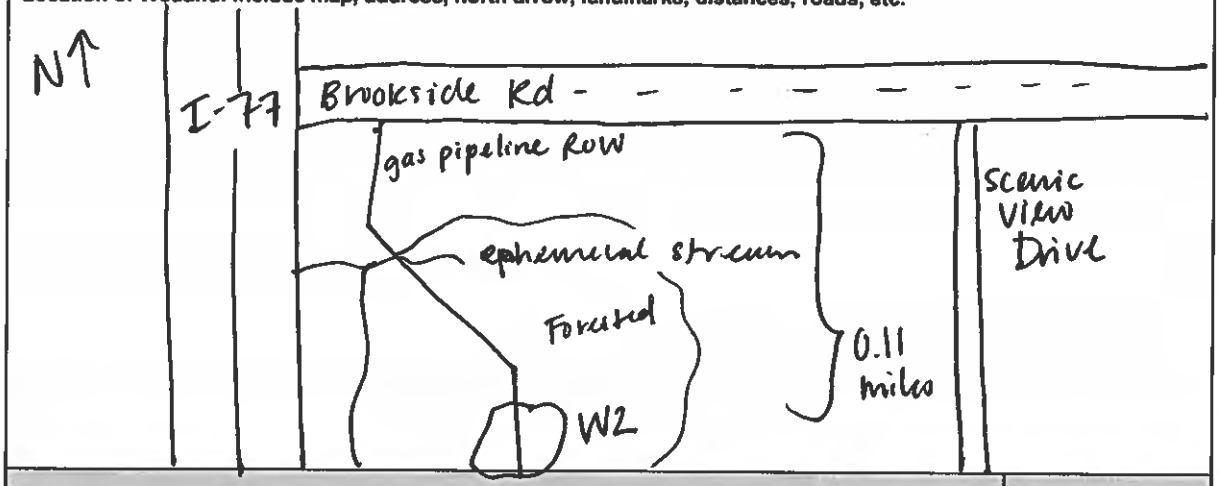
| Choose one | Category 1 | Category 2 | Category 3 |
|---|---|---|---|

## End of Ohio Rapid Assessment Method for Wetlands.

# Background Information

| | |
|---|---|
| Name: | ANN GILMORE |
| Date: | 09/12/2014 |
| Affiliation: | EnviroScience, Inc |
| Address: | 5070 Stow Rd, Stow, OH 44224 |
| Phone Number: | 330-688-0111 |
| e-mail address: | AGilmore@EnviroScienceInc.com |
| **Name of Wetland:** | W-3 |
| Vegetation Communit(ies): | PEM |
| HGM Class(es): | |

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

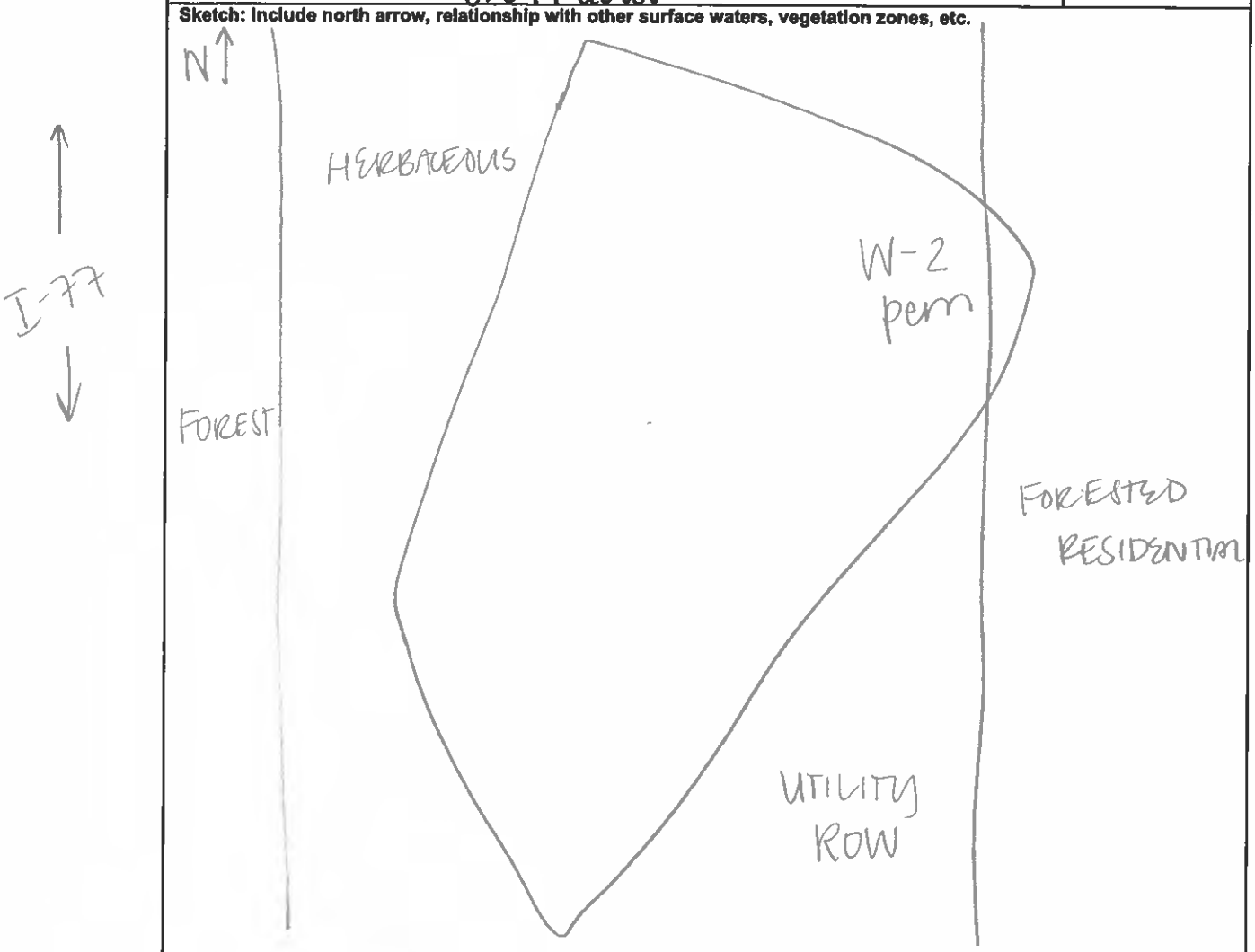



| | |
|---|---|
| Lat/Long or UTM Coordinate | 41.356439 N -81.648341 E |
| USGS Quad Name | Broadview Heights |
| County | Cuyahoga |
| Township | Independence |
| Section and Subsection | |
| Hydrologic Unit Code | 04110002 |
| Site Visit | #1 |
| National Wetland Inventory Map | Broadview Heights Quad ✓ |
| Ohio Wetland Inventory Map | |
| Soil Survey | Cuyahoga County Soil Survey |
| Delineation report/map | ✓ |

**Name of Wetland:** W-3

**Wetland Size (acres, hectares):** 0.099 acres

**Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.**




**Comments, Narrative Discussion, Justification of Category Changes:**

**Final score :** 25 **Category:**

# Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

| # | Steps in properly establishing scoring boundaries | done? | not applicable |
|---|---|---|---|
| Step 1 | Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc. | √ | |
| Step 2 | Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland. | √ | |
| Step 3 | Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary. | √ | |
| Step 4 | Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes. | √ | |
| Step 5 | In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately. | | √ |
| Step 6 | Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications. | √ | |

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

# Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

| # | Question | Circle one | |
|---|---|---|---|
| 1 | **Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 2 | NO<br><br>Go to Question 2 |
| 2 | **Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 3 | NO<br><br>Go to Question 3 |
| 3 | **Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 4 | NO<br><br>Go to Question 4 |
| 4 | **Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 5 | NO<br><br>Go to Question 5 |
| 5 | **Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation? | YES<br><br>Wetland is a Category 1 wetland<br><br>Go to Question 6 | NO<br><br>Go to Question 6 |
| 6 | **Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 7 | NO<br><br>Go to Question 7 |
| 7 | **Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 8a | NO<br><br>Go to Question 8a |
| 8a | **"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 8b | NO<br><br>Go to Question 8b |

| | | | |
|---|---|---|---|
| 8b | **Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh? | YES<br><br>Wetland should be evaluated for possible Category 3 status.<br><br>Go to Question 9a | NO<br><br>Go to Question 9a |
| 9a | **Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish? | YES<br><br>Go to Question 9b | NO<br><br>Go to Question 10 |
| 9b | Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 9c |
| 9c | Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation. | YES<br><br>Go to Question 9d | NO<br><br>Go to Question 10 |
| 9d | Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 10 | NO<br><br>Go to Question 9e |
| 9e | Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 10 |
| 10 | **Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality. | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 11 | NO<br><br>Go to Question 11 |
| 11 | **Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Complete Quantitative Rating | NO<br><br>Complete Quantitative Rating |

**Table 1. Characteristic plant species.**

| invasive/exotic spp | fen species | bog species | Oak Opening species | wet prairie species |
|---|---|---|---|---|
| *Lythrum salicaria* | *Zygadenus elegans var. glaucus* | *Calla palustris* | *Carex cryptolepis* | *Calamagrostis canadensis* |
| *Myriophyllum spicatum* | *Cacalia plantaginea* | *Carex atlantica var. capillacea* | *Carex lasiocarpa* | *Calamogrostis stricta* |
| *Najas minor* | *Carex flava* | *Carex echinata* | *Carex stricta* | *Carex atherodes* |
| *Phalaris arundinacea* | *Carex sterilis* | *Carex oligosperma* | *Cladium mariscoides* | *Carex buxbaumii* |
| *Phragmites australis* | *Carex stricta* | *Carex trisperma* | *Calamagrostis stricta* | *Carex pellita* |
| *Potamogeton crispus* | *Deschampsia caespitosa* | *Chamaedaphne calyculata* | *Calamagrostis canadensis* | *Carex sartwellii* |
| *Ranunculus ficaria* | *Eleocharis rostellata* | *Decodon verticillatus* | *Quercus palustris* | *Gentiana andrewsii* |
| *Rhamnus frangula* | *Eriophorum viridicarinatum* | *Eriophorum virginicum* | | *Helianthus grosseserratus* |
| *Typha angustifolia* | *Gentianopsis spp.* | *Larix laricina* | | *Liatris spicata* |
| *Typha xglauca* | *Lobelia kalmii* | *Nemopanthus mucronatus* | | *Lysimachia quadriflora* |
| | *Parnassia glauca* | *Schechzeria palustris* | | *Lythrum alatum* |
| | *Potentilla fruticosa* | *Sphagnum spp.* | | *Pycnanthemum virginianum* |
| | *Rhamnus alnifolia* | *Vaccinium macrocarpon* | | *Silphium terebinthinaceum* |
| | *Rhynchospora capillacea* | *Vaccinium corymbosum* | | *Sorghastrum nutans* |
| | *Salix candida* | *Vaccinium oxycoccos* | | *Spartina pectinata* |
| | *Salix myricoides* | *Woodwardia virginica* | | *Solidago riddellii* |
| | *Salix serissima* | *Xyris difformis* | | |
| | *Solidago ohioensis* | | | |
| | *Tofieldia glutinosa* | | | |
| | *Triglochin maritimum* | | | |
| | *Triglochin palustre* | | | |

**End of Narrative Rating. Begin Quantitative Rating on next page.**

ORAM v. 5.0 Field Form Quantitative Rating

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

| 1 | 1 |
|---|---|
| max 6 pts. | subtotal |

## Metric 1. Wetland Area (size).

Select one size class and assign score.

| | |
|---|---|
| | >50 acres (>20.2ha) (6 pts) |
| | 25 to <50 acres (10.1 to <20.2ha) (5 pts) |
| | 10 to <25 acres (4 to <10.1 ha) (4 pts) |
| | 3 to <10 acres (1.2 to <4 ha) (3 pts) |
| | 0.3 to < 3 acres (012 to <1.2ha) (2 pts) |
| 1 | 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt) |
| | <0.1 acres (0.04ha) (0 pts) |

| 7 | 8 |
|---|---|
| max 14 pts. | subtotal |

## Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

| | |
|---|---|
| | WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7) |
| 4 | MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) |
| | NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) |
| | VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) |

2b. Intensity of surrounding land use. Select one or double check and average.

| | |
|---|---|
| | VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) |
| | LOW. Old field (>10 years), shrubland, young second growth forest. (5) |
| 3 | MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) |
| | HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) |

| 7 | 15 |
|---|---|
| max 30 pts. | subtotal |

## Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

| | |
|---|---|
| | High pH groundwater (5) |
| | Other groundwater (3) |
| 1 | Precipitation (1) |
| | Seasonal/Intermittent surface water (3) |
| | Perennial surface water (lake or stream (5) |

3b. Connectivity. Score all that apply.

| | |
|---|---|
| | 100 year floodplain (1) |
| | Between stream/lake and other human use (1) |
| 1 | Part of wetland/upland (e.g. forest), complex (1) |
| | Part of riparian or upland corridor (1) |

3c. Maximum water depth. Select only one and assign score.

