

## **Appendix A: Wetland Delineation and Stream Identification Report**

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Wetland Delineation  
and  
Stream Identification Report  
for  
Carroll County Energy  
Carroll County, Ohio



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## ACRONYMS

1987 Manual	Corps of Engineers Wetland Delineation Manual
AWS	Agricultural Water Source
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GIS	Geographic Information Systems
GPS	Global Positioning System
HHEI	Headwater Habitat Evaluation Index
IWS	Industrial Water Source
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
Ohio EPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Method for Wetlands
OWI	Ohio Wetlands Inventory
PCR	Primary Contact Recreation
PEM	Palustrine emergent
PHWH	Primary Headwater Habitat
PFO	Palustrine Forested
PSS	Palustrine Scrub Shrub
QHEI	Qualitative Habitat Evaluation Index
Regional Supplement	Eastern Mountains and Piedmont Regional Supplement
SF	Square-foot
UNT	Unnamed tributary
UPL	Upland
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WWH	Warm Water Habitat

## 1.0 INTRODUCTION

This Wetland Delineation and Stream Identification Report for the proposed Carroll County Energy project has been prepared by Tetra Tech, Inc. on behalf of Carroll County Energy, LLC. Wetland areas were delineated on site using methodology enumerated in the United States Army Corps of Engineers (USACE) Wetland Delineation Manual (Environmental Laboratory, 1987) (1987 Manual) and the Eastern Mountains and Piedmont Regional Supplement (USACE, 2012) (Regional Supplement), as well as the Ohio Rapid Assessment Method (ORAM) for Wetlands (Mack, 2001). Headwater streams were evaluated using the Field Evaluation Manual for Ohio's Primary Headwater Streams (Ohio EPA, 2012).

The subject of this report is the potential site of proposed electric generation facility (the Project) located in Carroll County, Ohio, approximately 2.5 miles north of Carrollton, Ohio. Although the Project site will be smaller, a 182-acre Study Area was considered for this wetland delineation in order to identify and avoid jurisdictional features to the greatest extent possible. The 182-acre Study Area extends from Mobile Road NE to the east and continues approximately 1,000 feet beyond Route 9 (Kensington Road) to the west. Pasturelands, agricultural areas, and forested uplands are located north of the site, with forested uplands and residential properties to the south. The Study Area contains active agricultural areas as well as upland field, upland thicket, forested upland, and wetland vegetational communities.

The Study Area is located in the Tuscarawas River Watershed (05040001). East of Route 9 (Kensington Road), the Study Area contains ephemeral, intermittent, and perennial unnamed tributaries (UNTs) to Pipes Fork. An intermittent UNT and ephemeral UNT to Pipe Run are located west of Route 9. Pipe Run, Pipes Fork, and tributaries are designated as Warmwater Habitat (WWH), Agricultural Water Source (AWS), Industrial Water Source (IWS), and Primary Contact Recreation (PCR) under Ohio Administrative Code 3745-1-07, as further discussed in Section 2.0. Wetlands and other waters of the U.S., including ephemeral, intermittent, and perennial streams, are described in detail in Section 4.0.

## 2.0 REGULATORY FRAMEWORK FOR WETLANDS AND OTHER WATERS OF THE U.S.

The United States Army Corps of Engineers (USACE) is the lead agency for making jurisdictional determinations for freshwater wetlands and waters of the U.S. within Carroll County, Ohio. Section 404 of the U.S. Clean Water Act (CWA) of 1977 requires the USACE to use the procedures and criteria enumerated in the *1987 U.S. Army Corps of Engineers Wetlands Delineation Manual* (1987 Corps Manual) and the *Regional Supplement to Corps of Engineers Wetland Delineation Manual: Eastern Mountain and Piedmont Region* (Regional Supplement) in making jurisdictional determinations (Environmental Laboratory, 1987). Wetlands are defined in the 1987 Corps Manual and by the U.S. Environmental Protection Agency as:

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

Pursuant to 33 CFR 328 (Section 328.3), waters of the U.S. (which also includes wetlands), as it is applied to the jurisdiction limits of authority of USACE under the U.S. Clean Water Act of 1977, is defined as:

1. *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;*
2. *All interstate waters including interstate wetlands;*
3. *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*
  - i. *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
  - ii. *From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*
  - iii. *Which are used or could be used for industrial purpose by industries in interstate commerce;*
4. *All impoundments of waters otherwise defined as waters of the United States under the definition;*
5. *Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;*

6. *The territorial seas;*
7. *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition), are not waters of the United States.*
8. *Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.*

Additionally, two (2) recent U.S. Supreme Court decisions have limited the jurisdiction which USACE can exert over areas that meet the definition of wetlands or waters of the U.S. according to the *Corps Manual*. The first of these decisions, issued in 2001, was the *Solid Waste Agency of Northern Cook County v. US Army Corps of Engineers* (SWANCC). This ruling held that the USACE does not have jurisdiction over wetlands or waters of the U.S. that are not surface water tributaries of other wetlands or waters of the U.S., based solely upon its Migratory Bird Rule (MBR). As a result of this decision, the USACE has issued guidance to its field offices not to assert jurisdiction over these isolated wetlands or waters of the US unless a clear link to interstate commerce is present.

The second such Supreme Court decision, issued in 2006, was regarding the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (Rapanos). This ruling held that the USACE can only assert jurisdiction over Traditional Navigable Waters (TNW) and their associated wetlands, as well as relatively permanently flowing tributaries or relatively permanent waters (RPWs) of TNWs and their adjacent wetlands, or over those tributaries and associated wetlands that possess a significant nexus to the TNW s to which it eventually flows. As a result of this ruling, the U.S. Environmental Protection Agency (USEPA) and USACE have issued various guidance documents to their field offices regarding how and when to conduct analyses of tributaries of TNWs to determine whether they contain either relatively permanent flows or a significant nexus to downstream TNWs.

The various guidance documents are summarized in a publication entitled U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook (JD Guidebook) (USACE and USEPA, 2007). According to this guidebook, among the classes of water bodies subject to Federal CWA jurisdiction are:

- 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 relatively permanent tributaries.

Federal CWA jurisdiction also covers the following classes of waters when a fact-specific analysis determines that those waters have a significant nexus with a TNW:

- 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, together with its adjacent wetlands, has more than an insubstantial or speculative effect on the chemical, physical, and/or biological integrity of the downstream 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 functions performed by the tributary and all of its adjacent wetlands.

The USACE has developed a Significant Nexus Checklist for use in determining whether a significant nexus exists between a tributary of a TNW that does not have relatively permanent flow and the downstream TNW. It has also developed a new Jurisdictional Determination (JD) form for its use in determining whether it can assert jurisdiction over watercourses and associated wetlands, taking into consideration the SWANCC and Rapanos decisions.

The Ohio Environmental Protection Agency (OEPA) regulates isolated wetland systems that may not be jurisdictional by USACE. Ohio Administrative Code 6111.02 defines an "Isolated wetland" as a wetland that is not subject to regulation under the Federal Water Pollution Control Act. Therefore, any area that meets the USACE criteria and is determined to be a wetland, though it may not meet the jurisdictional definitions presented previously, would be subject to the regulations set forth by the OEPA. Any activity within isolated wetlands would require coordination with the USACE for a Jurisdictional Determination confirming the wetlands are isolated features followed by coordination with OEPA.

From the Ohio Administrative Code 3745-1-07 Water Use Designations and Statewide Criteria, Water Quality Standards contain two distinct elements: designated uses; and numerical or



narrative criteria designed to protect and measure attainment of the uses. Each water body in the state is assigned one or more aquatic life habitat use designations. Each water body may be assigned one or more water supply use designations and/or one recreational use designation.

**Aquatic life habitat designations include:**

(a) "Warmwater" - these are waters capable of supporting and maintaining a balanced, integrated, adaptive community of warmwater aquatic organisms having a species composition, diversity, and functional organization comparable to the twenty-fifth percentile of the identified reference sites within each of the following ecoregions: the interior plateau ecoregion, the Erie/Ontario lake plains ecoregion, the western Allegheny plateau ecoregion and the eastern corn belt plains ecoregion. For the Huron/Erie lake plains ecoregion, the comparable species composition, diversity and functional organization are based upon the ninetieth percentile of all sites within the ecoregion.

(b) "Limited warmwater" - these are waters that were temporarily designated in the 1978 water quality standards as not meeting specific warmwater habitat criteria.

(c) "Exceptional warmwater" - these are waters capable of supporting and maintaining an exceptional or unusual community of warmwater aquatic organisms having a species composition, diversity, and functional organization comparable to the seventy-fifth percentile of the identified reference sites on a statewide basis. (d) "Modified warmwater" - these are waters that have been the subject of a use attainability analysis and have been found to be incapable of supporting and maintaining a balanced, integrated, adaptive community of warmwater organisms due to irretrievable modifications of the physical habitat.

(e) "Seasonal salmonid" - these are rivers, streams and embayments capable of supporting the passage of salmonids from October to May and are water bodies large enough to support recreational fishing. This use will be in effect the months of October to May. Another aquatic life habitat use designation will be enforced the remainder of the year (June to September).

(f) "Coldwater" - these are waters that meet one or both of the characteristics as either "Coldwater habitat, inland trout streams" - these are waters which support trout stocking and management under the auspices of the Ohio Department of Natural Resources, Division of Wildlife, excluding waters in lake run stocking programs, lake or reservoir stocking programs, experimental or trial stocking programs, and put and take programs on waters without, or without the potential restoration of, natural coldwater attributes of temperature and flow or "Coldwater habitat, native fauna" - these are waters capable of supporting populations of native coldwater fish and associated vertebrate and invertebrate organisms and plants on an annual basis.

(g) "Limited resource water" - these are waters that have been the subject of a use attainability analysis and have been found to lack the potential for any resemblance of any other aquatic life habitat as determined by the biological criteria in table 7-15 of the rule.

**Water supply designations include:**

(a) "Public" - these are waters that, with conventional treatment, will be suitable for human intake and meet federal regulations for drinking water.

(b) "Agricultural" - these are waters suitable for irrigation and livestock watering without treatment.

(c) "Industrial" - these are waters suitable for commercial and industrial uses, with or without treatment.

**Recreation use designations are in effect only during the recreation season, which is the period from May first to October thirty-first and include:**

(a) "Bathing waters" - these are waters that, during the recreation season, are heavily used for swimming.

(b) "Primary contact" - these are waters that, during the recreation season, are suitable for one or more full-body contact recreation activities such as, but not limited to, wading, swimming, boating, water skiing, canoeing, kayaking, and scuba diving. Three classes of primary contact recreation use are defined to reflect differences in the observed and potential frequency and intensity of usage.

(c) "Secondary contact" - these are waters that result in minimal exposure potential to water borne pathogens because the waters are: rarely used for water based recreation such as, but not limited to, wading; situated in remote, sparsely populated areas; have restricted access points; and have insufficient depth to provide full body immersion, thereby greatly limiting the potential for water based recreation activities.

### 3.0 METHODOLOGY

Field investigations were performed on 23 April 2013, 24 April 2013, and 25 April 2013 within the 182-acre Study Area. A preliminary site reconnaissance of the study area was conducted through a review of available Geographic Information Systems (GIS) resources. Existing information reviewed included the following:

- United States Geological Survey (USGS) topographic mapping (Figure 1)
- Natural Resources Conservation Service (NRCS) National Cooperative Soil Survey (Figure 2)
- United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapping (Figure 3A)
- Ohio Wetlands Inventory (Figure 3B)

The field identification of wetlands within the study area was based on the 1987 Corps Manual's three (3) parameter approach of wetland delineation requiring the presence of the following three (3) wetland characteristics under normal environmental conditions: the predominance of hydrophytic vegetation, hydric soils, and indicators of wetland hydrology. The delineation consisted of establishment of the wetland/upland margin with flagging hung at intervals that accurately depicted the outline of the boundary. The individual flags were then located using a Global Positioning System (GPS) receiver and later added to the project area mapping (Figures 4 and 5).

Data concerning soils, hydrology, and vegetation were collected and recorded on USACE wetland determination data forms, which are provided in Appendix A. In addition to the USACE wetland delineation, a wetland evaluation was performed to determine the quality and function of each wetland as required by the OEPA. The Ohio Rapid Assessment Method for Wetlands (ORAM) (Mack, 2001) was used to perform this evaluation. Data concerning wetland size, adjacent upland land use, hydrology, habitat alteration, special habitats, and plant communities was collected and recorded on the ORAM 10 Page Form for Wetland Categorization (Appendix B). Wetlands can be designated as Category 1, Category 2, Modified Category 2, or Category 3 based on the results of the ORAM. The categories correspond to wetlands of low, medium, and high quality.

Headwater streams, those streams with a maximum pool depth less than 40 centimeters (15.4 inches) and/or drainage areas less than one square mile, were evaluated using the Field Evaluation Manual for Ohio's Primary Headwater Streams (OEPA, 2012) and the associated

Primary Headwater Habitat Evaluation Index (HHEI) forms (Appendix C). Streams can be designated as either Modified Class I, Modified Class II, Class I, Class II, or Class III Primary Headwater Habitats (PHWH) under Ohio Administrative Code 3745-1-07 (F)(9)(d). OEPA (2012) defines Class I PHWH streams as ephemeral streams that have little or no aquatic life potential, except seasonally when flowing water is present for short time periods following precipitation or snow melt. Class II PHWH streams are defined as streams that are normally intermittent but may have perennial flow. These watercourses may exhibit moderately diverse communities of warm water-adapted native fauna present either seasonally or year-round. The native fauna is characterized by species of vertebrates (temperature facultative species of amphibians and pioneering species of fish) and benthic macroinvertebrates (OEPA, 2012). Class III PHWH streams are perennial streams in which the prevailing flow and temperature conditions are influenced by groundwater. They exhibit moderately diverse to highly diverse communities of cold water adapted native fauna present year-round (OEPA, 2012).