| | |
|---|---|
| | >0.7 (27.6in) (3) |
| | 0.4 to 0.7m (15.7 to 27.6in) (2) |
| 1 | <0.4m (<15.7in) (1) |

/saturation. Score one or dbl check.

| | |
|---|---|
| | Semi- to permanently inundated/saturated (4) |
| | Regularly inundated/saturated (3) |
| | Seasonally inundated (2) |
| 1 | Seasonally saturated in upper 30cm (12in) (1) |

3e. Modifications to natural hydrologic regime. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (12) |
| | Recovered (7) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| | ditch | | point source (nonstormwater) |
| | tile | X | filling/grading |
| | dike | | road bed/RR track |
| | weir | | dredging |
| | stormwater input | X | Other: Mowed Easement |

| 7 | 22 |
|---|---|
| max 20 pts. | subtotal |

## Metric 4. Habitat Alternation and Development.

4a. Substrate disturbance. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (4) |
| | Recovered (3) |
| 2 | Recovering (2) |
| | Recent or no recovery (1) |

4b. Habitat development. Select only one and assign score.

| | |
|---|---|
| | Excellent (7) |
| | Very good (6) |
| | Good (5) |
| | Moderately good (4) |
| | Fair (3) |
| 2 | Poor to fair (2) |
| | Poor (1) |

4c. Habitat alteration. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (9) |
| | Recovered (6) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| X | mowing | X | shrub/sapling removal |
| | grazing | | herbaceous/aquatic bed removal |
| | clearcutting | | sedimentation |
| X | selective cutting | | dredging |
| | woody debris removal | | farming |
| | toxic pollutants | | nutrient enrichment |

| 22 |
|---|
| subtotal this page |

last revised 1 February 2001 jim

ORAM v. 5.0 Field Form Quantitative Rating

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

22
subtotal first page

## Metric 5. Special Wetlands.

0 max 10 pts. | 22 subtotal

Check all that apply and score as indicated.

| | |
|---|---|
| | Bog (10) |
| | Fen (10) |
| | Old growth forest (10) |
| | Mature forested wetland (5) |
| | Lake Erie coastal/tributary wetland -unrestricted hydrology (10) |
| | Lake Erie coastal/tributary wetland-restricted hydrology (5) |
| | Lake Plain Sand Prairies (Oak Openings) (10) |
| | Relict Wet Prairies (10) |
| | Known occurrence state/federal threatened or endangered species (10) |
| | Significant migratory songbird/water fowl habitat or usage (10) |
| | Category 1 Wetland. See Question 1 Qualitative Rating (-10) |

## Metric 6. Plant communities, interspersion, microtopography.

3 max 20 pts. | 25 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

| | |
|---|---|
| | Aquatic bed |
| 2 | Emergent |
| | Shrub |
| | Forest |
| | Mudflats |
| | Open Water |
| | Other_____ |

6b. Horizontal (plan view) Interspersion.
Score only one.

| | |
|---|---|
| | High (5) |
| | Moderately high (4) |
| | Moderate (3) |
| | Moderately low (2) |
| | Low (1) |
| 0 | None (0) |

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

| | |
|---|---|
| | Extensive >75% cover (-5) |
| | Moderate 25-75% cover (-3) |
| | Sparse 5-25% cover (-1) |
| 0 | Nearly absent <5% cover (0) |
| | Absent (1) |

6d. Microtopography.
Score all present using 0 to 3 scale.

| | |
|---|---|
| 0 | Vegetated hummucks/tussucks |
| 1 | Coarse woody debris >15cm (6in) |
| 0 | Standing dead >25cm (10in) dbh |
| 0 | Amphibian breeding pools |

**Vegatation Community Cover Scale**

| | |
|---|---|
| 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| 1 | Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality |
| 2 | Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality. |
| 3 | Present and comprises significant part, or more, of wetland's vegetation and is of high quality. |

**Narrative Description of Vegetation Quality**

| | |
|---|---|
| low | Low spp diversity and/or predominance of nonnative or disturbance tolerant native species |
| mod | Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp |
| high | A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp |

**Mudflat and Open Water Class Quality**

| | |
|---|---|
| 0 | Absent <0.1ha (0.247 acres) |
| 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) |
| 2 | Moderate 1 to <4ha (2.47 to 9.88 acres) |
| 3 | High 4ha (9.88 acres) or more |

**Microtopography Cover Scale**

| | |
|---|---|
| 0 | Absent |
| 1 | Present in very small amounts or if more common of marginal quality |
| 2 | Present in moderate amounts, but not of highest quality or in small amounts of highest quality |
| 3 | Present in moderate or greater amounts and of highest quality |

25 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

# ORAM Summary Worksheet

| | | circle answer or insert score | Result |
|---|---|---|---|
| Narrative Rating | Question 1 Critical Habitat | YES NO | If yes, Category 3. |
| | Question 2. Threatened or Endangered Species | YES NO | If yes, Category 3. |
| | Question 3. High Quality Natural Wetland | YES NO | If yes, Category 3. |
| | Question 4. Significant bird habitat | YES NO | If yes, Category 3. |
| | Question 5. Category 1 Wetlands | YES NO | If yes, Category 1. |
| | Question 6. Bogs | YES NO | If yes, Category 3. |
| | Question 7. Fens | YES NO | If yes, Category 3. |
| | Question 8a. Old Growth Forest | YES NO | If yes, Category 3. |
| | Question 8b. Mature Forested Wetland | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9b. Lake Erie Wetlands - Restricted | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9d. Lake Erie Wetlands – Unrestricted with native plants | YES NO | If yes, Category 3 |
| | Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 10. Oak Openings | YES NO | If yes, Category 3 |
| | Question 11. Relict Wet Prairies | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| Quantitative Rating | Metric 1. Size | 1 | |
| | Metric 2. Buffers and surrounding land use | 7 | |
| | Metric 3. Hydrology | 7 | |
| | Metric 4. Habitat | 7 | |
| | Metric 5. Special Wetland Communities | 0 | |
| | Metric 6. Plant communities, interspersion, microtopography | 3 | |
| | TOTAL SCORE | 25 | Category based on score breakpoints |

**Complete Wetland Categorization Worksheet.**

# Wetland Categorization Worksheet

| Choices | Circle one | | Evaluation of Categorization Result of ORAM |
|---|---|---|---|
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10 | YES<br><br>Wetland is categorized as a Category 3 wetland | NO | Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM |
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 1, 8b, 9b, 9e, 11 | YES<br><br>Wetland should be evaluated for possible Category 3 status | NO | Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category. |
| Did you answer "Yes" to<br><br>Narrative Rating No. 5 | YES<br><br>Wetland is categorized as a Category 1 wetland | NO | Is quantitative rating score *greater* than the Category 2 scoring threshold (*including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM |
| Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland? | YES<br><br>Wetland is assigned to the appropriate category based on the scoring range | NO | If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score. |
| Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands? | YES<br><br>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria | NO | Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C). |
| Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method? | YES<br><br>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form | NO<br><br>Wetland is assigned to category as determined by the ORAM. | A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided. |

**Final Category**

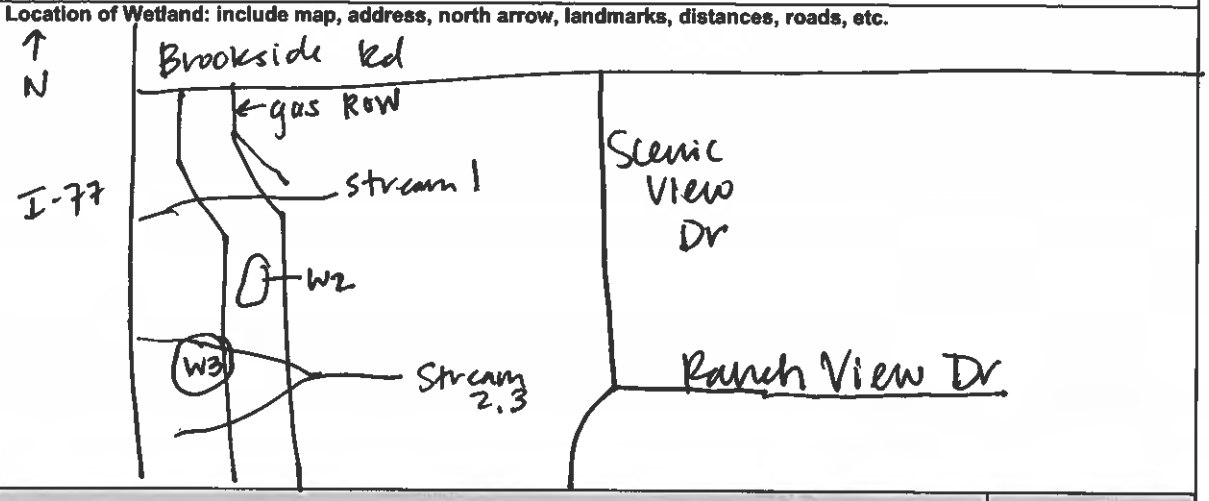
| Choose one | Category 1 | Category 2 | Category 3 |
|---|---|---|---|

## End of Ohio Rapid Assessment Method for Wetlands.

# Background Information

| | |
|---|---|
| **Name:** | ANN GILMORE |
| **Date:** | 09/12/2014 |
| **Affiliation:** | EnviroScience, Inc. |
| **Address:** | 5070 Stow Rd, Stow, OH 44224 |
| **Phone Number:** | 330-688-0111 |
| **e-mail address:** | AGilmore@EnviroScienceInc.com |
| **Name of Wetland:** | W-4 |
| **Vegetation Communit(ies):** | PEM |
| **HGM Class(es):** | |

**Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.**

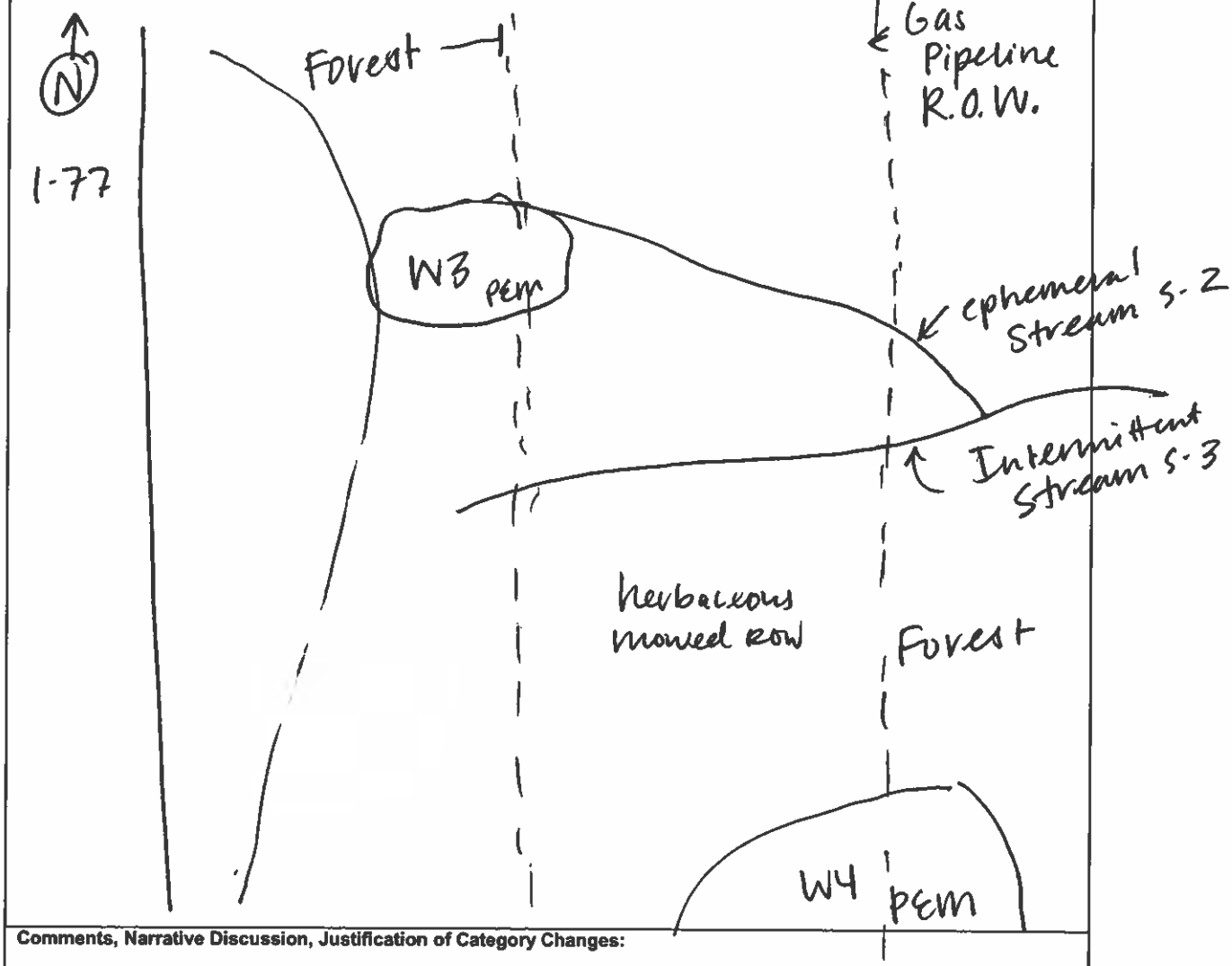



| | | |
|---|---|---|
| Lat/Long or UTM Coordinate | 41.355699N -81.648469 | |
| USGS Quad Name | Broadview Heights | |
| County | Cuyahoga | |
| Township | Independence | |
| Section and Subsection | | |
| Hydrologic Unit Code | 04110002 | |
| Site Visit | #1 | |
| National Wetland Inventory Map | Broadview Heights Quad | ✓ |
| Ohio Wetland Inventory Map | | |
| Soil Survey | Cuyahoga Co. Soil Survey | ✓ |
| Delineation report/map | | ✓ |