Photographs depicting wetland topography and vegetation, streams, and uplands onsite are included in Appendix D. Appendix E contains the Hydric Soils List for Carroll County, Ohio. Resumes of personnel are included as Appendix F.

## 4.0 RESULTS

Although the Project site will be smaller, a 182-acre Study Area was considered for this wetland delineation in order to identify and avoid jurisdictional features to the greatest extent possible. The field investigation identified eighteen areas within the Study Area that met the wetland criteria outlined in the 1987 Corps Manual, as amended by the Corps Regional Supplement. A narrative summary of field data collected for these systems is presented below. Fourteen watercourses were identified within the study area with general descriptions included below. The detail map provided as Figure 5 illustrates the project location and the wetlands and watercourses within the Study Area.

Hydric soils and soils with hydric components are often associated with wetlands. A review of the NRCS soil survey and hydric soil list indicated that there are two soil types mapped within the study area that are classified as hydric or containing hydric components. These are the Glenford silt loam, eight to fifteen percent slopes (GfC) and the Library-Variant silt loam, three to eight percent slopes (LbB) soil types. These soils are known to have major and/or minor hydric inclusions. The NRCS soil survey map is included as Figure 2. Confirmation of the soil mapping units was not performed during this site evaluation.

A review of U.S. Fish and Wildlife Service National Wetland Inventory mapping and Ohio Wetland Inventory (OHWI) mapping do not indicate the presence of NWI or OHWI-mapped wetlands within the Study Area. The National Wetland Inventory Map is included as Figure 3A and the Ohio Wetland Inventory Map is included as Figure 3B.

### 4.1 STUDY AREA WETLAND DELINEATION

Based on field evidence and best professional judgment, it was determined that there are eighteen wetlands within the Study Area. Data sheets that detail the existing vegetation, soil characteristics, and hydrology were prepared at each wetland area (Appendix A).

#### **Wetland A**

Wetland A is a 405-square foot (SF) palustrine emergent (PEM) wetland located adjacent to an intermittent stream/seep (Stream 2) within the north-central portion of the study area (Figure 5). Hydrology for this wetland is supported by groundwater and surficial runoff from adjacent uplands. Dominant vegetation consists of an unidentified sedge (*Carex* sp.) and jewelweed (*Impatiens capensis*). The soil within the upper five inches exhibited a low-chroma matrix color (10YR 4/2) with a sandy loam texture that contained redoximorphic features (7.5YR 4/6). Below

five inches, the soil profile exhibited a low-chroma matrix (2.5Y 4/1) with a sandy loam texture that contained redoximorphic features (7.5YR 4/6). Indicators of wetland hydrology included saturation within the upper twelve inches of the soil profile, high water table, surface water in portions of the wetland, and drainage patterns.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. The wetland exhibits a significant nexus to Stream 2 and would be considered jurisdictional by USACE.

### **Wetland B**

Wetland B is a 293-SF PEM wetland located at the toe of slope and abutting Stream 10 within the eastern portion of the study (Figure 5). Hydrology for this wetland system is supported by groundwater and surficial runoff from adjacent uplands. Dominant vegetation consists of elderberry (*Sambucus nigra* var. *canadensis*), jewelweed, an unidentified sedge (*Carex* sp.), and an unidentified grass species (*Poaceae* sp.). The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/1) with a silt texture that contained redoximorphic features (5YR 4/4). Indicators of wetland hydrology included surface water in portions of the wetland, high water table, saturation within the upper twelve inches of the soil profile, drainage patterns, geomorphic position, and positive FAC-Neutral test.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 10 and would be considered jurisdictional by USACE.

### **Wetland C**

Wetland C is an isolated 287-SF PEM wetland located within a historic diversion ditch within the east-central portion of the study (Figure 5). Hydrology is supported by precipitation and drainage from adjacent uplands. Dominant vegetation consists of redtop (*Agrostris gigantea*). The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 5/1) with a clay loam texture that contained redoximorphic features (10YR 4/6). Indicators of wetland hydrology included surface water in portions of the wetland, saturation within the upper twelve inches of the soil profile, and geomorphic position.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland system does not exhibit a significant nexus to a RPW or TNW. The historic diversion ditch constructed in the 1930's and does not connect to a RPW or TNW. Therefore, this wetland would not likely be considered jurisdictional by USACE; however, this wetland would be regulated by OEPA.

#### **Wetland D**

Wetland D is an isolated 117-SF PEM wetland located within a historic diversion ditch within the east-central portion of the study (Figure 5). Hydrology is supported by precipitation and drainage from adjacent uplands. Dominant vegetation consists of redtop (*Agrostis gigantea*). The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 5/1) with a clay loam texture that contained redoximorphic features (5YR 5/6). Indicators of wetland hydrology included water-stained leaves and geomorphic position.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland system does not exhibit a significant nexus to a RPW or TNW. The historic diversion ditch constructed in the 1930's does not connect to a RPW or TNW. Therefore, this wetland would not likely be considered jurisdictional by USACE; however, this wetland would be regulated by OEPA.

#### **Wetland E**

Wetland 5 is a 580-SF PEM wetland located adjacent to the south-central portion of the Study Area and abuts Stream 4 (Figure 5). Hydrology is supported by surficial runoff from adjacent uplands and occasional overtopping of Stream 4. Dominant vegetation consists of an unidentified grass species (*Poaceae* sp.). The soil within the upper seven inches exhibited low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (5YR 5/6). The soil between seven and twelve inches exhibited a low-chroma matrix (2.5Y 4/1) with a silt loam texture and contained redoximorphic features (5YR 5/6). Indicators of wetland hydrology included surface water within portions of the wetland, saturation within the upper twelve inches of the soil profile, oxidized rhizospheres, geomorphic position, and microtopographic relief.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic

plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 4 and would be considered jurisdictional by USACE.

#### **Wetland F**

Wetland F is a 328-SF PEM wetland located adjacent to the south-central portion of the Study Area, abutting Stream 5 (Figure 5). Hydrology for this wetland is supported by surficial runoff from adjacent uplands and occasional overtopping of Stream 5. Dominant vegetation consists of an unidentified grass (*Poaceae* sp.), white grass (*Leersia virginica*), and Japanese stilt grass (*Microstegium vimineum*). The soil within the upper ten inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (10YR 4/6). The soil below ten inches exhibits a higher chroma (2.5Y 4/3) with a silt loam texture and contained redoximorphic features (10YR 4/6). Indicators of wetland hydrology included surface water within portions of the wetland, saturation within the upper twelve inches of the soil profile, wetland drainage patterns, and geomorphic position.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 5 and would be considered jurisdictional by USACE.

#### **Wetland G**

Wetland G is an 8,018-SF PEM wetland located within the north-central portion of the study area (Figure 5). Hydrology for this wetland is supported by groundwater and drainage from adjacent uplands. An existing access road is located within the western portion of Wetland G. Dominant vegetation consists of an unidentified grass (*Poaceae* sp.), and fox sedge (*Carex vulpinoidea*). The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (7.5YR 4/6). Indicators of wetland hydrology included saturation within the upper twelve inches of the soil profile and wetland drainage patterns.

This area demonstrated the presence of hydric soils and wetland hydrology indicator parameters required by the 1987 Corps Manual and the Regional Supplement. Due to unidentified grass and sedge species, the wetland determination was weighted to soils and hydrology indicators. Drainage patterns from this wetland extend to an ephemeral stream channel (Stream 6);



therefore, this wetland exhibits a significant nexus to Stream 6 and would be considered jurisdictional by USACE.

#### **Wetland H**

Wetland H is a 920-SF PEM wetland that abuts Stream 7 within the north-central portion of the Study Area (Figure 5). Hydrology for this wetland is supported by drainage from adjacent uplands and occasional overtopping of the bank of Stream 7. Dominant vegetation consists of elderberry and an unidentified grass species (*Poaceae* sp.). The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (10YR 5/6). Indicators of wetland hydrology included evidence of seasonal ponding, wetland drainage patterns, and geomorphic position.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 7 and would be considered jurisdictional by USACE.

#### **Wetland I**

Wetland I is a 9,667-SF PEM wetland located within the eastern portion of the Study Area (Figure 5). This wetland occurs in a marginal depression at the toe of a steep slope and abuts Stream 9 and Stream 10. Hydrology for this wetland is supported by groundwater, drainage from adjacent uplands, and periodic inundation from Stream 10 during storm events. Dominant vegetation consists of skunk cabbage (*Symplocarpus foetidus*). The soil to a depth of six inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (7.5YR 5/6). At a depth of six to twelve inches, the soil exhibited a gleyed matrix (G1 6/10Y) with a fine sand texture and contained redoximorphic features (10YR 5/6). Indicators of wetland hydrology included surface water within portions of the wetland, high water table, saturation within the upper twelve inches of the soil profile, oxidized rhizospheres, wetland drainage patterns, geomorphic position, and positive FAC-neutral test.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 10 and would be considered jurisdictional by USACE.

**Wetland J**

Wetland J is an 86-SF PEM wetland located within the eastern portion of the Study Area (Figure 5). This wetland occurs within a marginal drainageway/depression and hydrology is supported by groundwater as well as drainage from Mobile Road NE and adjacent uplands to Stream 10. Dominant vegetation consists of an unidentified grass species (*Poaceae* sp.). The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (7.5YR 4/6). Indicators of wetland hydrology included high water table, saturation within the upper twelve inches of the soil profile, wetland drainage patterns.

This area demonstrated the presence of hydric soils and wetland hydrology indicator parameters required by the 1987 Corps Manual and the Regional Supplement. Due to unidentified grass and sedge species, the wetland determination was weighted to soils and hydrology indicators. This wetland exhibits a significant nexus to Stream 10 and would be considered jurisdictional by USACE.

**Wetland K**

Wetland K is a 5,454-SF PSS wetland located east of Mobile Road NE within the northeastern portion of the Study Area (Figure 5). This wetland abuts Stream 10 and hydrology is supported by drainage from adjacent uplands. Dominant vegetation consists of musclewood (*Carpinus caroliniana*), silky dogwood (*Cornus amomum*), black willow (*Salix nigra*), elderberry, an unidentified grass species (*Poaceae* sp.), and skunk cabbage. The soil within the upper twelve inches exhibited a low-chroma matrix color (10YR 4/2) with a silt loam texture and contained redoximorphic features (7.5YR 4/6). Indicators of wetland hydrology included geomorphic position and positive FAC-Neutral test.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 10 and would be considered jurisdictional by USACE.

**Wetland L**

Wetland L is a 109-SF PEM wetland located adjacent to Stream 10 within the eastern portion of the Study Area (Figure 5). This wetland occurs in a marginal depression/drainageway near the toe of a steep slope. Hydrology is supported by drainage from the adjacent slope. Dominant vegetation consists of an unidentified grass species (*Poaceae* sp.) and jewelweed. The soil

within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (7.5YR 4/6). Indicators of wetland hydrology included saturation within the upper twelve inches of the soil profile and geomorphic position.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 10 and would be considered jurisdictional by USACE.

#### **Wetland M**

Wetland M is a 1,373-SF PEM wetland within the eastern portion of the Study Area adjacent to Stream 10 (Figure 5). This wetland occurs in a marginal depression/drainageway near the toe of a steep slope. Hydrology is supported by drainage from adjacent uplands. Dominant vegetation consists of elderberry, jewelweed, an unidentified grass species (*Poaceae* sp.), and skunk cabbage. The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (7.5YR 5/6). Indicators of wetland hydrology included saturation within the upper twelve inches of the soil profile, wetland drainage patterns, and positive FAC-neutral test.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 10 and would be considered jurisdictional by USACE.

#### **Wetland N**

Wetland N is a 460-SF PEM wetland located in a depression abutting Stream 10 within the southeastern portion of the Study Area (Figure 5). Hydrology is supported by groundwater, drainage from adjacent uplands, and periodic inundation from Stream 10 during storm events. Dominant vegetation consists of jewelweed and an unidentified grass species (*Poaceae* sp.). The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/1) with a sand texture (alluvium) and contained organic streaking. Indicators of wetland hydrology included surface water in portions of the wetland, high water table, saturation within the upper twelve inches of the soil profile, sparsely vegetated concave surface, drainage patterns, and geomorphic position.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained hydrologic indicators. This wetland exhibits a significant nexus to Stream 10 and would be considered jurisdictional by USACE.

#### **Wetland O**

Wetland O is a 2,920-SF PSS wetland located between two (2) agricultural fields within the northern portion of the Study Area (Figure 5). Hydrology is supported by drainage from adjacent agricultural fields and forested uplands. This wetland is hydrologically connected to Stream 12. Dominant vegetation consists of elderberry, jewelweed, and white grass. The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (7.5YR 5/6). Indicators of wetland hydrology included surface water in portions of the wetland, saturation within the upper twelve inches of the soil profile, wetland drainage patterns, and positive FAC-Neutral test.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained primary hydrologic indicators. This wetland exhibits a significant nexus to Stream 12 and would be considered jurisdictional by USACE.