**Name of Wetland:** W-4

**Wetland Size (acres, hectares):** 0.00 acres

**Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.**




**Comments, Narrative Discussion, Justification of Category Changes:**

**Final score :** 22 **Category:** 1

# Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

| # | Steps in properly establishing scoring boundaries | done? | not applicable |
|---|---|---|---|
| Step 1 | Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc. | ✓ | |
| Step 2 | Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland. | ✓ | |
| Step 3 | Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary. | ✓ | |
| Step 4 | Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes. | ✓ | |
| Step 5 | In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately. | | ✓ |
| Step 6 | Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications. | ✓ | |

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

# Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

| # | Question | Circle one | |
|---|---|---|---|
| 1 | **Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 2 | NO<br><br>Go to Question 2 |
| 2 | **Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 3 | NO<br><br>Go to Question 3 |
| 3 | **Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 4 | NO<br><br>Go to Question 4 |
| 4 | **Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 5 | NO<br><br>Go to Question 5 |
| 5 | **Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation? | YES<br><br>Wetland is a Category 1 wetland<br><br>Go to Question 6 | NO<br><br>Go to Question 6 |
| 6 | **Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 7 | NO<br><br>Go to Question 7 |
| 7 | **Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 8a | NO<br><br>Go to Question 8a |
| 8a | **"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 8b | NO<br><br>Go to Question 8b |

| | | | |
|---|---|---|---|
| 8b | **Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh? | YES<br><br>Wetland should be evaluated for possible Category 3 status.<br><br>Go to Question 9a | NO<br><br>Go to Question 9a |
| 9a | **Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish? | YES<br><br>Go to Question 9b | NO<br><br>Go to Question 10 |
| 9b | Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 9c |
| 9c | Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation. | YES<br><br>Go to Question 9d | NO<br><br>Go to Question 10 |
| 9d | Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 10 | NO<br><br>Go to Question 9e |
| 9e | Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 10 |
| 10 | **Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality. | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 11 | NO<br><br>Go to Question 11 |
| 11 | **Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Complete Quantitative Rating | NO<br><br>Complete Quantitative Rating |

**Table 1. Characteristic plant species.**

| invasive/exotic spp | fen species | bog species | Oak Opening species | wet prairie species |
|---|---|---|---|---|
| *Lythrum salicaria* | *Zygadenus elegans var. glaucus* | *Calla palustris* | *Carex cryptolepis* | *Calamagrostis canadensis* |
| *Myriophyllum spicatum* | *Cacalia plantaginea* | *Carex atlantica var. capillacea* | *Carex lasiocarpa* | *Calamogrostis stricta* |
| *Najas minor* | *Carex flava* | *Carex echinata* | *Carex stricta* | *Carex atherodes* |
| *Phalaris arundinacea* | *Carex sterilis* | *Carex oligosperma* | *Cladium mariscoides* | *Carex buxbaumii* |
| *Phragmites australis* | *Carex stricta* | *Carex trisperma* | *Calamagrostis stricta* | *Carex pellita* |
| *Potamogeton crispus* | *Deschampsia caespitosa* | *Chamaedaphne calyculata* | *Calamagrostis canadensis* | *Carex sartwellii* |
| *Ranunculus ficaria* | *Eleocharis rostellata* | *Decodon verticillatus* | *Quercus palustris* | *Gentiana andrewsii* |
| *Rhamnus frangula* | *Eriophorum viridicarinatum* | *Eriophorum virginicum* | | *Helianthus grosseserratus* |
| *Typha angustifolia* | *Gentianopsis spp.* | *Larix laricina* | | *Liatris spicata* |
| *Typha xglauca* | *Lobelia kalmii* | *Nemopanthus mucronatus* | | *Lysimachia quadriflora* |
| | *Parnassia glauca* | *Schechzeria palustris* | | *Lythrum alatum* |
| | *Potentilla fruticosa* | *Sphagnum spp.* | | *Pycnanthemum virginianum* |
| | *Rhamnus alnifolia* | *Vaccinium macrocarpon* | | *Silphium terebinthinaceum* |
| | *Rhynchospora capillacea* | *Vaccinium corymbosum* | | *Sorghastrum nutans* |
| | *Salix candida* | *Vaccinium oxycoccos* | | *Spartina pectinata* |
| | *Salix myricoides* | *Woodwardia virginica* | | *Solidago riddellii* |
| | *Salix serissima* | *Xyris difformis* | | |
| | *Solidago ohioensis* | | | |
| | *Tofieldia glutinosa* | | | |
| | *Triglochin maritimum* | | | |
| | *Triglochin palustre* | | | |

**End of Narrative Rating. Begin Quantitative Rating on next page.**

ORAM v. 5.0 Field Form Quantitative Rating

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

| 0 | 0 |
|---|---|
| max 6 pts. | subtotal |

## Metric 1. Wetland Area (size).

Select one size class and assign score.

| | |
|---|---|
| | >50 acres (>20.2ha) (6 pts) |
| | 25 to <50 acres (10.1 to <20.2ha) (5 pts) |
| | 10 to <25 acres (4 to <10.1 ha) (4 pts) |
| | 3 to <10 acres (1.2 to <4 ha) (3 pts) |
| | 0.3 to < 3 acres (012 to <1.2ha) (2 pts) |
| | 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt) |
| 0 | <0.1 acres (0.04ha) (0 pts) |

| 7 | 7 |
|---|---|
| max 14 pts. | subtotal |

## Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

| | |
|---|---|
| | WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7) |
| 4 | MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) |
| | NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) |
| | VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) |

2b. Intensity of surrounding land use. Select one or double check and average.

| | |
|---|---|
| | VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) |
| | LOW. Old field (>10 years), shrubland, young second growth forest. (5) |
| 3 | MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) |
| | HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) |

| 11 | 18 |
|---|---|
| max 30 pts. | subtotal |

## Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

| | |
|---|---|
| | High pH groundwater (5) |
| | Other groundwater (3) |
| 1 | Precipitation (1) |
| 3 | Seasonal/Intermittent surface water (3) |
| | Perennial surface water (lake or stream (5) |

3b. Connectivity. Score all that apply.

| | |
|---|---|
| | 100 year floodplain (1) |
| | Between stream/lake and other human use (1) |
| | Part of wetland/upland (e.g. forest), complex (1) |
| | Part of riparian or upland corridor (1) |

/saturation. Score one or dbl check.

| | |
|---|---|
| | Semi- to permanently inundated/saturated (4) |
| 3 | Regularly inundated/saturated (3) |
| | Seasonally inundated (2) |
| | Seasonally saturated in upper 30cm (12in) (1) |

3c. Maximum water depth. Select only one and assign score.

| | |
|---|---|
| | >0.7 (27.6in) (3) |
| | 0.4 to 0.7m (15.7 to 27.6in) (2) |
| 1 | <0.4m (<15.7in) (1) |

3e. Modifications to natural hydrologic regime. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (12) |
| | Recovered (7) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| | ditch | | point source (nonstormwater) |
| | tile | X | filling/grading |
| | dike | X | road bed/RR track |
| | weir | | dredging |
| | stormwater input | X | Other: Mowed Easement |

| 6 | 24 |
|---|---|
| max 20 pts. | subtotal |

## Metric 4. Habitat Alternation and Development.

4a. Substrate disturbance. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (4) |
| | Recovered (3) |
| 2 | Recovering (2) |
| | Recent or no recovery (1) |

4b. Habitat development. Select only one and assign score.

| | |
|---|---|
| | Excellent (7) |
| | Very good (6) |
| | Good (5) |
| | Moderately good (4) |
| | Fair (3) |
| | Poor to fair (2) |
| 1 | Poor (1) |

4c. Habitat alteration. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (9) |
| | Recovered (6) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| X | mowing | X | shrub/sapling removal |
| | grazing | | herbaceous/aquatic bed removal |
| | clearcutting | | sedimentation |
| | selective cutting | | dredging |
| | woody debris removal | | farming |
| | toxic pollutants | | nutrient enrichment |

| 24 |
|---|
| subtotal this page |

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

24
subtotal first page

## Metric 5. Special Wetlands.

0 (max 10 pts.) | 24 (subtotal)

Check all that apply and score as indicated.

| | |
|---|---|
| | Bog (10) |
| | Fen (10) |
| | Old growth forest (10) |
| | Mature forested wetland (5) |
| | Lake Erie coastal/tributary wetland -unrestricted hydrology (10) |
| | Lake Erie coastal/tributary wetland-restricted hydrology (5) |
| | Lake Plain Sand Prairies (Oak Openings) (10) |
| | Relict Wet Prairies (10) |
| | Known occurrence state/federal threatened or endangered species (10) |
| | Significant migratory songbird/water fowl habitat or usage (10) |
| | Category 1 Wetland. See Question 1 Qualitative Rating (-10) |

## Metric 6. Plant communities, interspersion, microtopography.

-2 (max 20 pts.) | 22 (subtotal)

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

| | |
|---|---|
| | Aquatic bed |
| 1 | Emergent |
| | Shrub |
| | Forest |
| | Mudflats |
| | Open Water |
| | Other_____ |

6b. Horizontal (plan view) Interspersion.
Score only one.

| | |
|---|---|
| | High (5) |
| | Moderately high (4) |
| | Moderate (3) |
| | Moderately low (2) |
| | Low (1) |
| 0 | None (0) |

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

| | |
|---|---|
| | Extensive >75% cover (-5) |
| -3 | Moderate 25-75% cover (-3) |
| | Sparse 5-25% cover (-1) |
| | Nearly absent <5% cover (0) |
| | Absent (1) |

6d. Microtopography.
Score all present using 0 to 3 scale.

| | |
|---|---|
| 0 | Vegetated hummucks/tussucks |
| 0 | Coarse woody debris >15cm (6in) |
| 0 | Standing dead >25cm (10in) dbh |
| 0 | Amphibian breeding pools |

**Vegatation Community Cover Scale**

| | |
|---|---|
| 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| 1 | Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality |
| 2 | Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality. |
| 3 | Present and comprises significant part, or more, of wetland's vegetation and is of high quality. |

**Narrative Description of Vegetation Quality**

| | |
|---|---|
| low | Low spp diversity and/or predominance of nonnative or disturbance tolerant native species |
| mod | Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp |
| high | A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp |

**Mudflat and Open Water Class Quality**

| | |
|---|---|
| 0 | Absent <0.1ha (0.247 acres) |
| 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) |
| 2 | Moderate 1 to <4ha (2.47 to 9.88 acres) |
| 3 | High 4ha (9.88 acres) or more |

**Microtopography Cover Scale**

| | |
|---|---|
| 0 | Absent |
| 1 | Present in very small amounts or if more common of marginal quality |
| 2 | Present in moderate amounts, but not of highest quality or in small amounts of highest quality |
| 3 | Present in moderate or greater amounts and of highest quality |

22 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

# ORAM Summary Worksheet

| | | circle answer or insert score | Result |
|---|---|---|---|
| Narrative Rating | Question 1 Critical Habitat | YES NO | If yes, Category 3. |
| | Question 2. Threatened or Endangered Species | YES NO | If yes, Category 3. |
| | Question 3. High Quality Natural Wetland | YES NO | If yes, Category 3. |
| | Question 4. Significant bird habitat | YES NO | If yes, Category 3. |
| | Question 5. Category 1 Wetlands | YES NO | If yes, Category 1. |
| | Question 6. Bogs | YES NO | If yes, Category 3. |
| | Question 7. Fens | YES NO | If yes, Category 3. |
| | Question 8a. Old Growth Forest | YES NO | If yes, Category 3. |
| | Question 8b. Mature Forested Wetland | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9b. Lake Erie Wetlands - Restricted | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9d. Lake Erie Wetlands – Unrestricted with native plants | YES NO | If yes, Category 3 |
| | Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 10. Oak Openings | YES NO | If yes, Category 3 |
| | Question 11. Relict Wet Prairies | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| Quantitative Rating | Metric 1. Size | 0 | |
| | Metric 2. Buffers and surrounding land use | 7 | |
| | Metric 3. Hydrology | 11 | |
| | Metric 4. Habitat | 6 | |
| | Metric 5. Special Wetland Communities | 0 | |
| | Metric 6. Plant communities, interspersion, microtopography | -2 | |
| | TOTAL SCORE | 22 | Category based on score breakpoints |