#### **Wetland P**

Wetland P is a 4,001-SF PEM that abuts Stream 13 and Stream 14 within the southwestern portion of the Study Area (Figure 5). Hydrology is supported by groundwater, drainage from adjacent uplands, and occasional overtopping of Stream 13. Dominant vegetation consists of an unidentified grass species (*Poaceae* sp.) and jewelweed. The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (7.5YR 5/6). Indicators of wetland hydrology included surface water in portions of the wetland, saturation within the upper twelve inches of the soil profile, high water table, geomorphic position, and drainage patterns.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained primary hydrologic indicators. This wetland exhibits a significant nexus to Stream 13 and would be considered jurisdictional by USACE.

**Wetland Q**

Wetland Q is a 1,192-SF PEM wetland that abuts Stream 13 and is located adjacent to a power line right-of-way within the southwestern portion of the Study Area (Figure 5). Hydrology is supported by groundwater, drainage from adjacent uplands, and occasional overtopping of Stream 13. Dominant vegetation consists of elderberry, fox sedge, sensitive fern (*Onoclea sensibilis*), and jewelweed. The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (10YR 4/6). Indicators of wetland hydrology included high water table, saturation within the upper twelve inches of the soil profile, drainage patterns, positive FAC-Neutral test, and geomorphic position.

This area demonstrated the presence of all three wetland parameters required by the 1987 Corps Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained primary hydrologic indicators. This wetland exhibits a significant nexus to Stream 13 and would be considered jurisdictional by USACE.

**Wetland R**

Wetland R is a 1,179-SF PSS wetland that abuts Stream 13 and is located within the southeastern portion of the study area (Figure 5). Hydrology is supported by drainage from adjacent uplands and occasional overtopping of Stream 13. Dominant vegetation consists of box elder (*Acer negundo*) and an unidentified grass species (*Poaceae* sp.). The soil within the upper twelve inches exhibited a low-chroma matrix color (2.5Y 4/2) with a silt loam texture and contained redoximorphic features (10YR 5/6). Indicators of wetland hydrology included drainage patterns and geomorphic position.

This area demonstrated the presence of all three wetland parameters required by the 1987 Manual and the Regional Supplement. The vegetative community was dominated by hydrophytic plant species, the soils exhibited hydric characteristics, and the area contained primary hydrologic indicators. This wetland exhibits a significant nexus to Stream 13 and would be considered jurisdictional by USACE.

## 4.2 OHIO RAPID ASSESSMENT METHOD FOR WETLANDS ASSESSMENT

A wetland assessment was performed using the ORAM. Data sheets that detail wetland size, upland land use, hydrology, habitat alteration, special habitats, plant communities, and scoring calculations were prepared for each wetland (Appendix B). Wetlands were designated as a Category 1, Category 2, or Category 3 based on the results of the ORAM. Category 1 corresponds to wetlands of limited quality. Category 2 corresponds to wetlands of medium quality. Category 3 corresponds to wetland of high quality. Table 1 presents the results of the ORAM scoring summary and Category for the wetlands identified at the site.

**Table 1.**

### **Ohio Rapid Assessment Method for Wetlands Results Summary**

<b>Wetland Name</b>	<b>ORAM Score</b>	<b>ORAM Category</b>
WL A	52	2
WL B	60	2
WL C and WL D	27	1
WL E and WL F	52	2
WL G	52	2
WL H	53	2
WL I	76	3
WL J	33	2
WL K	58	2
WL L	50	2
WL M	56	2
WL N	59	2
WL O	56	2
WL P and WL Q	61	2
WL R	59	2

### 4.3 STUDY AREA STREAM EVALUATION

Headwater streams were evaluated using the Field Evaluation Manual for Ohio's Primary Headwater Streams (OEPA, 2012) and the associated HHEI forms (Appendix C). Streams were classified as either Class I, Class II, or Class III PHWHs based on the results of the evaluation forms. OEPA (2012) defines Class I PHWH streams as ephemeral streams that have little or no aquatic life potential, except seasonally when flowing water is present for short time periods following precipitation or snow melt. Class II PHWH streams are defined as streams that are normally intermittent but may have perennial flow. They may exhibit moderately diverse communities of warm water adapted native fauna present either seasonally or year-round. The native fauna is characterized by species of vertebrates (temperature facultative species of amphibians and pioneering species of fish) and benthic macroinvertebrates (OEPA, 2012). Class III PHWH streams are perennial streams in which the prevailing flow and temperature conditions are influenced by groundwater. They exhibit moderately diverse to highly diverse communities of cold water adapted native fauna present year-round (OEPA, 2012). None of the streams within the Study Area had a maximum pool depth greater than forty (40) centimeters (15.4 inches) and/or drainage areas greater than one (1) square mile, so no streams were evaluated using the Qualitative Habitat Evaluation Index (QHEI) and associated Qualitative Habitat Evaluation and Use Assessment Field Sheet.

General descriptions of each stream and results of the PHWH HHEI scoring are discussed below. The results of the HHEI are also summarized in Table 2.

#### **Stream 1**

Stream 1 is an ephemeral, headwater, unnamed tributary (UNT) of Pipes Fork located within the north-central portion of the Study Area (Figure 5). This stream is approximately 30 feet in length and flows south from an access road to its confluence with Stream 7. This watercourse is supported by drainage from an access road and from adjacent uplands. The stream channel is approximately 1.5 feet and contains a silt substrate. The stream did not exhibit any flow at the time of field investigations. The stream was classified as a Class I PHWH based on a HHEI score of 9.

#### **Stream 2**

Stream 2 is an intermittent, headwater, UNT of Pipes Fork located within the north-central portion of the Study Area (Figure 5). This watercourse is supported by a pipe associated with a well/seep and drainage from adjacent uplands. The stream channel is approximately 3 feet in width and contains a silt, gravel, and cobble substrate. The stream exhibited moderate flow at

the time of field investigations with a water depth of approximately 0.25 inch at riffles and 1 inch within pools. The stream was classified as a Class I PHWH based on a HHEI score of 26.5.

### **Stream 3**

Stream 3 is an ephemeral, headwater, UNT of Pipes Fork located within the eastern portion of the Study Area (Figure 5). This stream flows west from a culvert adjacent to Mobile Road NE to its confluence with Stream 10. This watercourse is supported by drainage from Mobile Road, surficial runoff from adjacent uplands, and drainage from a riprap channel adjacent to a residential dwelling east of Mobile Road. The stream channel is approximately 6 feet in width and contains a clay, silt, gravel, and cobble substrate. The stream exhibited moderate flow at the time of field investigations with a water depth of approximately 0.25 inch depth at riffles and 3 inches within pools. The stream was classified as a Class II PHWH based on an HHEI score of 49.

### **Stream 4**

Stream 4 is an ephemeral, headwater, unnamed tributary (UNT) of Pipes Fork located within the southwestern portion of the Study Area (Figure 5). This stream flows south through a forested upland community. This watercourse is supported by drainage from adjacent uplands. The stream channel is approximately 1.5 feet in width and contains a silt substrate with leaf litter. The stream exhibited low flow at the time of field investigations with a water depth of approximately 0.25 inch depth at riffles and 1 inch within pools. The stream was classified as a Class I PHWH based on a HHEI score of 18.

### **Stream 5**

Stream 5 is an ephemeral, headwater, UNT of Pipes Fork located within the southwestern portion of the Study Area (Figure 5). This stream flows southeast through a forested upland community. This watercourse is supported by drainage from forested uplands and an adjacent agricultural field. The stream channel is approximately 1 foot in width and contains a silt and gravel substrate. The stream exhibited low flow at the time of field investigations with a water depth of approximately 0.25 inch depth at riffles and 1 inch within pools. The stream was classified as a Class I PHWH based on a HHEI score of 24.

### **Stream 6**

Stream 6 is an ephemeral, headwater, UNT of Pipes Fork located within the north-central portion of the Study Area (Figure 5). This stream flows north from Wetland G to its confluence with Stream 7. This watercourse is supported by drainage from Wetland G and adjacent uplands. The stream channel is approximately 2 feet in width and contains a clay, silt, sand, gravel, and cobble substrate. The stream exhibited moderate flow at the time of field investigations with a



water depth of approximately 0.5 inch depth at riffles and 2.0 inches within pools. The stream was classified as a Class I PHWH based on an HHEI score of 28.

#### **Stream 7**

Stream 7 is an intermittent, headwater, UNT of Pipes Fork located within the north-central portion of the Study Area (Figure 5). This stream flows east from pasturelands on the property to the west to its confluence with Stream 10. This watercourse is supported by groundwater, drainage from tributaries, drainage from the aforementioned pastureland, and surficial runoff from adjacent uplands. The stream channel is approximately 6 to 7 feet in width and contains a sand, gravel, cobble, and boulder substrate. The stream exhibited moderate flow at the time of field investigations with a water depth of approximately 0.5 inch depth at riffles and 2 to 3 inches within pools. The stream was classified as a Class II PHWH based on HHEI scores of 48 and 55. Tadpoles (*Rana* sp.) were observed within the lower portions of the reach.

#### **Stream 8**

Stream 8 is an ephemeral, headwater, unnamed tributary (UNT) of Pipes Fork located within the northeast-central portion of the Study Area (Figure 5). This stream flows south to its confluence with Stream 7. This watercourse is supported by drainage from adjacent uplands. The stream channel is approximately two feet in width and contains a clay, sand, and gravel substrate. The stream exhibited low flow at the time of field investigations with a water depth of approximately 0.25 inch depth at riffles and 1 inch within pools. The stream was classified as a Class I PHWH based on a HHEI score of 22.

#### **Stream 9**

Stream 9 is an ephemeral, headwater, UNT of Pipes Fork located within the eastern portion of the Study Area (Figure 5). This stream flows west and conveys drainage from Mobile Road NE to its confluence with Stream 10. This watercourse is supported by drainage from Mobile Road and surficial runoff from adjacent uplands. The stream channel is approximately 3 feet in width and contains a silt, clay, and cobble substrate. Vegetation is also present within the stream channel. The stream exhibited moderate flow at the time of field investigations with a water depth of approximately 1 inch depth at riffles and 2 inches within pools. The stream was classified as a Class I PHWH based on a HHEI score of 17.

#### **Stream 10**

Stream 10 is a perennial, unnamed tributary of Pipes Fork located within the eastern portion of the study area (Figure 5). This watercourse is supported by groundwater, drainage from adjacent uplands, surficial runoff from adjacent uplands, and drainage from tributaries. The stream channel is approximately 7 to 10 feet in width and contains a silt, sand, gravel, and cobble

substrate. The stream exhibited medium flow at the time of field investigations, with an average water depth of approximately 0.25 to 0.50 inch at riffles and 3 to 4 inches within pools. The stream was classified as a Class III PHWH based on a HHEI score of 61 because the percent of bedrock, boulder, boulder slab, and cobble was greater than 10 percent (50 percent cobble).

#### **Stream 11**

Stream 11 is an intermittent, headwater, UNT of Pipes Fork located within the southeastern portion of the Study Area (Figure 5). This stream flows west from a partially collapsed culvert adjacent to Mobile Road NE to its confluence with Stream 10. This watercourse is supported by groundwater, drainage from Mobile Road, and surficial runoff from adjacent uplands. The stream channel is approximately 7 feet in width and contains a silt, sand, gravel, cobble, and boulder substrate. The stream exhibited moderate flow at the time of field investigations with a water depth of approximately 1 inch depth at riffles and 2 inches within pools. The stream was classified as a Class II PHWH based on a HHEI score of 45.

#### **Stream 12**

Stream 12 is an intermittent, headwater, UNT of Pipes Fork located within the northern portion of the Study Area (Figure 5). This stream flows south within a forested fringe between two agricultural fields to its confluence with Stream 7. A buried culvert associated with an access road between the agricultural fields affects flow of the stream. This watercourse is supported by drainage from Wetland O and surficial runoff from adjacent uplands. The stream channel ends at a collapsed culvert, with drainage conveyed within an existing access road to Stream 1. The upper portion of the reach is approximately 3 feet in width and contains a silt substrate. The lower portion of the stream channel is approximately 1.5 feet in width and contains a silt, gravel, cobble, and boulder substrate. The upper portion of the reach contained 0.25 to 0.5 inch of water in pool areas at the time of field investigations; the lower portion of the reach did not contain any water at the time of field investigations. The upper portion of the stream was classified as a Class II PHWH based on an HHEI score of 36. The lower portion of the stream was classified as a Class I PHWH based on an HHEI score of 24.

#### **Stream 13**

Stream 13 is an UNT of Pipe Run and is located within the western portion of the Study Area, west of Route 9. Hydrology is supported by drainage from Route 9 as well as existing farm facilities, upland fields, and forested uplands. Hydrology within the lower portion of the reach is also supported by groundwater and drainage from a tributary (Stream 14). The stream drains west through the Study Area within a narrow ravine. The upper portion of the reach is ephemeral and is approximately 2 feet in width and exhibited a moist streambed with no flow. The stream

channel is approximately 2 feet in width and contains a silt, sand, gravel and cobble substrate. The lower portion is intermittent with an approximately 0.25 inch depth at riffles and 2 inches within pools. The stream channel within the lower portion of the reach is approximately 3.50 feet in width and contains a silt, sand, gravel, and cobble substrate. The stream was classified as Class I PHWH based on an HHEI score of 17 within the upper portion of the reach and as a Class II PHWH based on an HHEI score of 33 within the lower portion of the reach.