**Complete Wetland Categorization Worksheet.**

# Wetland Categorization Worksheet

| Choices | Circle one | | Evaluation of Categorization Result of ORAM |
|---|---|---|---|
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10 | YES<br><br>Wetland is categorized as a Category 3 wetland | NO | Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM |
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 1, 8b, 9b, 9e, 11 | YES<br><br>Wetland should be evaluated for possible Category 3 status | NO | Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category. |
| Did you answer "Yes" to<br><br>Narrative Rating No. 5 | YES<br><br>Wetland is categorized as a Category 1 wetland | NO | Is quantitative rating score *greater* than the Category 2 scoring threshold (*including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM |
| Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland? | YES<br><br>Wetland is assigned to the appropriate category based on the scoring range | NO | If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score. |
| Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands? | YES<br><br>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria | NO | Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C). |
| Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method? | YES<br><br>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form | NO<br><br>Wetland is assigned to category as determined by the ORAM. | A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided. |

**Final Category**

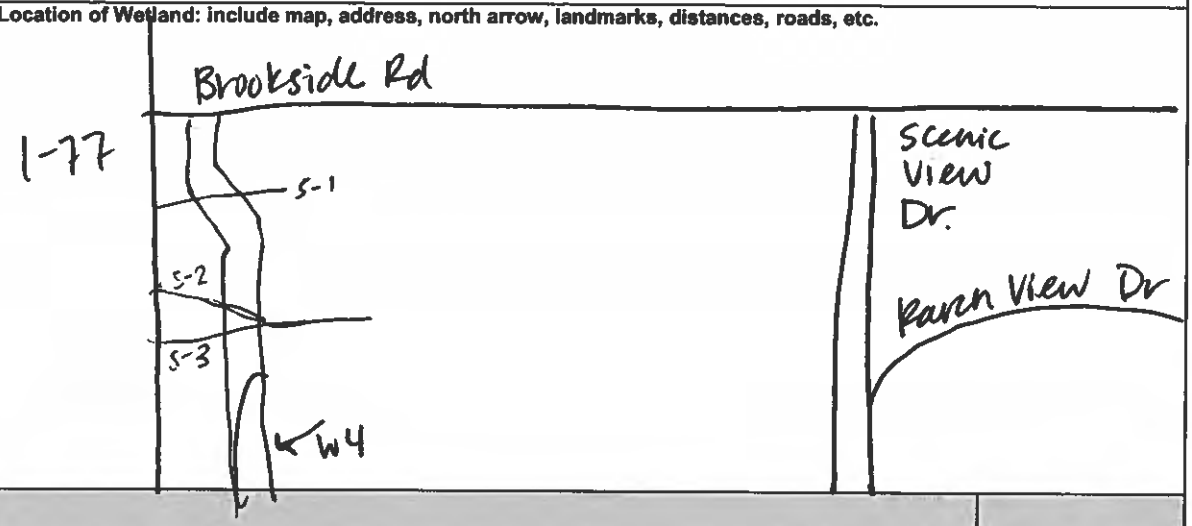
| Choose one | Category 1 | Category 2 | Category 3 |
|---|---|---|---|

## End of Ohio Rapid Assessment Method for Wetlands.

# Background Information

| | |
|---|---|
| **Name:** | Ann Gilmore |
| **Date:** | 09/12/2014 |
| **Affiliation:** | EnviroScience, Inc |
| **Address:** | 5070 Stow Rd, Stow, OH 44224 |
| **Phone Number:** | 330-688-0111 |
| **e-mail address:** | AGilmore@EnviroScienceInc.com |
| **Name of Wetland:** | W-5 |
| **Vegetation Communit(ies):** | PEM |
| **HGM Class(es):** | |

**Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.**

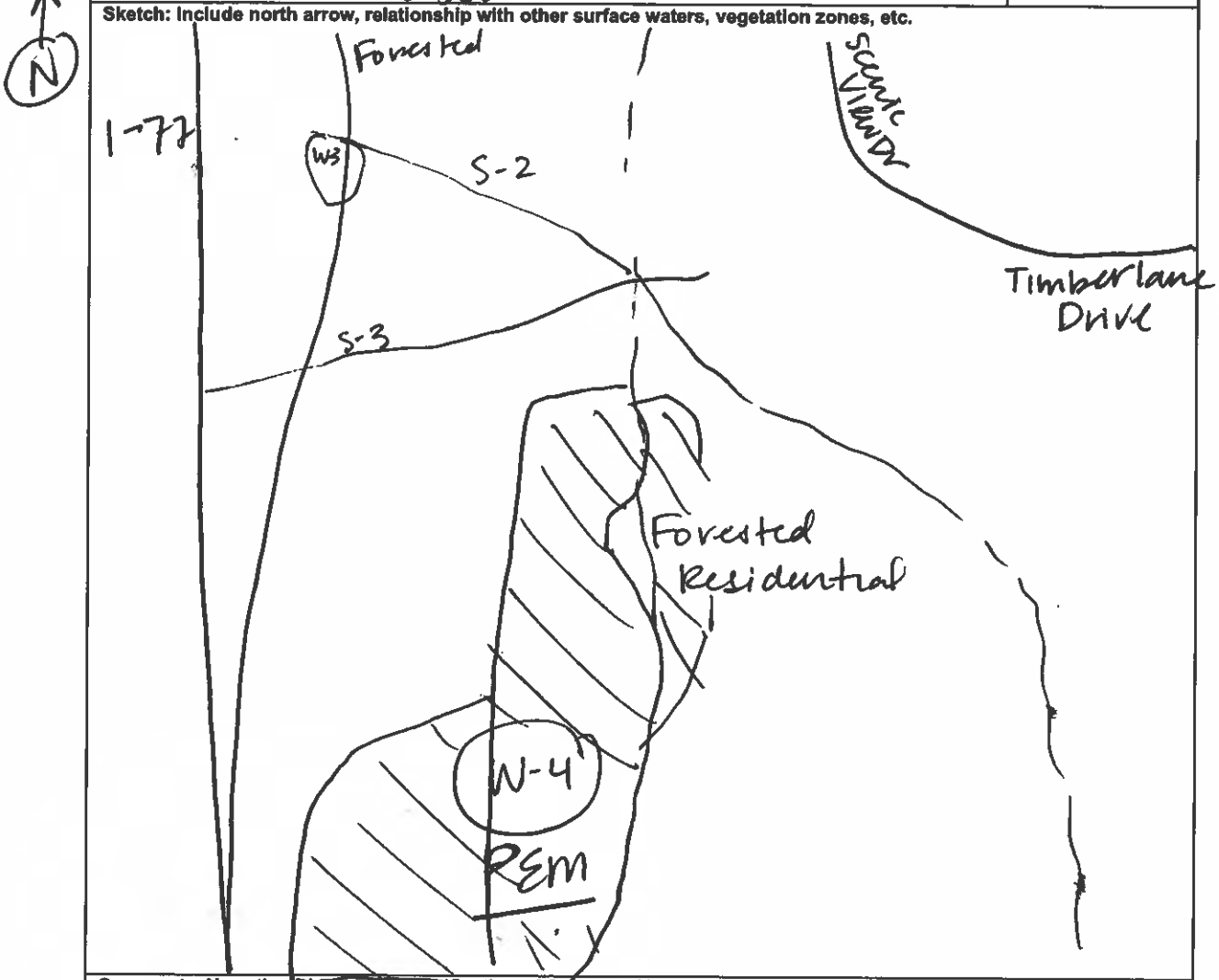



| | |
|---|---|
| Lat/Long or UTM Coordinate | 41.354605N -81.648315 |
| USGS Quad Name | Broadview Heights |
| County | Cuyahoga |
| Township | Independence |
| Section and Subsection | |
| Hydrologic Unit Code | 04110002 |
| Site Visit | #1 |
| National Wetland Inventory Map | Broadview Heights Quad ✓ |
| Ohio Wetland Inventory Map | |
| Soil Survey | Cuyahoga Co. Soil Survey ✓ |
| Delineation report/map | ✓ |

**Name of Wetland:** W-5

**Wetland Size (acres, hectares):** 0.362

**Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.**




**Comments, Narrative Discussion, Justification of Category Changes:**

**Final score :** 36 **Category:** 2

# Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

| # | Steps in properly establishing scoring boundaries | done? | not applicable |
|---|---|---|---|
| Step 1 | Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc. | √ | |
| Step 2 | Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland. | √ | |
| Step 3 | Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary. | √ | |
| Step 4 | Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes. | √ | |
| Step 5 | In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately. | | √ |
| Step 6 | Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications. | √ | |

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

# Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

| # | Question | Circle one | |
|---|---|---|---|
| 1 | **Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 2 | NO<br><br>Go to Question 2 |
| 2 | **Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 3 | NO<br><br>Go to Question 3 |
| 3 | **Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 4 | NO<br><br>Go to Question 4 |
| 4 | **Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 5 | NO<br><br>Go to Question 5 |
| 5 | **Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation? | YES<br><br>Wetland is a Category 1 wetland<br><br>Go to Question 6 | NO<br><br>Go to Question 6 |
| 6 | **Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 7 | NO<br><br>Go to Question 7 |
| 7 | **Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 8a | NO<br><br>Go to Question 8a |
| 8a | **"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs? | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 8b | NO<br><br>Go to Question 8b |

| | | | |
|---|---|---|---|
| 8b | **Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh? | YES<br><br>Wetland should be evaluated for possible Category 3 status.<br><br>Go to Question 9a | NO<br><br>Go to Question 9a |
| 9a | **Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish? | YES<br><br>Go to Question 9b | NO<br><br>Go to Question 10 |
| 9b | Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 9c |
| 9c | Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation. | YES<br><br>Go to Question 9d | NO<br><br>Go to Question 10 |
| 9d | Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 10 | NO<br><br>Go to Question 9e |
| 9e | Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 10 |
| 10 | **Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality. | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 11 | NO<br><br>Go to Question 11 |
| 11 | **Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Complete Quantitative Rating | NO<br><br>Complete Quantitative Rating |

**Table 1. Characteristic plant species.**

| Invasive/exotic spp | fen species | bog species | Oak Opening species | wet prairie species |
|---|---|---|---|---|
| *Lythrum salicaria* | *Zygadenus elegans var. glaucus* | *Calla palustris* | *Carex cryptolepis* | *Calamagrostis canadensis* |
| *Myriophyllum spicatum* | *Cacalia plantaginea* | *Carex atlantica var. capillacea* | *Carex lasiocarpa* | *Calamogrostis stricta* |
| *Najas minor* | *Carex flava* | *Carex echinata* | *Carex stricta* | *Carex atherodes* |
| *Phalaris arundinacea* | *Carex sterilis* | *Carex oligosperma* | *Cladium mariscoides* | *Carex buxbaumii* |
| *Phragmites australis* | *Carex stricta* | *Carex trisperma* | *Calamagrostis stricta* | *Carex pellita* |
| *Potamogeton crispus* | *Deschampsia caespitosa* | *Chamaedaphne calyculata* | *Calamagrostis canadensis* | *Carex sartwellii* |
| *Ranunculus ficaria* | *Eleocharis rostellata* | *Decodon verticillatus* | *Quercus palustris* | *Gentiana andrewsii* |
| *Rhamnus frangula* | *Eriophorum viridicarinatum* | *Eriophorum virginicum* | | *Helianthus grosseserratus* |
| *Typha angustifolia* | *Gentianopsis spp.* | *Larix laricina* | | *Liatris spicata* |
| *Typha xglauca* | *Lobelia kalmii* | *Nemopanthus mucronatus* | | *Lysimachia quadriflora* |
| | *Parnassia glauca* | *Schechzeria palustris* | | *Lythrum alatum* |
| | *Potentilla fruticosa* | *Sphagnum spp.* | | *Pycnanthemum virginianum* |
| | *Rhamnus alnifolia* | *Vaccinium macrocarpon* | | *Silphium terebinthinaceum* |
| | *Rhynchospora capillacea* | *Vaccinium corymbosum* | | *Sorghastrum nutans* |
| | *Salix candida* | *Vaccinium oxycoccos* | | *Spartina pectinata* |
| | *Salix myricoides* | *Woodwardia virginica* | | *Solidago riddellii* |
| | *Salix serissima* | *Xyris difformis* | | |
| | *Solidago ohioensis* | | | |
| | *Tofieldia glutinosa* | | | |
| | *Triglochin maritimum* | | | |
| | *Triglochin palustre* | | | |

**End of Narrative Rating. Begin Quantitative Rating on next page.**

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

| 2 | 2 |
|---|---|
| max 6 pts. | subtotal |

## Metric 1. Wetland Area (size).

Select one size class and assign score.

| | |
|---|---|
| | >50 acres (>20.2ha) (6 pts) |
| | 25 to <50 acres (10.1 to <20.2ha) (5 pts) |
| | 10 to <25 acres (4 to <10.1 ha) (4 pts) |
| | 3 to <10 acres (1.2 to <4 ha) (3 pts) |
| 2 | 0.3 to < 3 acres (012 to <1.2ha) (2 pts) |
| | 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt) |
| | <0.1 acres (0.04ha) (0 pts) |

| 8 | 10 |
|---|---|
| max 14 pts. | subtotal |

## Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

| | |
|---|---|
| | WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7) |
| 4 | MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) |
| | NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) |
| | VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) |

2b. Intensity of surrounding land use. Select one or double check and average.