#### **Stream 14**

Stream 14 is an ephemeral, headwater, UNT of Pipe Run located within the southwestern portion of the Study Area (Figure 5). This stream flows southeast through a forested upland community. This watercourse is supported by drainage from forested uplands and an adjacent agricultural field. The stream channel is approximately 2.5 feet in width and contains a silt and gravel substrate. The stream exhibited moderate flow at the time of field investigations with a water depth of approximately 0.25 inch depth at riffles and 0.5 inches within pools. The stream was classified as a Class I PHWH based on a HHEI score of 24.

**Table 2.**

**Headwater Habitat Evaluation Index and Qualitative Habitat Evaluation Index Results Summary**

<b>Stream ID</b>	<b>HHEI Score</b>	<b>PHWH Class</b>
Stream 1	9	I
Stream 2	26.5	I
Stream 3	49	II
Stream 4	18	I
Stream 5	24	I
Stream 6	28	I
Stream 7	48/55	II
Stream 8	22	I
Stream 9	17	I
Stream 10	61	III
Stream 11	49	II
Stream 12-1	36	II
Stream 12-2	24	I
Stream 13-1	17	I
Stream 13-2	33	II
Stream 14	24	I

## 5.0 CONCLUSIONS

As a result of the on-site investigation, eighteen areas were identified within the Study Area that exhibited all three criteria necessary to be classified as a wetland according to the 1987 Corps Manual and the Regional Supplement.

- The areas had a vegetative community that contained a predominance (greater than 50% aerial coverage) of hydrophytic plant species.
- Hydric soil conditions were present at each location.
- There were indicators of wetland hydrology at each location.

Of the eighteen wetlands that occur within the Study Area, two were classified as a Category 1, fifteen were classified as Category 2, one was classified as Category 3 based on the ORAM scoring system for assessing quality and function of wetlands. Two of the eighteen wetlands (Wetlands C and D) were identified as isolated non-jurisdictional wetlands during field investigations. Though the USACE would not have jurisdiction over these wetlands, the OEPA does regulate isolated wetlands. Of the 182-acre Study Area, only 0.85 acres was identified as containing wetlands.

Fourteen streams were also identified during field investigations. Two streams (Streams 12 and 13) had upper and lower segments that scored as Class I and Class II PWH streams. Of the remaining twelve streams, eight were classified as Class I PWH streams, three were classified as Class II PWH streams, and one was classified as a Class III PWH stream.

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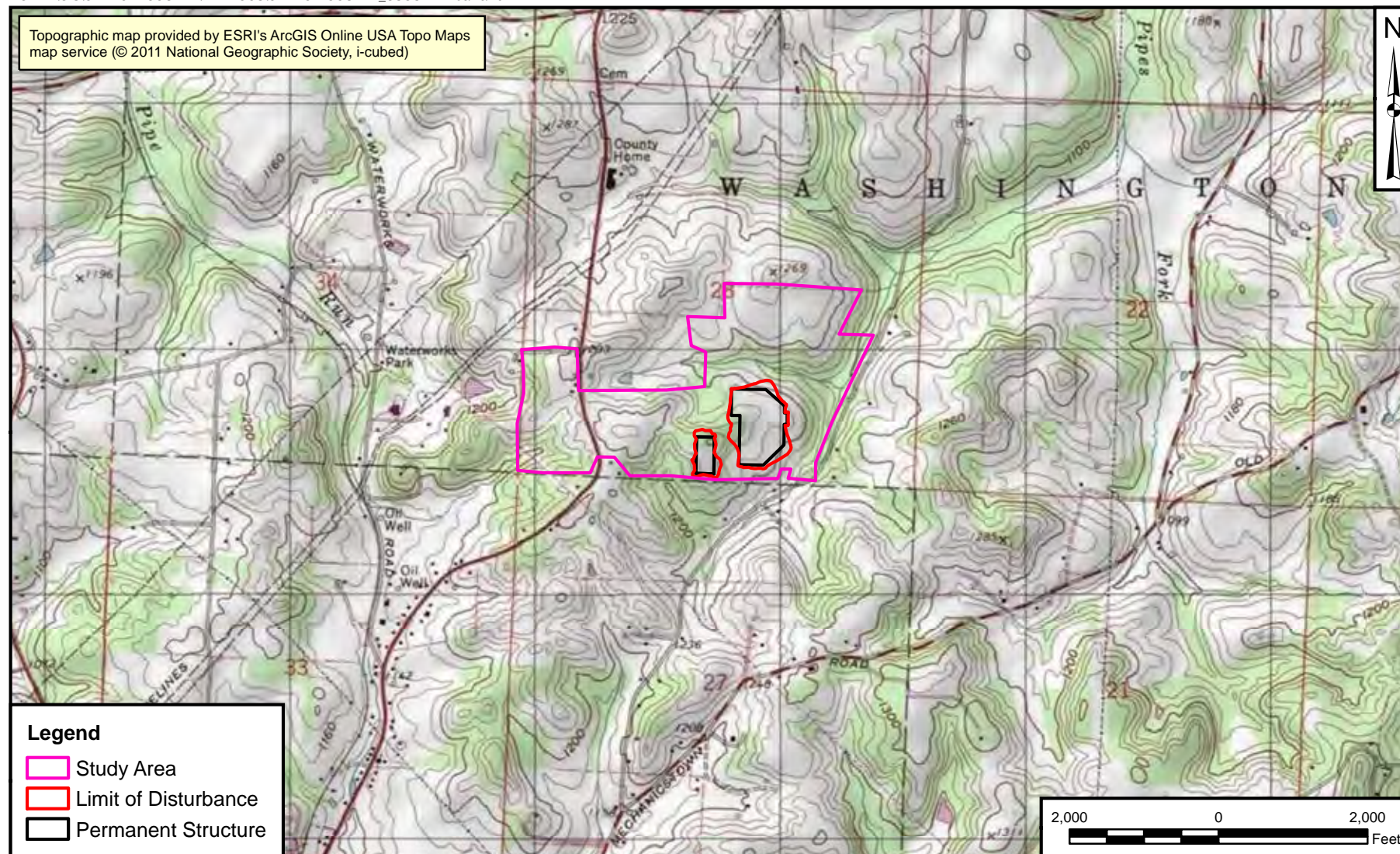
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## FIGURES

Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2011 National Geographic Society, i-cubed)



USGS PROJECT LOCATION MAP  
CARROLL COUNTY ENERGY  
CARROLL COUNTY ENERGY, LLC  
CARROLL COUNTY, OHIO

DRAWN BY: J. NOVAK 04/22/13  
CHECKED BY: M. MUSSOMELI 05/13/13  
APPROVED BY:

CONTRACT NUMBER: 112IC05375

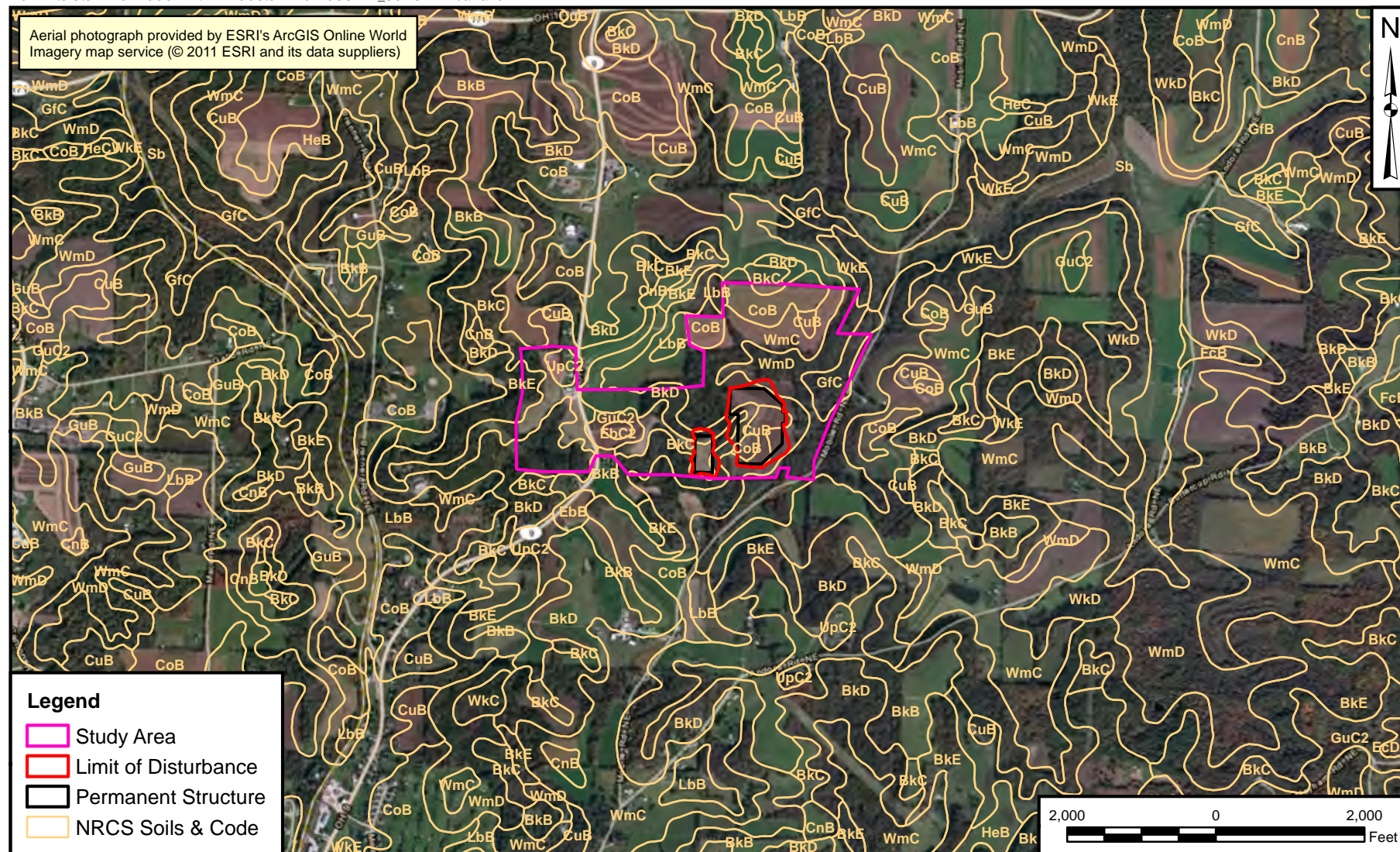
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NRCS SOILS MAP  
CARROLL COUNTY ENERGY  
CARROLL COUNTY ENERGY, LLC  
CARROLL COUNTY, OHIO

DRAWN BY: K. MOORE 5/6/13  
CHECKED BY: M. MUSSOMELI 05/13/13  
APPROVED BY:

CONTRACT NUMBER: 112C05375

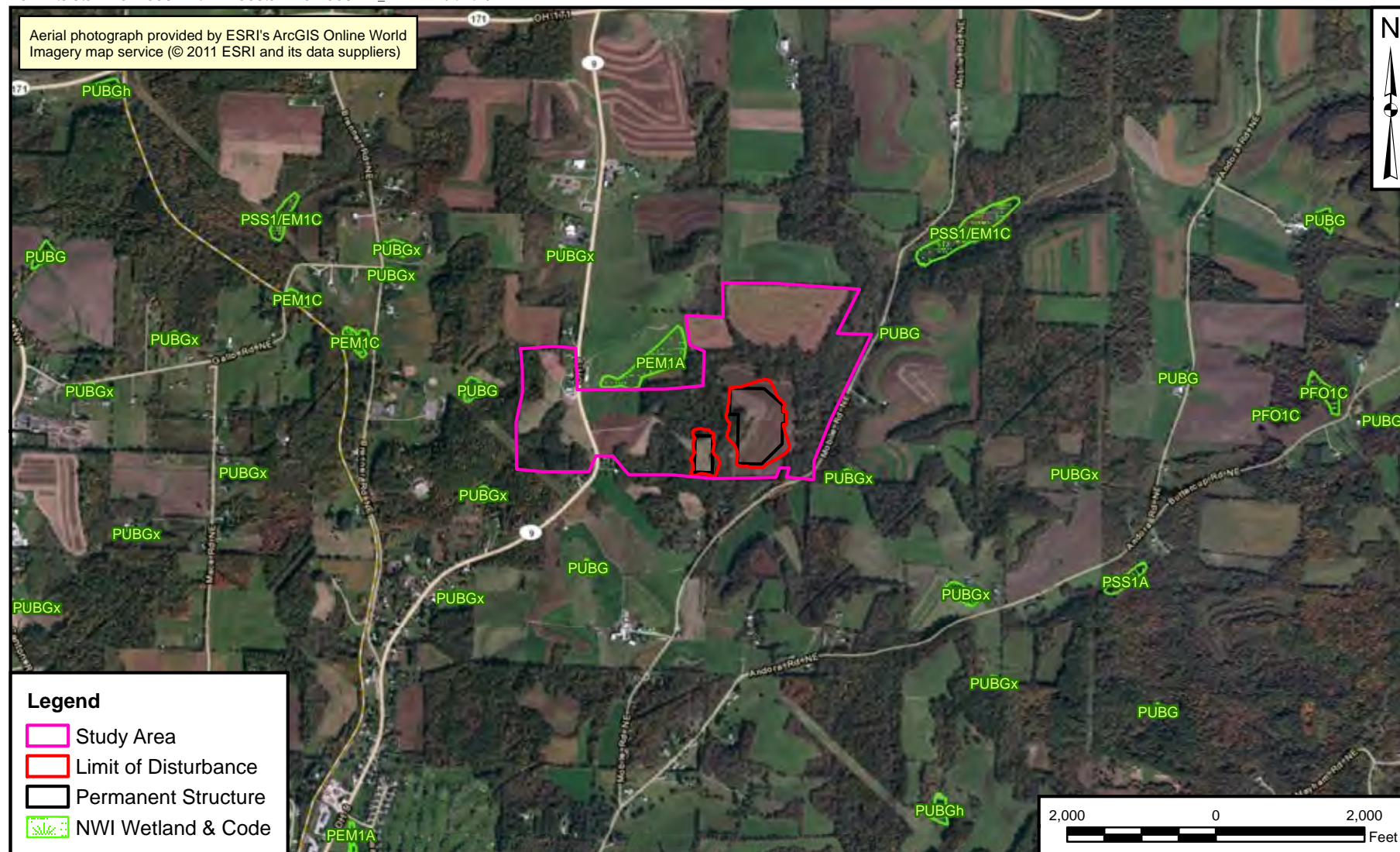
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NWI WETLANDS MAP  
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CARROLL COUNTY ENERGY, LLC  
CARROLL COUNTY, OHIO

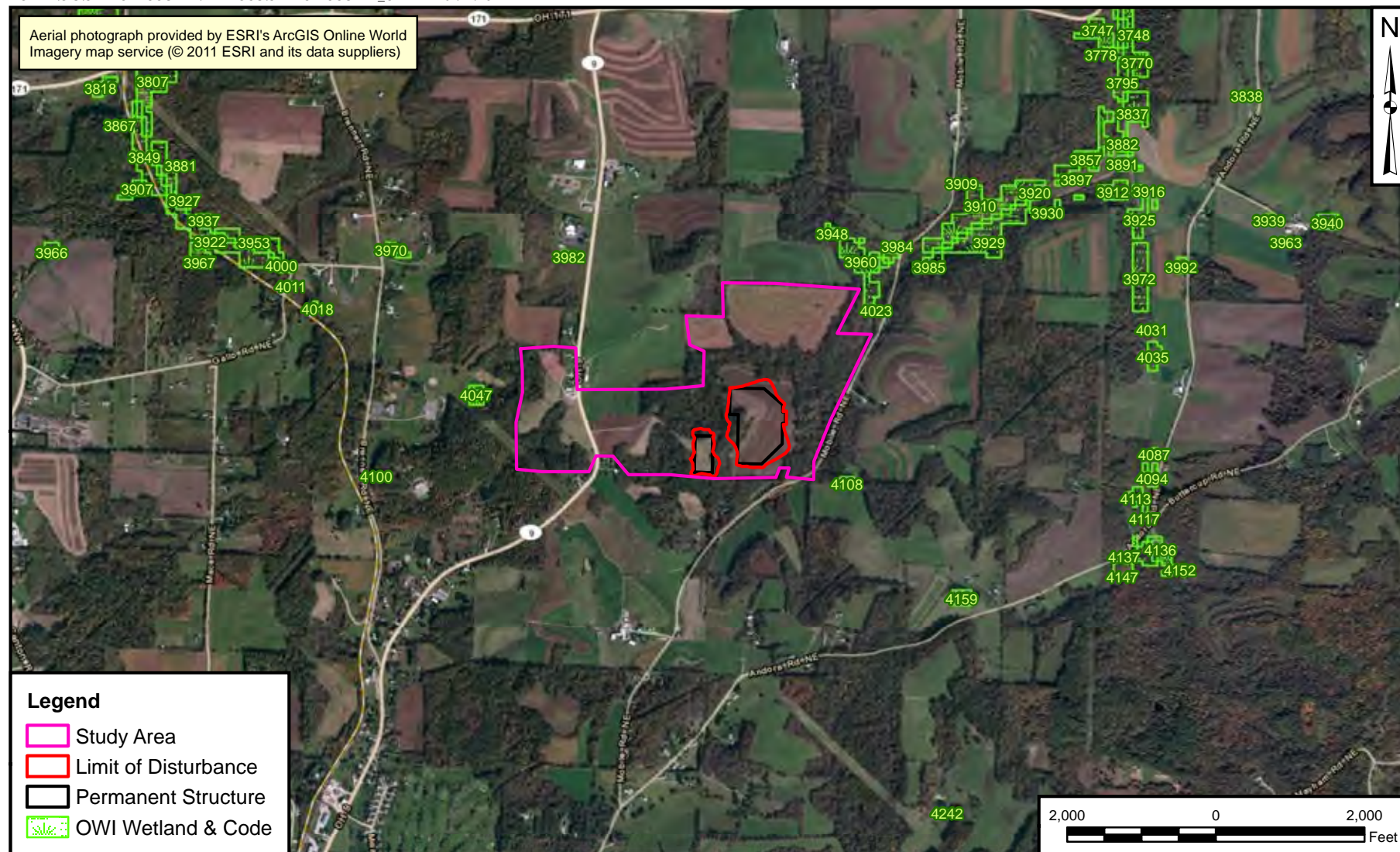
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CHECKED BY: M. MUSSOMELI 07/22/13  
APPROVED BY:

CONTRACT NUMBER: 112C05375

FIGURE NUMBER  
3A

REV  
0





OWI WETLANDS MAP  
CARROLL COUNTY ENERGY  
CARROLL COUNTY ENERGY, LLC  
CARROLL COUNTY, OHIO

DRAWN BY: K. MOORE 5/6/13  
CHECKED BY: M. MUSSOMELI 07/22/13  
APPROVED BY:

CONTRACT NUMBER: 112C05375

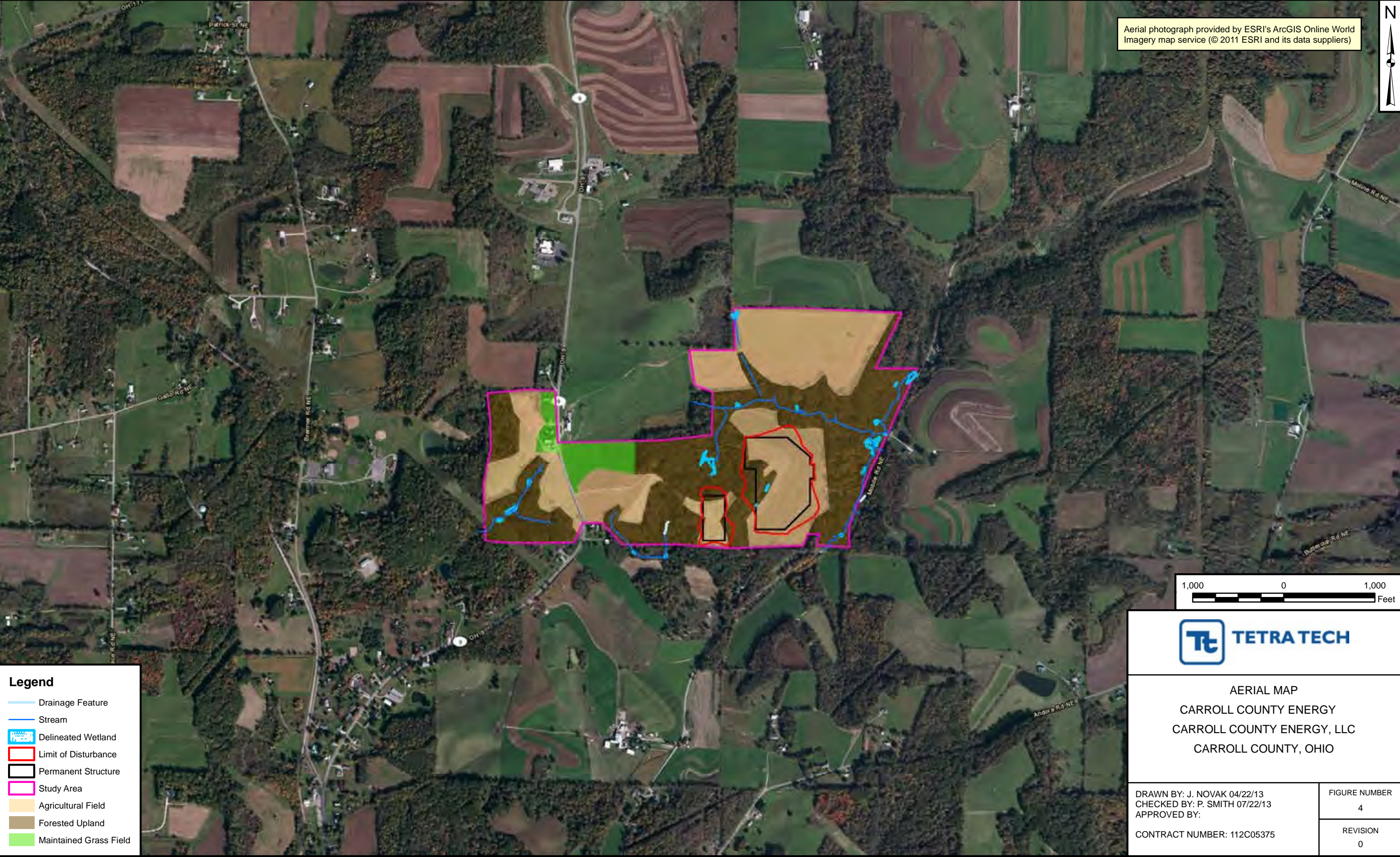
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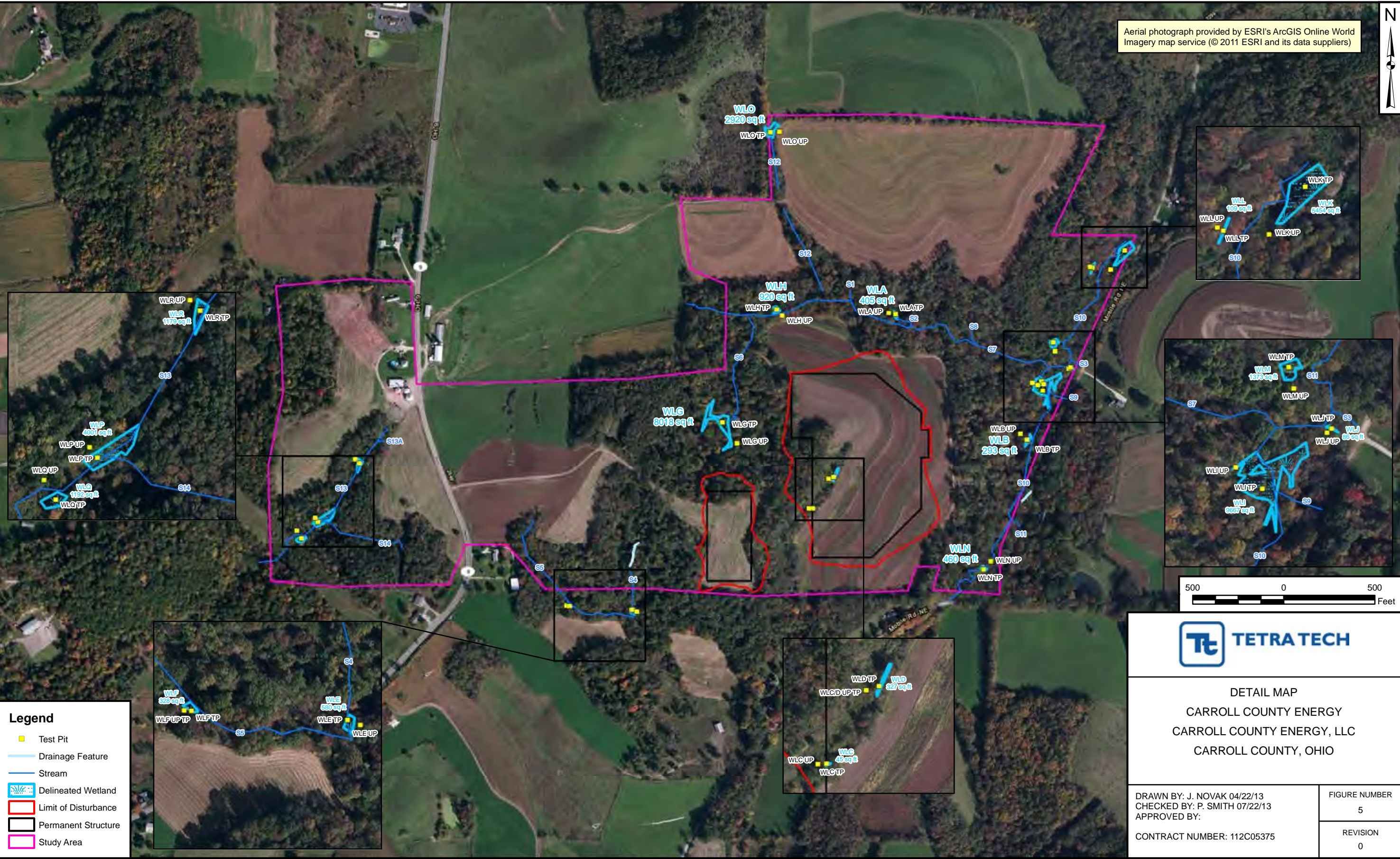
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## **APPENDIX A**