| | |
|---|---|
| | VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) |
| 5 | LOW. Old field (>10 years), shrubland, young second growth forest. (5) |
| 3 | MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) |
| | HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) |

| 13 | 23 |
|---|---|
| max 30 pts. | subtotal |

## Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

| | |
|---|---|
| | High pH groundwater (5) |
| | Other groundwater (3) |
| 1 | Precipitation (1) |
| | Seasonal/Intermittent surface water (3) |
| 5 | Perennial surface water (lake or stream (5) |

3b. Connectivity. Score all that apply.

| | |
|---|---|
| | 100 year floodplain (1) |
| | Between stream/lake and other human use (1) |
| | Part of wetland/upland (e.g. forest), complex (1) |
| | Part of riparian or upland corridor (1) |

/saturation. Score one or dbl check.

| | |
|---|---|
| | Semi- to permanently inundated/saturated (4) |
| | Regularly inundated/saturated (3) |
| | Seasonally inundated (2) |
| 1 | Seasonally saturated in upper 30cm (12in) (1) |

3c. Maximum water depth. Select only one and assign score.

| | |
|---|---|
| | >0.7 (27.6in) (3) |
| | 0.4 to 0.7m (15.7 to 27.6in) (2) |
| 1 | <0.4m (<15.7in) (1) |

3e. Modifications to natural hydrologic regime. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (12) |
| 7 | Recovered (7) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| | ditch | | point source (nonstormwater) |
| | tile | X | filling/grading |
| | dike | | road bed/RR track |
| | weir | | dredging |
| | stormwater input | X | Other: Mowed Easement |

| 9 | 32 |
|---|---|
| max 20 pts. | subtotal |

## Metric 4. Habitat Alternation and Development.

4a. Substrate disturbance. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (4) |
| | Recovered (3) |
| 2 | Recovering (2) |
| | Recent or no recovery (1) |

4b. Habitat development. Select only one and assign score.

| | |
|---|---|
| | Excellent (7) |
| | Very good (6) |
| | Good (5) |
| 4 | Moderately good (4) |
| | Fair (3) |
| | Poor to fair (2) |
| | Poor (1) |

4c. Habitat alteration. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (9) |
| | Recovered (6) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| X | mowing | X | shrub/sapling removal |
| | grazing | | herbaceous/aquatic bed removal |
| | clearcutting | | sedimentation |
| X | selective cutting | | dredging |
| | woody debris removal | | farming |
| | toxic pollutants | | nutrient enrichment |

| 32 |
|---|
| subtotal this page |

ORAM v. 5.0 Field Form Quantitative Rating

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

32
subtotal first page

## Metric 5. Special Wetlands.

| max 10 pts. | subtotal |
|---|---|
| 0 | 32 |

Check all that apply and score as indicated.

| | |
|---|---|
| | Bog (10) |
| | Fen (10) |
| | Old growth forest (10) |
| | Mature forested wetland (5) |
| | Lake Erie coastal/tributary wetland -unrestricted hydrology (10) |
| | Lake Erie coastal/tributary wetland-restricted hydrology (5) |
| | Lake Plain Sand Prairies (Oak Openings) (10) |
| | Relict Wet Prairies (10) |
| | Known occurrence state/federal threatened or endangered species (10) |
| | Significant migratory songbird/water fowl habitat or usage (10) |
| | Category 1 Wetland. See Question 1 Qualitative Rating (-10) |

## Metric 6. Plant communities, interspersion, microtopography.

| max 20 pts. | subtotal |
|---|---|
| 4 | 36 |

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

| | |
|---|---|
| | Aquatic bed |
| 1 | Emergent |
| | Shrub |
| 2 | Forest |
| | Mudflats |
| | Open Water |
| | Other_____ |

6b. Horizontal (plan view) Interspersion.
Score only one.

| | |
|---|---|
| | High (5) |
| | Moderately high (4) |
| | Moderate (3) |
| | Moderately low (2) |
| 1 | Low (1) |
| | None (0) |

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

| | |
|---|---|
| | Extensive >75% cover (-5) |
| -3 | Moderate 25-75% cover (-3) |
| | Sparse 5-25% cover (-1) |
| | Nearly absent <5% cover (0) |
| | Absent (1) |

6d. Microtopography.
Score all present using 0 to 3 scale.

| | |
|---|---|
| 1 | Vegetated hummucks/tussucks |
| 2 | Coarse woody debris >15cm (6in) |
| 0 | Standing dead >25cm (10in) dbh |
| 0 | Amphibian breeding pools |

**Vegatation Community Cover Scale**

| | |
|---|---|
| 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| 1 | Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality |
| 2 | Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality. |
| 3 | Present and comprises significant part, or more, of wetland's vegetation and is of high quality. |

**Narrative Description of Vegetation Quality**

| | |
|---|---|
| low | Low spp diversity and/or predominance of nonnative or disturbance tolerant native species |
| mod | Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp |
| high | A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp |

**Mudflat and Open Water Class Quality**

| | |
|---|---|
| 0 | Absent <0.1ha (0.247 acres) |
| 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) |
| 2 | Moderate 1 to <4ha (2.47 to 9.88 acres) |
| 3 | High 4ha (9.88 acres) or more |

**Microtopography Cover Scale**

| | |
|---|---|
| 0 | Absent |
| 1 | Present in very small amounts or if more common of marginal quality |
| 2 | Present in moderate amounts, but not of highest quality or in small amounts of highest quality |
| 3 | Present in moderate or greater amounts and of highest quality |

**36 GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

# ORAM Summary Worksheet

| | | circle answer or insert score | Result |
|---|---|---|---|
| Narrative Rating | Question 1 Critical Habitat | YES NO | If yes, Category 3. |
| | Question 2. Threatened or Endangered Species | YES NO | If yes, Category 3. |
| | Question 3. High Quality Natural Wetland | YES NO | If yes, Category 3. |
| | Question 4. Significant bird habitat | YES NO | If yes, Category 3. |
| | Question 5. Category 1 Wetlands | YES NO | If yes, Category 1. |
| | Question 6. Bogs | YES NO | If yes, Category 3. |
| | Question 7. Fens | YES NO | If yes, Category 3. |
| | Question 8a. Old Growth Forest | YES NO | If yes, Category 3. |
| | Question 8b. Mature Forested Wetland | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9b. Lake Erie Wetlands - Restricted | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9d. Lake Erie Wetlands – Unrestricted with native plants | YES NO | If yes, Category 3 |
| | Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 10. Oak Openings | YES NO | If yes, Category 3 |
| | Question 11. Relict Wet Prairies | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| Quantitative Rating | Metric 1. Size | 2 | |
| | Metric 2. Buffers and surrounding land use | 8 | |
| | Metric 3. Hydrology | 13 | |
| | Metric 4. Habitat | 9 | |
| | Metric 5. Special Wetland Communities | 0 | |
| | Metric 6. Plant communities, interspersion, microtopography | 4 | |
| | TOTAL SCORE | 36 | Category based on score breakpoints |

**Complete Wetland Categorization Worksheet.**

# Wetland Categorization Worksheet

| Choices | Circle one | | Evaluation of Categorization Result of ORAM |
|---|---|---|---|
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10 | YES<br><br>Wetland is categorized as a Category 3 wetland | NO | Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM |
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 1, 8b, 9b, 9e, 11 | YES<br><br>Wetland should be evaluated for possible Category 3 status | NO | Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category. |
| Did you answer "Yes" to<br><br>Narrative Rating No. 5 | YES<br><br>Wetland is categorized as a Category 1 wetland | NO | Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM |
| Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland? | YES<br><br>Wetland is assigned to the appropriate category based on the scoring range | NO | If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score. |
| Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands? | YES<br><br>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria | NO | Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C). |
| Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method? | YES<br><br>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form | NO<br><br>Wetland is assigned to category as determined by the ORAM. | A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided. |

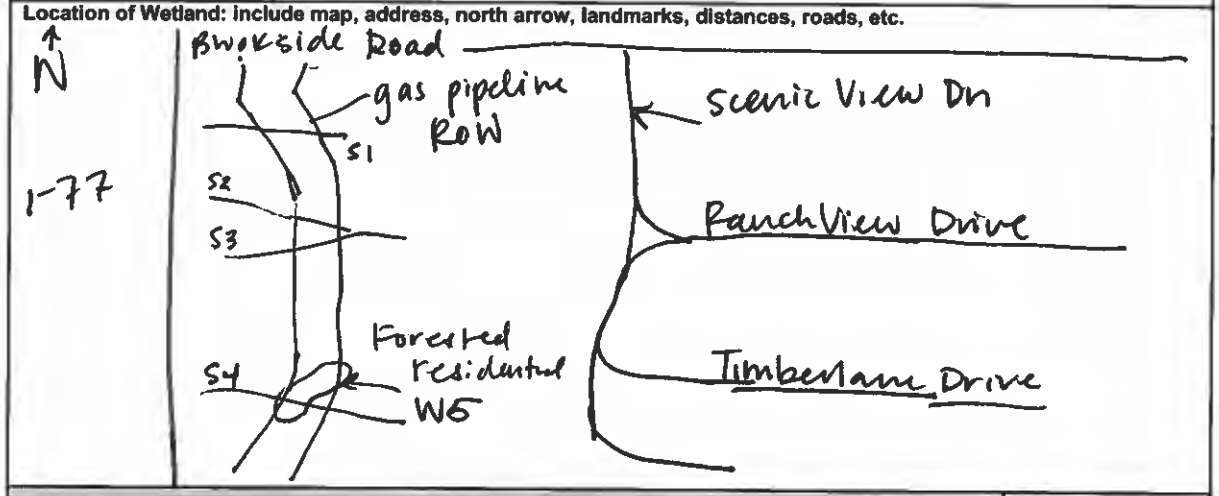
**Final Category**

| Choose one | Category 1 | Category 2 | Category 3 |
|---|---|---|---|

## End of Ohio Rapid Assessment Method for Wetlands.

# Background Information

| | |
|---|---|
| **Name:** Ann Gilmore | |
| **Date:** 09/12/2014 | |
| **Affiliation:** EnviroScience, Inc. | |
| **Address:** 5070 Stow Rd., Stow OH 44224 | |
| **Phone Number:** 330-688-0111 | |
| **e-mail address:** AGilmore@EnviroScienceInc.com | |
| **Name of Wetland:** W-6 | |
| **Vegetation Communit(ies):** PEM | |
| **HGM Class(es):** | |
| **Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.** | |

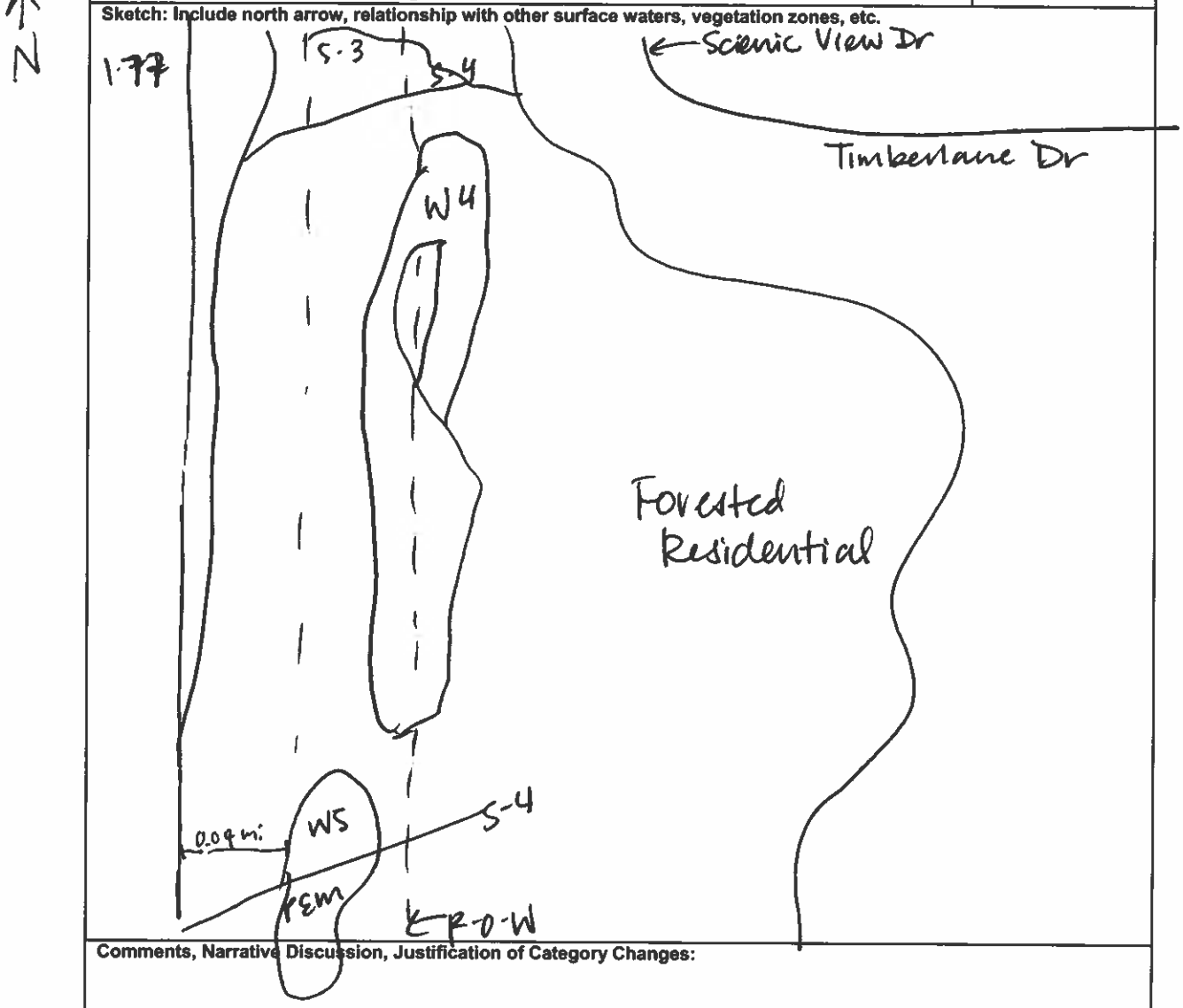



| | |
|---|---|
| Lat/Long or UTM Coordinate 41.353608N -81.648378 | |
| USGS Quad Name Broadview Heights | |
| County Cuyahoga | |
| Township Independence | |
| Section and Subsection | |
| Hydrologic Unit Code 04110002 | |
| Site Visit #1 | |
| National Wetland Inventory Map Broadview Heights Quad | ✓ |
| Ohio Wetland Inventory Map | |
| Soil Survey Cuyahoga Co. Soil Survey | ✓ |
| Delineation report/map | ✓ |

Name of Wetland: W-6

Wetland Size (acres, hectares): 0.101

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.