### **USACE WETLAND DETERMINATION DATA FORMS**

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Carrall County Energy City/County: Carrall Co. Sampling Date: 23 April 2017  
 Applicant/Owner: Alvin Rouse State: OH Sampling Point: vic A  
 Investigator(s): Mike Marschall and Preston Smith Section, Township, Range: 228, 714N, R5W  
 Landform (hillslope, terrace, etc.): hillside seep Local relief (concave, convex, none): concave Slope (%): 5-10  
 Subregion (LRR or MLRA): LRR N Lat: 40.6072 Long: -81.0511 Datum: NAD 83  
 Soil Map Unit Name: Wentworth-Coshocton silt loam, 15-25% slopes (WMB) NWI classification: PEM (not mapped)  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: <u>Seep, living pipe</u>			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators (minimum of one is required; check all that apply)</b> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<b>Secondary Indicators (minimum of two required)</b> <input type="checkbox"/> Surface Soil Cracks (B5) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6" 25"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: <u>surface water in portions of wetland</u>		

## VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: vic A

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>  </u>				
2. <u>  </u>				
3. <u>  </u>				
4. <u>  </u>				
5. <u>  </u>				
6. <u>  </u>				
7. <u>  </u>				
= Total Cover 50% of total cover: <u>  </u> 20% of total cover: <u>  </u>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>  </u> Multiply by: <u>  </u> OBL species <u>  </u> x 1 = <u>  </u> FACW species <u>  </u> x 2 = <u>  </u> FAC species <u>  </u> x 3 = <u>  </u> FACU species <u>  </u> x 4 = <u>  </u> UPL species <u>  </u> x 5 = <u>  </u> Column Totals: <u>  </u> (A) <u>  </u> (B)
<b>Sapling/Shrub Stratum (Plot size: <u>15'</u>)</b>				Prevalence Index - B/A - <u>  </u>
1. <u>  </u>				
2. <u>  </u>				
3. <u>  </u>				
4. <u>  </u>				
5. <u>  </u>				
6. <u>  </u>				
7. <u>  </u>				
8. <u>  </u>				
9. <u>  </u>				
= Total Cover 50% of total cover: <u>  </u> 20% of total cover: <u>  </u>				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
<b>Herb Stratum (Plot size: <u>5'</u>)</b>				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex sp.</u>	<u>60</u>	<input checked="" type="checkbox"/>		
2. <u>Impatiens capensis</u>	<u>20</u>	<input checked="" type="checkbox"/>	FACW	
3. <u>Vallisneria</u>	<u>5</u>	<input type="checkbox"/>	FAC	
4. <u>Carex lasiocarpa</u>	<u>5</u>	<input type="checkbox"/>	FACU	
5. <u>  </u>				
6. <u>  </u>				
7. <u>  </u>				
8. <u>  </u>				
9. <u>  </u>				
10. <u>  </u>				
11. <u>  </u>				
= Total Cover 50% of total cover: <u>45</u> 20% of total cover: <u>18</u>				<b>Definitions of Four Vegetation Strata:</b> Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
<b>Woody Vine Stratum (Plot size: <u>30'</u>)</b>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>  </u>				
2. <u>  </u>				
3. <u>  </u>				
4. <u>  </u>				
5. <u>  </u>				
= Total Cover 50% of total cover: <u>  </u> 20% of total cover: <u>  </u>				
Remarks: (Include photo numbers here or on a separate sheet.) <u>9. C. lasiocarpa not included in wetland</u>				

Sampling Point: wt A

US Army Corps of Engineers

Project/Site: Carroll County Energy City/County: Carroll Co. Sampling Date: 23 Apr. 2013  
Applicant/Owner: Advanced Power State: OH Sampling Point: WLA-4  
Investigator(s): Mike Muscarelli and Preston Smith Section, Township, Range: S28, T14N, R5W  
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 10-15  
Subregion (LRR or MLRA): LRR IV Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: NAD 83  
Soil Map Unit Name: Westmont - Custeron silt loam, 15-25% clay (wmo) NWI classification: upL  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>✓</u> Hydric Soil Present? Yes _____ No <u>✓</u> Wetland Hydrology Present? Yes _____ No <u>✓</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Remarks:	

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (H8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (H16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (H7)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____		
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Sampling Point: WLA 42

## SOIL

Sampling Point: 26 N-7

[illegible]



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Carrall County, Georgia City/County: Carrall Co Sampling Date: 27 April 2013  
 Applicant/Owner: Atlanta Power State: GA Sampling Point: W2B  
 Investigator(s): Mike Muscarella and Preston Smith Section, Township, Range: S28 T14N R5W  
 Landform (hillslope, terrace, etc.): Level Local relief (concave, convex, none): convex Slope (%): 1-2  
 Subregion (LRR or MLRA): L2B R Lat: 40.6253 Long: -81.0561 Datum: NAD 83  
 Soil Map Unit Name: Wetland, land construction with heavy clay 15-25% slopes (W2B) NWI classification: SCM (not mapped)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: <u>Too steep, abilities stream</u>			

## HYDROLOGY

Wetland Hydrology Indicators: (minimum of one is required; check all that apply)  
 Primary Indicators: ☒ Surface Water (A1) ☐ True Aquatic Plants (B14) ☐ Surface Soil Cracks (B6)  
☒ High Water Table (A2) ☐ Hydrogen Sulfide Odor (C1) ☐ Sparsely Vegetated Concave Surface (H8)  
☒ Saturation (A3) ☐ Oxidized Rhizospheres on Living Roots (C3) ☒ Drainage Patterns (B10)  
☐ Water Marks (B1) ☐ Presence of Reduced Iron (C4) ☐ Moss Trim Lines (B16)  
☐ Sediment Deposits (B2) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Dry-Season Water Table (I2)  
☐ Drift Deposits (H3) ☐ Thin Muck Surface (C7) ☐ Crayfish Burrows (C8)  
☐ Algal Mat or Crust (B4) ☐ Other (Explain in Remarks) ☐ Saturation Visible on Aerial Imagery (C9)  
☐ Iron Deposits (B5) ☐ Stunted or Stressed Plants (J11)  
☐ Inundation Visible on Aerial Imagery (H7) ☒ Geomorphic Position (D2)  
☐ Water-Stained Leaves (B9) ☐ Shallow Aquitard (D3)  
☐ Aquatic Fauna (B13) ☐ Microtopographic Relief (D4)  
☒ FAC Neutral Test (D5)

Field Observations:  
 Surface Water Present? Yes ☒ No ☐ Depth (inches): 6.15'  
 Water Table Present? Yes ☒ No ☐ Depth (inches):           
 Saturation Present? Yes ☒ No ☐ Depth (inches):           
 Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:  
standing water in portions of wetland

## VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W2B

Tree Stratum (Plot size: <u>30' x 30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>        </u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u>        </u>				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. <u>        </u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. <u>        </u>				
5. <u>        </u>				
6. <u>        </u>				
7. <u>        </u>				
50% of total cover: <u>        </u> 20% of total cover: <u>        </u>				Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: <u>15' x 15'</u> )				Total % Cover of: <u>        </u> Multiply by: <u>        </u>
1. <u>Sambucus racemosa (var. canadensis)</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	OBL species <u>        </u> x 1 = <u>        </u>
2. <u>        </u>				FACW species <u>        </u> x 2 = <u>        </u>
3. <u>        </u>				FAC species <u>        </u> x 3 = <u>        </u>
4. <u>        </u>				FACU species <u>        </u> x 4 = <u>        </u>
5. <u>        </u>				UPL species <u>        </u> x 5 = <u>        </u>
6. <u>        </u>				Column Totals: <u>        </u> (A) <u>        </u> (B)
7. <u>        </u>				
8. <u>        </u>				
9. <u>        </u>				
50% of total cover: <u>15</u> 20% of total cover: <u>3</u>				Prevalence Index - B/A = <u>        </u>
Herb Stratum (Plot size: <u>5' x 5'</u> )				Hydrophytic Vegetation Indicators:
1. <u>Impatiens capensis</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Urtica dioica</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>        </u>	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
3. <u>Polygonum sp.</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>        </u>	<input type="checkbox"/> 3 - Prevalence Index is >3.0
4. <u>Vitis rotundifolia</u>	<u>5</u>		<u>FAC</u>	<input type="checkbox"/> 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
5. <u>Asplenium platyneuron</u>	<u>5</u>		<u>FACW</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain)
6. <u>Sambucus racemosa (var. canadensis) (seedling)</u>	<u>5</u>		<u>FACW</u>	
7. <u>        </u>				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. <u>        </u>				Definitions of Four Vegetation Strata:
9. <u>        </u>				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
10. <u>        </u>				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
11. <u>        </u>				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
50% of total cover: <u>25</u> 20% of total cover: <u>10</u>				Woody vine – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: <u>20' x 20'</u> )				
1. <u>        </u>				
2. <u>        </u>				
3. <u>        </u>				
4. <u>        </u>				
5. <u>        </u>				
50% of total cover: <u>        </u> 20% of total cover: <u>        </u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: (Include photo numbers here or on a separate sheet)  
\* plot size adjusted due to size of wetland  
\*\* unidentified grass and sedges species not included in worksheet

Sampling Point: W 2 R

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Carroll County Energy City/County: Carroll Co. Sampling Date: 23 April 2014  
 Applicant/Owner: Advanced Power State: OH Sampling Point: wa Buf  
 Investigator(s): Mike Muscarelli and Patricia Smith Section, Township, Range: S28, T14N, R5W  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 15-20  
 Subregion (LRR or MLRA): 6A IV Lat: 40.6020 Long: -81.0561 Datum: NAD 83  
 Soil Map Unit Name: Investigation: Goshute silt loam 15-25% slope (unD) NWI classification: UPL  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS** – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> FAC-Neutral Test (B15)		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Sampling Point: wt B up

SOIL

Sampling Point: *W1349*

[illegible]

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Cecil County, Maryland City/County: Cecil Co Sampling Date: 23 Apr 2008  
 Applicant/Owner: Advanced Power State: MD Sampling Point: Box C  
 Investigator(s): Mike Muscarelli and Preston Smith Section, Township, Range: S28, T14N, R5W  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0-2  
 Subregion (LRR or MLRA): LRA N Lat: 40.6043 Long: -81.0608 Datum: NAD 83  
 Soil Map Unit Name: Buffy, silty, silt loam, 15-25% slopes (Bk0) NWI classification: PEM (not mapped)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No ☐  
 Hydric Soil Present? Yes ☒ No ☐  
 Wetland Hydrology Present? Yes ☒ No ☐

Is the Sampled Area within a Wetland? Yes ☒ No ☐

Remarks:  
within high ice ditch on roadside; isolated

## 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 (H4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B8)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ 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)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

### Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 0.25"  
 Water Table Present? Yes ☐ No ☒ Depth (inches): 1"  
 Saturation Present? Yes ☒ No ☐ Depth (inches): 1"

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:  
surface water in portion of wetland

## VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point: Box C

Tree Stratum (Plot size: <u>10' x 10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u> </u>			
2. <u> </u>			
3. <u> </u>			
4. <u> </u>			
5. <u> </u>			
6. <u> </u>			
7. <u> </u>			

50% of total cover:   20% of total cover:  

Sapling/Shrub Stratum (Plot size: <u>10' x 10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u> </u>			
2. <u> </u>			
3. <u> </u>			
4. <u> </u>			
5. <u> </u>			
6. <u> </u>			
7. <u> </u>			
8. <u> </u>			
9. <u> </u>			

50% of total cover:   20% of total cover:  

Herb Stratum (Plot size: <u>5' x 5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Andropogon scoparius</i></u>	<u>70</u>	<u>1</u>	<u>FACW</u>
2. <u><i>Ceanothus americanus</i></u>	<u>10</u>	<u> </u>	<u>FACW</u>
3. <u><i>Chenopodium album</i></u>	<u>3</u>	<u> </u>	<u>UPL</u>
4. <u><i>Galium aparine</i></u>	<u>2</u>	<u> </u>	<u>FACW</u>
5. <u> </u>			
6. <u> </u>			
7. <u> </u>			
8. <u> </u>			
9. <u> </u>			
10. <u> </u>			
11. <u> </u>			

50% of total cover: 42.5 20% of total cover: 17

Woody Vine Stratum (Plot size: <u>10' x 10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u> </u>			
2. <u> </u>			
3. <u> </u>			
4. <u> </u>			
5. <u> </u>			

50% of total cover:   20% of 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 (A/B)

Prevalence Index worksheet:  
 Total % Cover of:   Multiply by:  
 OBL species   x 1 =    
 FACW species   x 2 =    
 FAC species   x 3 =    
 FACU species   x 4 =    
 UPL species   x 5 =    
 Column Totals: (A)   (B)  

Prevalence Index = B/A =    
 Hydrophytic Vegetation Indicators:  
☒ 1 - Rapid Test for Hydrophytic Vegetation  
☐ 2 - Dominance Test is >50%  
☐ 3 - Prevalence Index is <3.0  
☐ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

### Definitions of Four Vegetation Strata:

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

Sapling/Shrub - Woody plants, excluding vines, 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 vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

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

\*plot sizes adjusted due to size of wetland

Sampling Point: WLC

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont RegionUS Army Corps of Engineers

Sampling Point: wet 0

Tree Stratum (Plot size: 10' x 10')	Absolute % Cover	Dominant Species?	Indicator Species?	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____		20% of total cover: _____		
<b>Sapling/Shrub Stratum (Plot size: 10' x 10')</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____		20% of total cover: _____		
<b>Herb Stratum (Plot size: 5' x 5')</b>				
1. <u>Asplenium nidus</u>	<u>30</u>	<u>✓</u>	<u>FACW</u>	
2. <u>Asplenium nidus</u>	<u>10</u>		<u>FACW</u>	
3. <u>Centropogon parviflorus</u>	<u>8</u>		<u>FACW</u>	
4. <u>Centropogon parviflorus</u>	<u>5</u>		<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>26.5</u>		20% of total cover: <u>10.6</u>		
<b>Woody Vine Stratum (Plot size: 10' x 10')</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____		20% of total cover: _____		
<b>Provalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species x 1 = _____ FACW species x 2 = _____ FAC species x 3 = _____ FACU species x 4 = _____ UPL species x 5 = _____ Column Totals: _____ (A) _____ (B)  Provalence Index = HIA = _____				
<b>Hydrophytic Vegetation Indicators:</b> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Definitions of Four Vegetation Strata:</b>				
<b>Tree</b> – Woody plants, excluding vines, 3 in. (7.5 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____				
Remarks: (Include photo numbers here or on a separate sheet.) <u>* - plot sizes adjusted due to size of wetland</u>				

Sampling Point: W2 D

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/State: Carroll County Energy City/County: Carroll Co. Sampling Date: 23 April 2017  
 Applicant/Owner: Advanced Power State: OH Sampling Point: not C/D up  
 Investigator(s): Mike Mussarelli and Kersten Smith Section, Township, Range: S28, T14N, R5W  
 Landform (hillside, terrace, etc.): hilltop Local relief (concave, convex, none): convex Slope (%): 5-10  
 Subregion (LRR or MLRA): LRR IV Lat: 40.6056 Long: -81.0607 Datum: NAD 83  
 Soil Map Unit Name: Brkts shaly silt loam, 15-25% slopes (BRG) NWI classification: UPL  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (H3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (H9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? (includes capillary fringe)		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____

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

Remarks:

# VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: not C/D up

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer saccharum</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
50% of total cover: <u>2.5</u> = Total Cover			
20% of total cover: <u>1</u>			
Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
50% of total cover: <u>12.5</u> = Total Cover			
20% of total cover: <u>5</u>			
Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Potamogeton</u>	<u>40</u>	<input checked="" type="checkbox"/>	<u>—</u>
2. <u>Sagittaria arifolia</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
3. <u>Claytonia virginica</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>UPL</u>
4. <u>Barbarea vulgaris</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% of total cover: <u>39</u> = Total Cover			
20% of total cover: <u>15.6</u>			
Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% of total cover: _____ = Total Cover			
20% of total cover: _____			
Remarks: (Include photo numbers here or on a separate sheet.)			
<u>* - additional field survey not included in worksheet</u>			

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 (A/B)

Prevalence Index worksheet:

Total % Cover of: \_\_\_\_\_ Multiply by:

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index =  $WA = \frac{A}{B}$

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is  $\leq 3.0$

4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

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

## Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Sampling Point: wet CP up

US Army Corps of Engineers

Project/Site: Carrall County Energy City/County: Carrall Co Sampling Date: 2 Apr 2018  
Applicant/Owner: Advanced Power State: OH Sampling Point: W1 E  
Investigator(s): Mike Musumeci and Preston Smith Section, Township, Range: 52 S 714 N 13 W  
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 2-4  
Subregion (LRR or MLRA): 22A W Lat: 40.630 Long: -81.663 Datum: NAD83  
Soil Map Unit Name: B-Ks, stony, 14-16%, 15-25% slopes (BKK) NWI classification: PER (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** – Attach site map showing sampling point locations, transects, important features, etc.

## HYDROLOGY

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 0.25

Water Table Present? Yes ☒ No ☐ Depth (inches):

Saturation Present? Yes ☒ No ☐ Depth (inches): 4

Wetland Hydrology Present? Yes ☒ No ☐

U.S. Army Corps of Engineers



Sampling Point: w6 E

SOIL

Sampling Point: W6 E

US Army Corps of Engineers

## WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Carruth County Farming City/County: Carruth Co Sampling Date: 23 April 2014  
 Applicant/Owner: Advanced Power State: OH Sampling Point: W6 EUP  
 Investigator(s): Mike Mussing and Jacob Smith Section, Township, Range: 28, 719N, R5W  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 7-10%  
 Subregion (1 HR or M1 RA): LAR N Lat: 40.6030 Long: 81.0641 Datum: NAD 83  
 Soil Map Unit Name: Black Shaly silt loam, 15-25% slopes (DRP) NW1 classification: vpl

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

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

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

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (H14)	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (H16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Sediment Deposits (H2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Iron Deposits (B5)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Water-Stained Leaves (B9)			
<input type="checkbox"/> Aquatic Fauna (H13)			

Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
(includes capillary fringe)		

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

Remarks:

## VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point: W6 EUP

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Ulmus rubra</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>Quercus rubra</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
3. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
4. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
5. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
6. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
7. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
50% of total cover: <u>25</u>		20% of total cover: <u>5</u>	
Total Cover: <u>30</u>			
Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>Ulmus rubra</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
3. <u>Corylus americana</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
4. <u>Rhus glabra</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
5. <u>Rubus occidentalis</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>vpl</u>
6. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
7. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
8. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
9. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
50% of total cover: <u>22.5</u>		20% of total cover: <u>9</u>	
Total Cover: <u>45</u>			
Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Allium petiolatum</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>Rosa multiflora</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
3. <u>Cornus canadensis</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
4. <u>Claytonia virginica</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>vpl</u>
5. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
6. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
7. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
8. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
9. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
10. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
11. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
50% of total cover: <u>11.5</u>		20% of total cover: <u>4.6</u>	
Total Cover: <u>23</u>			
Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Toxicaria canadensis</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
3. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
4. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
5. <u>                    </u>	<u>          </u>	<input type="checkbox"/>	<u>          </u>
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>	
Total Cover: <u>5</u>			
Remarks: (Include photo numbers here or on a separate sheet.)			

Dominance Test worksheet:  
 Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)  
 Total Number of Dominant Species Across All Strata: 8 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 37.5% (A/B)

Prevalence Index worksheet:  
 Total % Cover of:            Multiply by:  
 OBL species            x 1 =             
 FACW species            x 2 =             
 FAC species            x 3 =             
 FACU species            x 4 =             
 UPL species            x 5 =             
 Column Totals:            (A)            (B)

Prevalence Index = B/A =             
 Hydrophytic Vegetation Indicators:  
 1 - Rapid Test for Hydrophytic Vegetation  
 2 - Dominance Test is >50%  
 3 - Prevalence Index is >3.0  
 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation (Explain)

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

## Definitions of Four Vegetation Strata:

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

Sapling/Shrub - Woody plants, excluding vines, 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 vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Sampling Point: W2 E 4

US Army Corps of Engineers

Project/Site: Cumtall County Energy Center City/County: Cumtall Co. Sampling Date: 23 Apr 2019  
Applicant/Owner: Advanced Power State: OH Sampling Point: W2 F  
Investigator(s): Mike Plummer and Preston Smith Section, Township, Range: S28, T14N, R5W  
Landform (hillslope, terrace, etc.): dune/grassy Local relief (concave, convex, none): convex Slope (%): 35  
Subregion (LRR or MLRA): LRR n Lat: 40.6033 Long: -81.0636 Datum: NAD 83  
Soil Map Unit Name: Buho shaly silt loam, 15 to 25% slopes (BKO) NWI classification: Pem (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

HYDROLOGYDescribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:US Army Corps of Engineers

Sampling Point: W2 P

## SOIL

Sampling Point: Wc Fa

[illegible]

Project/Site: Corbett County Energy City/County: Corbett Co. Sampling Date: 23 April 2009  
Applicant/Owner: Advanced Power State: OH Sampling Point: well #1  
Investigator(s): Mike Plasmanski and Preston Smith Section, Township, Range: Sect. 719N, R5W  
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 8-10  
Subregion (LRR or MLRA): EAR 2 Lat: 40.6031 Long: -81.0655 Datum: NAD 83  
Soil Map Unit Name: Bkky shaly silt loam, 15-25% slopes (BKO) NWI classification: UPL  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present? Yes \_\_\_\_\_ No ☒

Hydric Soil Present? Yes \_\_\_\_\_ No ☒

Wetland Hydrology Present? Yes \_\_\_\_\_ No ☒

Remarks: \_\_\_\_\_

Is the Sampled Area within a Wetland? Yes \_\_\_\_\_ No ☒

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Surface Soil Cracks (B6)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (H8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (H2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (H5)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> FAC-Neutral Test (D5)

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Wetland Hydrology Present? Yes ☐ No ☒

Remarks:

Tree Stratum (Plot size: 30' )

	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acacia saligna</i>	20	✓	FAW
2. <i>Casuarina equisetifolia</i>	5	✓	FAW
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

25 = Total Cover  
50% of total cover: 12.5 20% of total cover: 5

Sapling/Shrub Stratum (Plot size: 15' )

	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Rosa roxburghii</i>	40	✓	FAW
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			

40 = Total Cover  
50% of total cover: 20 20% of total cover: 8

Herb Stratum (Plot size: 5' )

	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Albizia julibrissin</i>	10	✓	FAW
2. <i>Clitoria hirsuta</i>	5	✓	FAW
3. <i>Albizia julibrissin</i>	3		FAW
4. <i>Impatiens capensis</i>	2		FAW
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			

20 = Total Cover  
50% of total cover: 10 20% of total cover: 4

Woody Vine Stratum (Plot size: 3' )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			

\_\_\_\_\_ = Total Cover  
50% of total cover: \_\_\_\_\_ 20% of 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: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species x 1 = \_\_\_\_\_  
FACW species x 2 = \_\_\_\_\_  
FAC species x 3 = \_\_\_\_\_  
FACU species x 4 = \_\_\_\_\_  
UIM species x 5 = \_\_\_\_\_

Column Totals: (A) \_\_\_\_\_ (B) \_\_\_\_\_

Prevalence Index = B/A = \_\_\_\_\_

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is  $\geq 3.0$
- 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation? (Explain) \_\_\_\_\_

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

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes \_\_\_\_\_ No ☒

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

Sampling Point: قمر فقہ

US Army Corps of Engineers

Project/Site: Carroll County Farming City/County: Carroll County Sampling Date: 24 April 2013  
Applicant/Owner: Alvin Powell State: GA Sampling Point: W-6  
Investigator(s): Mike Marshall and Colie Wilson Section, Township, Range: S23, 714N, R3W  
Landform (hillslope, terrace, etc.): hillside slope Local relief (concave, convex, none): concave Slope (%): 3-5  
Subregion (LRR or MLRA): LRA 4 Lat: 30.653 Long: -81.6624 Datum: NAD 83  
Soil Map Unit Name: Wentworth (Gishwood silt loam) 8-15% Slopes (Went) NWI classification: DEM (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

HYDROLOGY

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Saturation Present? Yes ☒ No ☐ Depth (inches): \_\_\_\_\_

(includes capillary fringe)

**Wetland Hydrology Present?** Yes ☒ No ☐

US Army Corps of Engineers

Sampling Point: 606 G

SOIL

Sampling Point: wL 6

US Army Corps of Engineers

Project/Site: Curcell County Energy City/County: Curcell Co Sampling Date: 24 Sept 2013  
 Applicant/Owner: Altamont Power State: GA Sampling Point: W66-E  
 Investigator(s): Mike Musumund and Gabe Vittori Section, Township, Range: S28 T44N R9W  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 9-7  
 Subregion (I, II, or III): I, II Lat: 31.664 Long: -81.067 Datum: NAD 83  
 Soil Map Unit Name: Westmoreland-Cashola silt loam 15-25% slopes NWI classification: UdC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Remarks:					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (H10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (J2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (J5)

Surface Water Present? Yes ☐ No ☒ Depth (inches):           

Water Table Present? Yes ☐ No ☒ Depth (inches):           

Saturation Present? Yes ☐ No ☒ Depth (inches):           

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

[illegible]

**Tree Stratum** (Plot size: 30')

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Cleome spinosa</u>	<u>20</u>	<u>✓</u>	<u>FAC</u>
2. <u>Rhus glabra</u>	<u>10</u>	<u>✓</u>	<u>FAC</u>
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

50% of total cover: 15 30' = Total Cover  
20% of total cover: 6

**Sapling/Shrub Stratum** (Plot size: 15')

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora</u>	<u>30</u>	<u>✓</u>	<u>FAC</u>
2. <u>Rhus glabra</u>	<u>5</u>		<u>WPL</u>
3. <u>Sambucus nigra var. canadensis</u>	<u>5</u>		<u>FAC</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			

50% of total cover: 30 15' = Total Cover  
20% of total cover: 6

**Herb Stratum** (Plot size: 9')

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Alliaria petiolata</u>	<u>10</u>	<u>✓</u>	<u>FAC</u>
2. <u>Polygonum sp.</u>	<u>15</u>	<u>✓</u>	<u>—</u>
3. <u>Chytanum virginicum</u>	<u>5</u>		<u>FAC</u>
4. <u>Eleocharis acicularis</u>	<u>10</u>	<u>✓</u>	<u>FAC</u>
5. <u>Geranium maculatum</u>	<u>5</u>		<u>FAC</u>
6. <u>Galium aparine</u>	<u>3</u>		<u>FAC</u>
7. <u>Viola sororia</u>	<u>2</u>		<u>FAC</u>
8. _____			
9. _____			
10. _____			
11. _____			