Comments, Narrative Discussion, Justification of Category Changes:

Final score : 28

Category: 1

2

# Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

| # | Steps in properly establishing scoring boundaries | done? | not applicable |
|---|---|---|---|
| Step 1 | Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc. | √ | |
| Step 2 | Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland. | √ | |
| Step 3 | Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary. | √ | |
| Step 4 | Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes. | √ | |
| Step 5 | In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately. | | √ |
| Step 6 | Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications. | √ | |

**End of Scoring Boundary Determination. Begin Narrative Rating on next page.**

# Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

| # | Question | Circle one | |
|---|---|---|---|
| 1 | **Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000). | YES<br>Wetland should be evaluated for possible Category 3 status<br>Go to Question 2 | NO<br>Go to Question 2 |
| 2 | **Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species? | YES<br>Wetland is a Category 3 wetland.<br>Go to Question 3 | NO<br>Go to Question 3 |
| 3 | **Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland? | YES<br>Wetland is a Category 3 wetland<br>Go to Question 4 | NO<br>Go to Question 4 |
| 4 | **Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas? | YES<br>Wetland is a Category 3 wetland<br>Go to Question 5 | NO<br>Go to Question 5 |
| 5 | **Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation? | YES<br>Wetland is a Category 1 wetland<br>Go to Question 6 | NO<br>Go to Question 6 |
| 6 | **Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%? | YES<br>Wetland is a Category 3 wetland<br>Go to Question 7 | NO<br>Go to Question 7 |
| 7 | **Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%? | YES<br>Wetland is a Category 3 wetland<br>Go to Question 8a | NO<br>Go to Question 8a |
| 8a | **"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs? | YES<br>Wetland is a Category 3 wetland.<br>Go to Question 8b | NO<br>Go to Question 8b |

| | | | |
|---|---|---|---|
| 8b | **Mature forested wetlands.** Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh? | YES<br><br>Wetland should be evaluated for possible Category 3 status.<br><br>Go to Question 9a | NO<br><br>Go to Question 9a |
| 9a | **Lake Erie coastal and tributary wetlands.** Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish? | YES<br><br>Go to Question 9b | NO<br><br>Go to Question 10 |
| 9b | Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 9c |
| 9c | Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation. | YES<br><br>Go to Question 9d | NO<br><br>Go to Question 10 |
| 9d | Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present? | YES<br><br>Wetland is a Category 3 wetland<br><br>Go to Question 10 | NO<br><br>Go to Question 9e |
| 9e | Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities? | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Go to Question 10 | NO<br><br>Go to Question 10 |
| 10 | **Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality. | YES<br><br>Wetland is a Category 3 wetland.<br><br>Go to Question 11 | NO<br><br>Go to Question 11 |
| 11 | **Relict Wet Prairies.** Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.). | YES<br><br>Wetland should be evaluated for possible Category 3 status<br><br>Complete Quantitative Rating | NO<br><br>Complete Quantitative Rating |

**Table 1. Characteristic plant species.**

| invasive/exotic spp | fen species | bog species | Oak Opening species | wet prairie species |
|---|---|---|---|---|
| *Lythrum salicaria* | *Zygadenus elegans var. glaucus* | *Calla palustris* | *Carex cryptolepis* | *Calamagrostis canadensis* |
| *Myriophyllum spicatum* | *Cacalia plantaginea* | *Carex atlantica var. capillacea* | *Carex lasiocarpa* | *Calamogrostis stricta* |
| *Najas minor* | *Carex flava* | *Carex echinata* | *Carex stricta* | *Carex atherodes* |
| *Phalaris arundinacea* | *Carex sterilis* | *Carex oligosperma* | *Cladium mariscoides* | *Carex buxbaumii* |
| *Phragmites australis* | *Carex stricta* | *Carex trisperma* | *Calamagrostis stricta* | *Carex pellita* |
| *Potamogeton crispus* | *Deschampsia caespitosa* | *Chamaedaphne calyculata* | *Calamagrostis canadensis* | *Carex sartwellii* |
| *Ranunculus ficaria* | *Eleocharis rostellata* | *Decodon verticillatus* | *Quercus palustris* | *Gentiana andrewsii* |
| *Rhamnus frangula* | *Eriophorum viridicarinatum* | *Eriophorum virginicum* | | *Helianthus grosseserratus* |
| *Typha angustifolia* | *Gentianopsis spp.* | *Larix laricina* | | *Liatris spicata* |
| *Typha xglauca* | *Lobelia kalmii* | *Nemopanthus mucronatus* | | *Lysimachia quadriflora* |
| | *Parnassia glauca* | *Schechzeria palustris* | | *Lythrum alatum* |
| | *Potentilla fruticosa* | *Sphagnum spp.* | | *Pycnanthemum virginianum* |
| | *Rhamnus alnifolia* | *Vaccinium macrocarpon* | | *Silphium terebinthinaceum* |
| | *Rhynchospora capillacea* | *Vaccinium corymbosum* | | *Sorghastrum nutans* |
| | *Salix candida* | *Vaccinium oxycoccos* | | *Spartina pectinata* |
| | *Salix myricoides* | *Woodwardia virginica* | | *Solidago riddellii* |
| | *Salix serissima* | *Xyris difformis* | | |
| | *Solidago ohioensis* | | | |
| | *Tofieldia glutinosa* | | | |
| | *Triglochin maritimum* | | | |
| | *Triglochin palustre* | | | |

**End of Narrative Rating. Begin Quantitative Rating on next page.**

ORAM v. 5.0 Field Form Quantitative Rating

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

| 1 | 1 |
|---|---|
| max 6 pts. | subtotal |

## Metric 1. Wetland Area (size).

Select one size class and assign score.

| | |
|---|---|
| | >50 acres (>20.2ha) (6 pts) |
| | 25 to <50 acres (10.1 to <20.2ha) (5 pts) |
| | 10 to <25 acres (4 to <10.1 ha) (4 pts) |
| | 3 to <10 acres (1.2 to <4 ha) (3 pts) |
| | 0.3 to < 3 acres (012 to <1.2ha) (2 pts) |
| 1 | 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt) |
| | <0.1 acres (0.04ha) (0 pts) |

| 5 | 6 |
|---|---|
| max 14 pts. | subtotal |

## Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

| | |
|---|---|
| | WIDE. Buffers average 50m (164 ft) or more around wetland perimeter (7) |
| | MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4) |
| 1 | NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1) |
| | VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0) |

2b. Intensity of surrounding land use. Select one or double check and average.

| | |
|---|---|
| | VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) |
| 5 | LOW. Old field (>10 years), shrubland, young second growth forest. (5) |
| 3 | MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) |
| | HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1) |

| 15 | 21 |
|---|---|
| max 30 pts. | subtotal |

## Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

| | |
|---|---|
| | High pH groundwater (5) |
| | Other groundwater (3) |
| 1 | Precipitation (1) |
| | Seasonal/Intermittent surface water (3) |
| 5 | Perennial surface water (lake or stream (5) |

3b. Connectivity. Score all that apply.

| | |
|---|---|
| | 100 year floodplain (1) |
| | Between stream/lake and other human use (1) |
| | Part of wetland/upland (e.g. forest), complex (1) |
| 1 | Part of riparian or upland corridor (1) |

/saturation. Score one or dbl check.

| | |
|---|---|
| | Semi- to permanently inundated/saturated (4) |
| | Regularly inundated/saturated (3) |
| 2 | Seasonally inundated (2) |
| | Seasonally saturated in upper 30cm (12in) (1) |

3c. Maximum water depth. Select only one and assign score.

| | |
|---|---|
| | >0.7 (27.6in) (3) |
| | 0.4 to 0.7m (15.7 to 27.6in) (2) |
| 1 | <0.4m (<15.7in) (1) |

3e. Modifications to natural hydrologic regime. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (12) |
| 7 | Recovered (7) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| | ditch | | point source (nonstormwater) |
| | tile | X | filling/grading |
| | dike | X | road bed/RR track |
| | weir | | dredging |
| | stormwater input | X | Other: Mowed Easement/Culvert |

| 8 | 29 |
|---|---|
| max 20 pts. | subtotal |

## Metric 4. Habitat Alternation and Development.

4a. Substrate disturbance. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (4) |
| | Recovered (3) |
| 2 | Recovering (2) |
| | Recent or no recovery (1) |

4b. Habitat development. Select only one and assign score.

| | |
|---|---|
| | Excellent (7) |
| | Very good (6) |
| | Good (5) |
| | Moderately good (4) |
| 3 | Fair (3) |
| | Poor to fair (2) |
| | Poor (1) |

4c. Habitat alteration. Score one or double check and average.

| | |
|---|---|
| | None or none apparent (9) |
| | Recovered (6) |
| 3 | Recovering (3) |
| | Recent or no recovery (1) |

Check all disturbances observed

| | | | |
|---|---|---|---|
| X | mowing | X | shrub/sapling removal |
| | grazing | | herbaceous/aquatic bed removal |
| | clearcutting | | sedimentation |
| X | selective cutting | | dredging |
| | woody debris removal | | farming |
| | toxic pollutants | | nutrient enrichment |

| 29 |
|---|
| subtotal this page |

last revised 1 February 2001 jim

7

| Site: Line 285 - 2015 Replacement | Rater(s): A. Gilmore | Date:9/12/2014 |
|---|---|---|

29
subtotal first page

## Metric 5. Special Wetlands.

0 max 10 pts. | 29 subtotal

Check all that apply and score as indicated.

| | |
|---|---|
| | Bog (10) |
| | Fen (10) |
| | Old growth forest (10) |
| | Mature forested wetland (5) |
| | Lake Erie coastal/tributary wetland -unrestricted hydrology (10) |
| | Lake Erie coastal/tributary wetland-restricted hydrology (5) |
| | Lake Plain Sand Prairies (Oak Openings) (10) |
| | Relict Wet Prairies (10) |
| | Known occurrence state/federal threatened or endangered species (10) |
| | Significant migratory songbird/water fowl habitat or usage (10) |
| | Category 1 Wetland. See Question 1 Qualitative Rating (-10) |

## Metric 6. Plant communities, interspersion, microtopography.

-1 max 20 pts. | 28 subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

| | |
|---|---|
| | Aquatic bed |
| 2 | Emergent |
| | Shrub |
| | Forest |
| | Mudflats |
| | Open Water |
| | Other_____ |

6b. Horizontal (plan view) Interspersion.
Score only one.

| | |
|---|---|
| | High (5) |
| | Moderately high (4) |
| | Moderate (3) |
| | Moderately low (2) |
| | Low (1) |
| 0 | None (0) |

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage.

| | |
|---|---|
| | Extensive >75% cover (-5) |
| -3 | Moderate 25-75% cover (-3) |
| | Sparse 5-25% cover (-1) |
| | Nearly absent <5% cover (0) |
| | Absent (1) |

6d. Microtopography.
Score all present using 0 to 3 scale.

| | |
|---|---|
| 0 | Vegetated hummucks/tussucks |
| 0 | Coarse woody debris >15cm (6in) |
| 0 | Standing dead >25cm (10in) dbh |
| 0 | Amphibian breeding pools |

**Vegatation Community Cover Scale**

| | |
|---|---|
| 0 | Absent or comprises <0.1ha (0.2471 acres) contiguous area |
| 1 | Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality |
| 2 | Present and either comprises significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality. |
| 3 | Present and comprises significant part, or more, of wetland's vegetation and is of high quality. |

**Narrative Description of Vegetation Quality**

| | |
|---|---|
| low | Low spp diversity and/or predominance of nonnative or disturbance tolerant native species |
| mod | Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened, or endangered spp |
| high | A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp |

**Mudflat and Open Water Class Quality**

| | |
|---|---|
| 0 | Absent <0.1ha (0.247 acres) |
| 1 | Low 0.1 to <1ha (0.247 to 2.47 acres) |
| 2 | Moderate 1 to <4ha (2.47 to 9.88 acres) |
| 3 | High 4ha (9.88 acres) or more |

**Microtopography Cover Scale**

| | |
|---|---|
| 0 | Absent |
| 1 | Present in very small amounts or if more common of marginal quality |
| 2 | Present in moderate amounts, but not of highest quality or in small amounts of highest quality |
| 3 | Present in moderate or greater amounts and of highest quality |

28 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM score calibration report for the scoring breakpoints between categories at the following address: http://epa.state.oh.us/dsw/401/401.html

8

# ORAM Summary Worksheet

| | | circle answer or insert score | Result |
|---|---|---|---|
| Narrative Rating | Question 1 Critical Habitat | YES NO | If yes, Category 3. |
| | Question 2. Threatened or Endangered Species | YES NO | If yes, Category 3. |
| | Question 3. High Quality Natural Wetland | YES NO | If yes, Category 3. |
| | Question 4. Significant bird habitat | YES NO | If yes, Category 3. |
| | Question 5. Category 1 Wetlands | YES NO | If yes, Category 1. |
| | Question 6. Bogs | YES NO | If yes, Category 3. |
| | Question 7. Fens | YES NO | If yes, Category 3. |
| | Question 8a. Old Growth Forest | YES NO | If yes, Category 3. |
| | Question 8b. Mature Forested Wetland | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9b. Lake Erie Wetlands - Restricted | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 9d. Lake Erie Wetlands – Unrestricted with native plants | YES NO | If yes, Category 3 |
| | Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| | Question 10. Oak Openings | YES NO | If yes, Category 3 |
| | Question 11. Relict Wet Prairies | YES NO | If yes, evaluate for Category 3; may also be 1 or 2. |
| Quantitative Rating | Metric 1. Size | 1 | |
| | Metric 2. Buffers and surrounding land use | 5 | |
| | Metric 3. Hydrology | 15 | |
| | Metric 4. Habitat | 8 | |
| | Metric 5. Special Wetland Communities | 0 | |
| | Metric 6. Plant communities, interspersion, microtopography | -1 | |
| | TOTAL SCORE | 28 | Category based on score breakpoints |

**Complete Wetland Categorization Worksheet.**

# Wetland Categorization Worksheet

| Choices | Circle one | | Evaluation of Categorization Result of ORAM |
|---|---|---|---|
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10 | YES<br><br>Wetland is categorized as a Category 3 wetland | NO | Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM |
| Did you answer "Yes" to any of the following questions:<br><br>Narrative Rating Nos. 1, 8b, 9b, 9e, 11 | YES<br><br>Wetland should be evaluated for possible Category 3 status | NO | Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category. |
| Did you answer "Yes" to<br><br>Narrative Rating No. 5 | YES<br><br>Wetland is categorized as a Category 1 wetland | NO | Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM |
| Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland? | YES<br><br>Wetland is assigned to the appropriate category based on the scoring range | NO | If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score. |
| Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands? | YES<br><br>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria | NO | Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C). |
| Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method? | YES<br><br>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form | NO<br><br>Wetland is assigned to category as determined by the ORAM. | A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided. |

**Final Category**

| Choose one | Category 1 | Category 2 | Category 3 |
|---|---|---|---|

## End of Ohio Rapid Assessment Method for Wetlands.

# Appendix E:

# Stream Habitat Forms

# OhioEPA Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3) :** 48 Class II

SITE NAME/LOCATION Line 285 - 2015 Replacement

SITE NUMBER S-1 RIVER BASIN Cuyahoga DRAINAGE AREA (mi²) 0.67

LENGTH OF STREAM REACH (ft) 200 LAT. 41.3574 LONG. -81.6486 RIVER CODE _____ RIVER MILE _____

DATE 9/12/14 SCORER L. Sayre COMMENTS _____

**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 40). 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] | | ☐ ☐ | SILT [3 pt] | |
| ☐ ☐ | BOULDER (>256 mm) [16 pts] | 5 | ☐ ☐ | LEAF PACK/WOODY DEBRIS [3 pts] | 5 |
| ☐ ☐ | BEDROCK [16 pt] | | ☐ ☐ | FINE DETRITUS [3 pts] | |
| ☐ ☐ | COBBLE (65-256 mm) [12 pts] | 15 | ☐ ☐ | CLAY or HARDPAN [0 pt] | |
| ☒ ☐ | GRAVEL (2-64 mm) [8 pts] | 50 | ☐ ☐ | MUCK [0 pts] | |
| ☐ ☐ | SAND (>2 mm) [6 pts] | 5 | ☐ ☒ | ARTIFICIAL [3 pts] | 20 |

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20 (A) 12

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 6

**HHEI Metric Points** — Substrate Max = 40: 18 (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 OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 9.5

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 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 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) 1.2

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 L | R | (Per Bank) | FLOODPLAIN QUALITY L | R | (Most Predominant per Bank) | L | R | |
|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | Wide >10m | ☐ | ☐ | Mature Forest, Wetland | ☐ | ☐ | Conservation Tillage |
| ☐ | ☒ | Moderate 5-10m | ☐ | ☒ | Immature Forest, Shrub or Old Field | ☐ | ☐ | Urban or Industrial |
| ☒ | ☐ | Narrow <5m | ☒ | ☒ | Residential, Park, New Field | ☐ | ☐ | Open Pasture, Row Crop |
| ☐ | ☐ | None | ☐ | ☐ | Fenced Pasture | ☐ | ☐ | 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 61 m (200 ft) of channel) (Check *ONLY* one box):

| | | | |
|---|---|---|---|
| ☐ None | ☒ 1.0 | ☐ 2.0 | ☐ 3.0 |
| ☐ 0.5 | ☐ 1.5 | ☐ 2.5 | ☐ >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: _____ 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 Quadrangle Name: Broadview Hts. NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Cuyahoga Township / City: Independence

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 9/10/14 Quantity: 1.8"

Photograph Information: attached

Elevated Turbidity? (Y/N): N Canopy (% open): 60

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

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

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

Additional comments/description of pollution impacts: _____

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

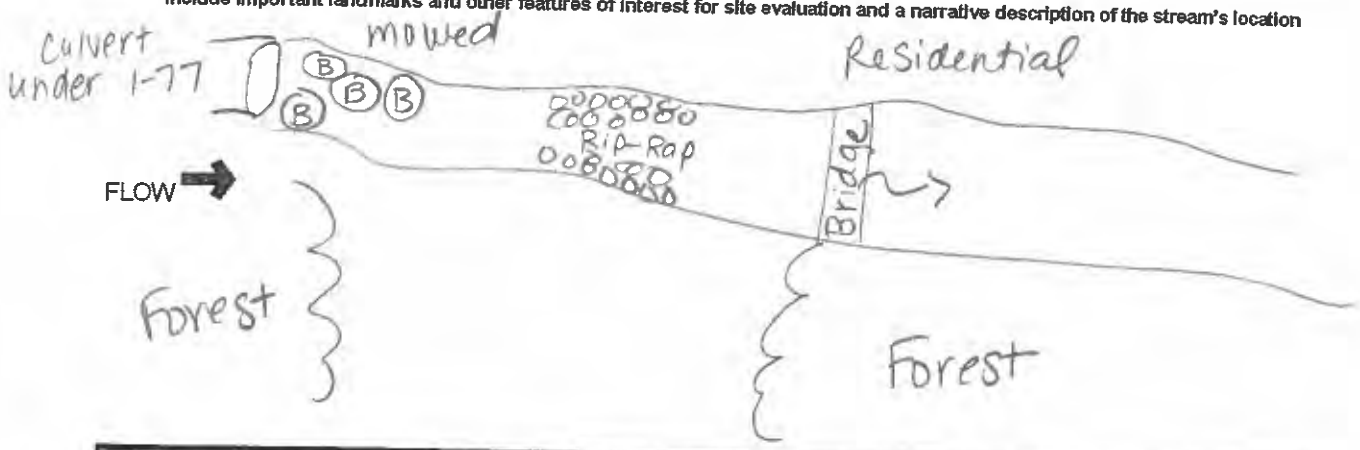
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



# Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3) :** 24 Class I

SITE NAME/LOCATION Line 285 - 2015 Replacement / Independence, OH

SITE NUMBER S-2, Eph. RIVER BASIN CuyAHOGA DRAINAGE AREA (mi²) <1mi²

LENGTH OF STREAM REACH (ft) 65.6' LAT. 41.355698 LONG. -81.648358 RIVER CODE_ RIVER MILE _____

DATE 09/12/14 SCORER A.GILMORE L. SAYRE COMMENTS erosional channel through Row

**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] | | ☐ ☐ | SILT [3 pt] | 10 |
| ☐ ☐ | BOULDER (>256 mm) [16 pts] | | ☐ ☐ | LEAF PACK/WOODY DEBRIS [3 pts] | |
| ☐ ☐ | BEDROCK [16 pt] | | ☐ ☐ | FINE DETRITUS [3 pts] | |
| ☐ ☐ | COBBLE (65-256 mm) [12 pts] | 5 | ☒ ☐ | CLAY or HARDPAN [0 pt] | 30 |
| ☒ ☐ | GRAVEL (2-64 mm) [9 pts] | 25 | ☐ ☐ | MUCK [0 pts] | |
| ☐ ☐ | SAND (>2 mm) [6 pts] | 30 | ☐ ☐ | ARTIFICIAL [3 pts] | |

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5

**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** (A) 9

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

**HHEI Metric Points**

**Substrate Max = 40** 14

**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 OR MOIST CHANNEL [0 pts]

**COMMENTS**_____ **MAXIMUM POOL DEPTH (centimeters):** 2

**Pool Depth Max = 30** 5

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [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)** .2

**Bankfull Width Max=30** 5

**This information must also be completed**

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

| L R | RIPARIAN WIDTH (Per Bank) | L R | FLOODPLAIN QUALITY (Most Predominant per Bank) | L R | |
|---|---|---|---|---|---|
| ☐ ☐ | Wide >10m | ☐ ☐ | Mature Forest, Wetland | ☐ ☐ | Conservation Tillage |
| ☐ ☐ | Moderate 5-10m | ☐ ☐ | Immature Forest, Shrub or Old Field | ☐ ☐ | Urban or Industrial |
| ☐ ☐ | Narrow <5m | ☒ ☒ | Residential, Park, New Field | ☐ ☐ | Open Pasture, Row Crop |
| ☒ ☒ | None | ☐ ☐ | Fenced Pasture | ☐ ☐ | 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 61 m (200 ft) of channel) (Check *ONLY* one box):

| | | | |
|---|---|---|---|
| ☒ None | ☐ 1.0 | ☐ 2.0 | ☐ 3.0 |
| ☐ 0.5 | ☐ 1.5 | ☐ 2.5 | ☐ >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)



October 24, 2002 Revision

**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: _____ 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 Quadrangle Name: Broadview Hts. NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Cuyahoga Township / City: Independence

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 9/10/14 Quantity: 1.8"

Photograph Information: attached Upstream from center ofreach _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100

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

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

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

Additional comments/description of pollution impacts: _____

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

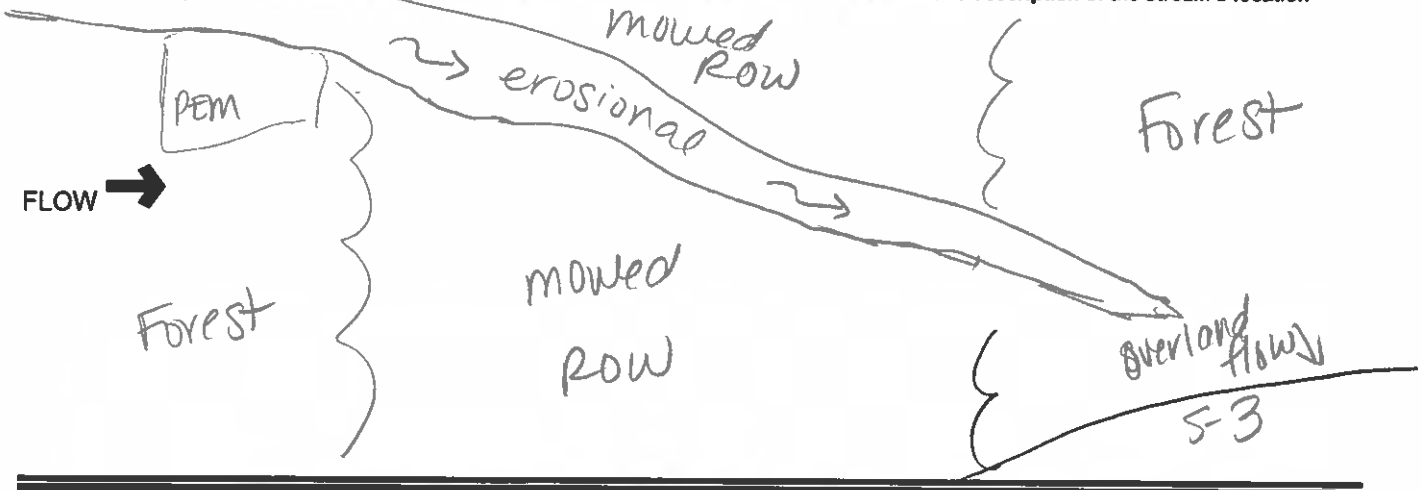
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

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

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



Class II

# Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3) :** 56

SITE NAME/LOCATION Line 285-2015 Replacement

SITE NUMBER S-3, Int RIVER BASIN Cuyahoga DRAINAGE AREA (mi²) 0.61 mi²

LENGTH OF STREAM REACH (ft) 200' LAT. 41.35845 LONG. -81.648383 RIVER CODE_ RIVER MILE _____

DATE 09/12/14 SCORER A. Gilmore COMMENTS rip rap w/in ROW from past construction

**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] | | ☐ | ☐ | SILT [3 pt] | |
| ☐ | ☐ | BOULDER (>256 mm) [16 pts] | | ☐ | ☐ | LEAF PACK/WOODY DEBRIS [3 pts] | |
| ☐ | ☐ | BEDROCK [16 pt] | | ☐ | ☐ | FINE DETRITUS [3 pts] | |
| ☒ | ☐ | COBBLE (65-256 mm) [12 pts] | 15 | ☐ | ☐ | CLAY or HARDPAN [0 pt] | |
| ☐ | ☒ | GRAVEL (2-64 mm) [9 pts] | 40 | ☐ | ☐ | MUCK [0 pts] | |
| ☐ | ☐ | SAND (<2 mm) [6 pts] | 15 | ☐ | ☒ | ARTIFICIAL [3 pts] | 30 |

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 15

**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** (A) 12

**TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

**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 OR MOIST CHANNEL [0 pts]

**COMMENTS**_____ **MAXIMUM POOL DEPTH (centimeters):** 46

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [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)** 2.9

**HHEI Metric Points**

| | |
|---|---|
| Substrate Max = 40 | 16 |
| A + B | |
| Pool Depth Max = 30 | 20 |
| Bankfull Width Max=30 | 20 |

**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 | FLOODPLAIN QUALITY (Most Predominant per Bank) | L | R | | L | R | |
|---|---|---|---|---|---|---|---|---|---|
| Wide >10m | ☐ | ☐ | Mature Forest, Wetland | ☐ | ☐ | | ☐ | ☐ | Conservation Tillage |
| Moderate 5-10m | ☒ | ☒ | Immature Forest, Shrub or Old Field | ☒ | ☒ | | ☐ | ☐ | Urban or Industrial |
| Narrow <5m | ☐ | ☐ | Residential, Park, New Field | ☒ | ☒ | | ☐ | ☐ | Open Pasture, Row Crop |
| None | ☐ | ☐ | Fenced Pasture | ☐ | ☐ | | ☐ | ☐ | Mining or Construction |

COMMENTS Culverted under I-77,

**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 61 m (200 ft) of channel) (Check *ONLY* one box):

| | | | |
|---|---|---|---|
| ☐ None | ☒ 1.0 | ☐ 2.0 | ☐ 3.0 |
| ☐ 0.5 | ☐ 1.5 | ☐ 2.5 | ☐ >3 |

**STREAM GRADIENT ESTIMATE** 2.

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



$\frac{256\text{ ft}}{\text{mi}} = \frac{256\text{ ft}}{5280\text{ ft}} = \frac{x}{100}$ $5280x = 25600$ $= 4.8\text{ ft}/100\text{ ft}$

**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: _____ 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 Quadrangle Name: Broadview Heights NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Cuyahoga Township / City: Independence

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 09/11/2014 Quantity: 0.13"

Photograph Information: _____ Upstream from center ofreach _____

Elevated Turbidity? (Y/N): _____ Canopy (% open): 40%

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

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

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

Additional comments/description of pollution impacts: _____

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

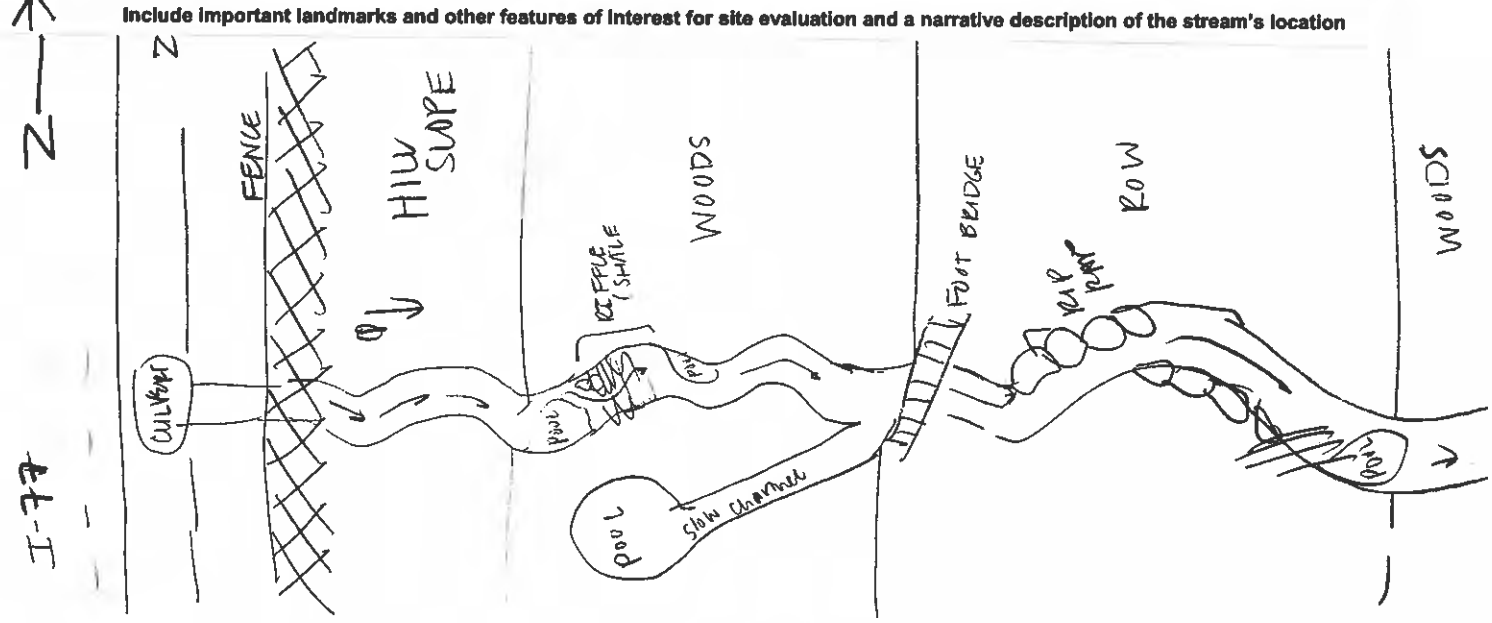
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



# Ohio EPA Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3) :** 40 Class II

SITE NAME/LOCATION Line 285 - 2015 Replacement

SITE NUMBER 5-4 RIVER BASIN _____ DRAINAGE AREA (mi²) 0.16 mi2

LENGTH OF STREAM REACH (ft) __ LAT. 41.353527 LONG. 81.648339 RIVER CODE_ RIVER MILE _____

DATE 09/12/14 SCORER AG ILMORE COMMENTS Wetland upper - ill-defined channel

**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 |
|---|---|---|
| ☐ ☐ | BLDR SLABS [16 pts] | |
| ☐ ☐ | BOULDER (>256 mm) [16 pts] | 10 |
| ☐ ☐ | BEDROCK [16 pt] | |
| ☒ ☐ | COBBLE (65-256 mm) [12 pts] | 40 |
| ☐ ☐ | GRAVEL (2-64 mm) [9 pts] | 5 |
| ☐ ☐ | SAND (<2 mm) [6 pts] | 15 |

| TYPE | | PERCENT |
|---|---|---|
| ☐ ☐ | SILT [3 pt] | |
| ☐ ☐ | LEAF PACK/WOODY DEBRIS [3 pts] | |
| ☐ ☐ | FINE DETRITUS [3 pts] | |
| ☐ ☐ | CLAY or HARDPAN [0 pt] | |
| ☐ ☐ | MUCK [0 pts] | |
| ☒ ☐ | ARTIFICIAL [3 pts] | 30 |

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 50

(A) 15 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

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

**HHEI Metric Points — Substrate Max = 40:** 20 (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 OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 9

**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 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [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)** .8

**Bankfull Width Max=30:** 5

**This information must also be completed**

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

| L R | RIPARIAN WIDTH (Per Bank) | L R | FLOODPLAIN QUALITY (Most Predominant per Bank) | L R | |
|---|---|---|---|---|---|
| ☐ ☐ | Wide >10m | ☐ ☐ | Mature Forest, Wetland | ☐ ☐ | Conservation Tillage |
| ☐ ☐ | Moderate 5-10m | ☐ ☐ | Immature Forest, Shrub or Old Field | ☐ ☐ | Urban or Industrial |
| ☐ ☐ | Narrow <5m | ☐ ☐ | Residential, Park, New Field | ☐ ☐ | Open Pasture, Row Crop |
| ☐ ☐ | None | ☐ ☐ | Fenced Pasture | ☐ ☐ | 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 61 m (200 ft) of channel) (Check *ONLY* one box):

| | | | |
|---|---|---|---|
| ☐ None | ☐ 1.0 | ☐ 2.0 | ☐ 3.0 |
| ☒ 0.5 | ☐ 1.5 | ☐ 2.5 | ☐ >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)

211 ft/mi

$\frac{211 \text{ ft}}{\text{mi}} = \frac{x \text{ ft}}{100 \text{ ft}}$ 3.99 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: _____ 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 Quadrangle Name: Broadview Heights NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Cuyahoga Township / City: Independence

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 09/10/2014 09/11/2014 Quantity: 1.8" 0.13"

Photograph Information: _____ Upstream from center ofreach attached

Elevated Turbidity? (Y/N): N Canopy (% open): 70%

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

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

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

Additional comments/description of pollution impacts: _____

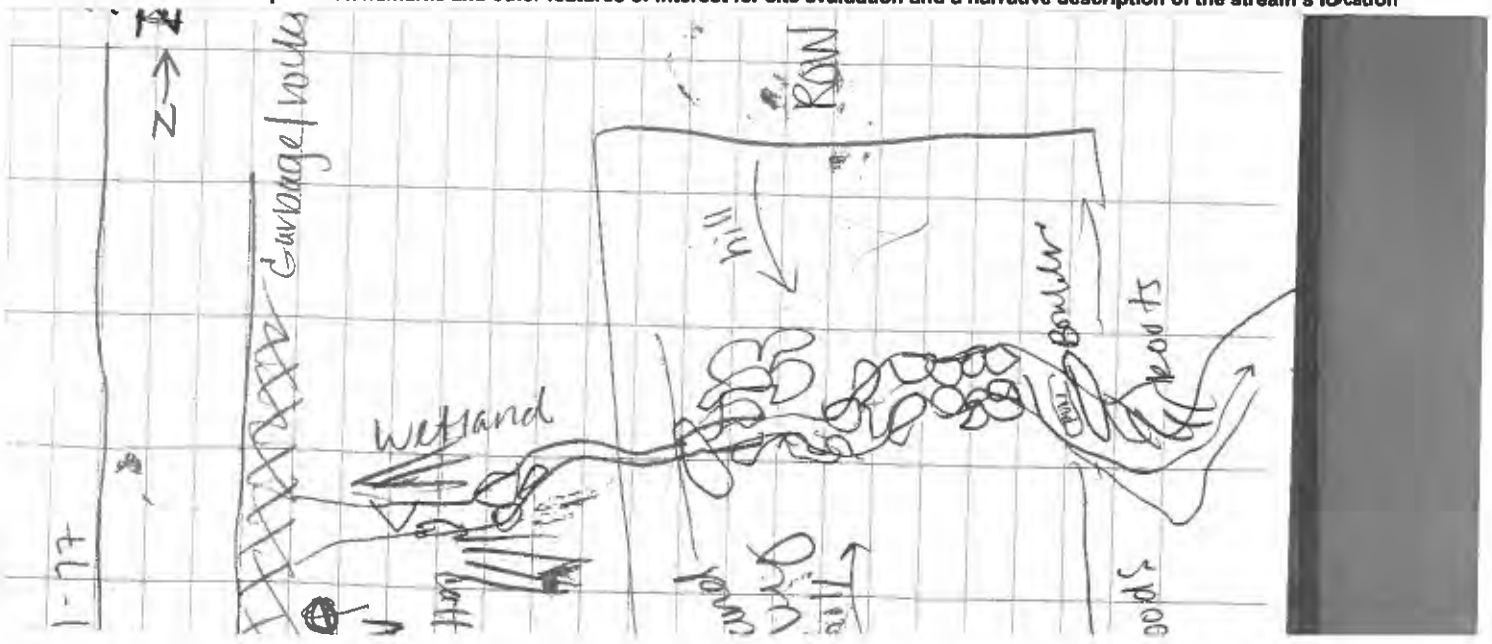
**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

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

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