50% of total cover: 25 9' = Total Cover  
20% of total cover: 10

**Woody Vine Stratum** (Plot size: 30')

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			

\_\_\_\_\_ = Total Cover  
50% of total cover: \_\_\_\_\_ 20% of 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: 5 (H)  
Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (AB)  
Prevalence Index worksheet:  
Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_  
OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_  
FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_  
FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_  
FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_  
UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_  
Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)  
Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
1 - Rapid Test for Hydrophytic Vegetation  
- Dominance Test is >50%  
3 - Prevalence Index is >3.0  
4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)  
Problematic Hydrophytic Vegetation (Explain) \_\_\_\_\_

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

**Definitions of Four Vegetation Strata:**  
Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  
Sapling/Shrub - Woody plants, excluding vines, 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 vine - All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No ✓

\* - incident, find gross not included in worksheet



[illegible]

Project/Site: Carrall Creek Energy City/County: Genesee Co. Sampling Date: 24 April 2015  
Applicant/Owner: Advanced Power State: NY Sampling Point: W2 H  
Investigator(s): Mike Morsink and John Wilson Section, Township, Range: S28, T14N, R5W  
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): None Slope (%): 1-3  
Subregion (LRR or MLRA): 18A N Lat: 42.6412 Long: -81.0615 Datum: NAD 83  
Soil Map Unit Name: W30mshat (shale) silt loam, 6-25% slope (wmc) NW1 classification: SCm (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (if needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**  

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

  
Remarks: a bulb stream  
**HYDROLOGY**  

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Other (Explain in Remarks)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u> (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks: <u>no evidence of seasonal ponding</u>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Sampling Point: w 2 / 1

SOIL

Sampling Point: wf 11

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Carroll County Farming City/County: Carroll Co. Sampling Date: 24 April 2008  
 Applicant/Owner: Adrienne Jones State: OH Sampling Point: W1 H 1  
 Investigator(s): Mike Misemore and Colin Wilton Section, Township, Range: S26, T14N, R9W  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3-7%  
 Subregion (1 HR or MIRA): L12 N Lat: 40 60 23 Long: -81 26 14 Datum: NAD 83  
 Soil Map Unit Name: Wetland (Sphagnum) 15-18% (W1 H 1) NWI classification: UPL  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (H6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (H2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (H5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquilard (D3)
<input type="checkbox"/> Aquatic Fauna (H13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
(includes capillary fringe)		

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

Remarks:
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## VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W1 H 1

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
1. <u>Pinus strobus</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	
2. <u>Ulmus rubra</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	Prevalence Index worksheet: Total % Cover of: <u>40</u> Multiply by: OBL species <u>          </u> x 1 = <u>          </u> FACW species <u>          </u> x 2 = <u>          </u> FAC species <u>          </u> x 3 = <u>          </u> FACU species <u>          </u> x 4 = <u>          </u> UPL species <u>          </u> x 5 = <u>          </u> Column Totals: <u>          </u> (A) <u>          </u> (B) Prevalence Index = B/A = <u>          </u>
3. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
4. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
6. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
50% of total cover: <u>20</u> 20% of total cover: <u>8</u>				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
Sapling/Shrub Stratum (Plot size: <u>15'</u> )				
1. <u>Rosa multiflora</u>	<u>45</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Rubus occidentalis</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>UPL</u>	
3. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
4. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
5. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
7. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
8. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
9. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
10. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
50% of total cover: <u>25</u> 20% of total cover: <u>10</u>				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
Herb Stratum (Plot size: <u>5'</u> )				
1. <u>Urtica dioica</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Urtica dioica</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	
3. <u>Rosa multiflora</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
4. <u>Urtica dioica</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	
5. <u>Cornus amomum</u>	<u>2</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. <u>Cornus canadensis</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FAW</u>	
7. <u>Urtica dioica</u>	<u>2</u>	<input checked="" type="checkbox"/>	<u>UPL</u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
8. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
9. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
10. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
50% of total cover: <u>13</u> 20% of total cover: <u>5.2</u>				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: <u>30'</u> )				
1. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
3. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
4. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
5. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. <u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	
50% of total cover: <u>          </u> 20% of total cover: <u>          </u>				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
Remarks: (Include photo numbers here or on a separate sheet.)				

Sampling Point: Lot 4

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Cecil County Energy City/County: Cecil Co Sampling Date: 24 April 2013  
 Applicant/Owner: Advanced Power State: OH Sampling Point: W15  
 Investigator(s): Mike Mussomeli and Leslie Wilton Section, Township, Range: S28, T14N, R9W  
 Landform (hillslope, terrace, etc.): diverging slope Local relief (concave, convex, none): convex Slope (%): 1-7  
 Subregion (LRR or MLRA): LRA 2 Lat: 40 6 60 Long: -81 05 57 Datum: NAD 83  
 Soil Map Unit Name: Glendon silt loam, 3-15% slope (68C) NWI classification: PEM (outwash)  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: <u>W15 both banks of perennial stream</u>			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators (minimum of one is required; check all that apply)</b> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<b>Secondary Indicators (minimum of two required)</b> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0.25"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>5"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: <u>- surface water in portion of wetland</u>		

Sampling Point: w4 J

SOIL

Sampling Point: W4 I

US Army Corps of Engineers

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Corbett County, Georgia City/County: Corbett Co Sampling Date: 24 April 2007  
 Applicant/Owner: Johnson Power State: GA Sampling Point: 606 E up  
 Investigator(s): Mike Massimelli and John Kilgus Section, Township, Range: S28, T14N, R5W  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 7-10  
 Subregion (LRR or MLRA): LAR IV Lat: 32.6069 Long: -81.0501 Datum: NAD 83  
 Soil Map Unit Name: Chickamauga silt loam, 0 to 15% slopes (6.6C) NWI classification: UPL  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators (minimum of one is required; check all that apply)</b> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B8) <input type="checkbox"/> Aquatic Fauna (B13)		<b>Secondary Indicators (minimum of two required)</b> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (A10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Strressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ Remarks: _____	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

## VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 606 E up

<b>Tree Stratum</b> (Plot size: <u>30</u> ) 1. <u>Quercus rubra</u> Absolute % Cover: <u>20</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FACW</u> 2. <u>Pinus strobus</u> Absolute % Cover: <u>15</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FACW</u> 3. <u>Alnus incana</u> Absolute % Cover: <u>10</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FAC</u> 4. _____ 5. _____ 6. _____ 7. _____ 50% of total cover: <u>22.5</u> = Total Cover 20% of total cover: <u>9</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B) <b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ <b>Hydrophytic Vegetation Indicators:</b> 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is >3.0 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation? (Explain) _____ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. _____ <b>Definitions of Four Vegetation Strata:</b> Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15</u> ) 1. <u>Quercus rubra</u> Absolute % Cover: <u>15</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FACW</u> 2. <u>Pinus strobus</u> Absolute % Cover: <u>10</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FACW</u> 3. <u>Alnus incana</u> Absolute % Cover: <u>5</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FAC</u> 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 50% of total cover: <u>22.5</u> = Total Cover 20% of total cover: <u>6</u>	
<b>Herb Stratum</b> (Plot size: <u>5</u> ) 1. <u>Polygonum persicaria</u> Absolute % Cover: <u>10</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FACW</u> 2. <u>Potamogeton amplifolius</u> Absolute % Cover: <u>5</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FACW</u> 3. <u>Aster spicatus</u> Absolute % Cover: <u>3</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>UPL</u> 4. <u>Potamogeton amplifolius</u> Absolute % Cover: <u>2</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FACW</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 50% of total cover: <u>20</u> = Total Cover 20% of total cover: <u>4</u>	
<b>Woody Vine Stratum</b> (Plot size: <u>30</u> ) 1. <u>Smilax latifolia</u> Absolute % Cover: <u>5</u> Dominant Species? <input checked="" type="checkbox"/> Status: <u>FAC</u> 2. _____ 3. _____ 4. _____ 5. _____ 50% of total cover: <u>5</u> = Total Cover 20% of total cover: <u>1</u>	
Remarks: (Include photo numbers here or on a separate sheet.) _____	

Sampling Point: W-1

US Army Corps of Engineers

Project/Site: Cornell County Energy City/County: Cornell Co Sampling Date: 29 April 2013  
Applicant/Owner: Advanced Power State: OH Sampling Point: 665  
Investigator(s): Mike Messersmith and John V. Lona Section, Township, Range: S28 T94N R5W  
Landform (hillslope, terrace, etc.): down-sloping Local relief (concave, convex, none): convex Slope (%): 1-3  
Subregion (I, RR or MIRA): 62R W Lat: 40.6669 Long: -81.0557 Datum: NAD 83  
Soil Map Unit Name: Glendale silt loam 3 to 8 ft: steep (66C) NWI classification: PEM (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B5)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Water-Stained Leaves (B9)			
<input type="checkbox"/> Aquatic Fauna (B13)			

Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	9"
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	3"
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:
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VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WLS

Tree Stratum (Plot size: <u>15' x 15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
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Project/Site: Carroll County Trng. 24 City/County: Carroll Co. Sampling Date: 24 Apr 2013  
 Applicant/Owner: Adrian P. Kiser State: GA Sampling Point: W6 J<sub>2</sub>  
 Investigator(s): Philip Mossman, and Cedric Viloria Section, Township, Range: S23 T14N R6W  
 Landform (hillslope, terrace, etc.): hilltop/summit Local relief (concave, convex, none): convex Slope (%): 4-7  
 Subregion (I RR or MIRA): CR 2 Lat: 30.665 Long: -81.555 Datum: NAD 83  
 Soil Map Unit Name: Chert silt loam, 3-8% clay (6fC) NWI classification: wp  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Remarks:					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (I21)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Microtopographic Relief (I14)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Iron Deposits (B5)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Water-Stained Leaves (B9)			
<input type="checkbox"/> Aquatic Fauna (B13)			
<b>Field Observations:</b>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
(includes capillary fringe)		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Tree Stratum (Plot size: 30)		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <i>Alnus incana</i>		20	✓	Fac	Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2.					Total Number of Dominant Species Across All Strata:	4 (B)
3.					Percent of Dominant Species That Are OBL, FACW, or FAC:	25 (A/B)
4.						
5.						
6.						
7.						
		30 = Total Cover			Prevalence Index worksheet:	
50% of total cover: 10		70% of total cover: 7			Total % Cover of:	Multiply by:
Sapling/Shrub Stratum (Plot size: 15)					OBL species	x 1 =
1. <i>Rosa multiflora</i>		30	✓	FACW	FACW species	x 2 =
2. <i>Rubus coccineus</i>		10	✓	UPL	FAC species	x 3 =
3.					FACU species	x 4 =
4.					UPL species	x 5 =
5.					Column Totals:	(A) (B)
6.					Prevalence Index - B/A =	
7.					Hydrophytic Vegetation Indicators:	
8.					1 - Rapid Test for Hydrophytic Vegetation	
9.					2 - Dominance Test is >50%	
					3 - Prevalence Index is >3.0 <sup>1</sup>	
					4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
Herb Stratum (Plot size: 5)					<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. <i>Potamogeton sp.</i>		40	✓		Definitions of Four Vegetation Strata:	
2. <i>Rosa multiflora</i>		15	✓	FACW	Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
3. <i>Glycerhiza hederacea</i>		5		FACW	Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
4.					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
5.					Woody vine - All woody vines greater than 3.28 ft in height.	
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50% of total cover: 32		20% of total cover: 12			Hydrophytic Vegetation Present? Yes No	
Woody Vine Stratum (Plot size: 30)						
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50% of total cover: 32		20% of total cover: 12				
Remarks: (Include photo numbers here or on a separate sheet.)						
4 - unidentified grass sp. not included in calculations						

Sampling Point: W. J. J.

US Army Corps of Engineers

Project/Site: Carell locality, Emery City/County: Carell Co Sampling Date: 24 Apr. 2013  
Applicant/Owner: Adrian Power State: CA Sampling Point: W. K  
Investigator(s): Mike Mueserwald and Colin Pittman Section, Township, Range: S2S, 71N, R5W  
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-3  
Subregion (LRR or MLRA): LRA 2 Lat: 40.6031 Long: -81.0595 Datum: NAD 83  
Soil Map Unit Name: Wentworth-Canton silt loam, 15-25% slope (wmd) NWI classification: p3S (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

HYDROLOGY

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Saturation Present? Yes ☐ No ☐ Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes ☒ No ☐

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

US Army Corps of Engineers

Sampling Point: W 1 K

SOFL

Sampling Point: W6 K

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Cummins County Energy City/County: Cummins Co. Sampling Date: 21 Apr 2018  
 Applicant/Owner: Johnson Power State: OK Sampling Point: W-1 R-1  
 Investigator(s): Mike Monaghan and Colton Wilson Section, Township, Range: S26 T14N R5W  
 Landform (hillslope, terrace, etc.): hillslope/embankment Local relief (concave, convex, none): convex Slope (%): 5-7  
 Subregion (LRR or MLRA): LRA 2 Lat: 46.6084 Long: -81.0572 Datum: WGS 84  
 Soil Map Unit Name: Wetland - Lixisols with humus, B-257-5 (W-0) NWI classification: W1  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (H2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (H7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>      </u>	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>      </u>	
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>      </u>	

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

Remarks:
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## VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W-1 & R-1

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)
1. <u>Populus sp.</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>OBL</u>	
2. <u>Viburnum sp.</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
50% of total cover: <u>25</u> = Total Cover 20% of total cover: <u>5</u>				Prevalence Index worksheet: Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x 1 = <u>      </u> FACW species <u>      </u> x 2 = <u>      </u> FAC species <u>      </u> x 3 = <u>      </u> FACU species <u>      </u> x 4 = <u>      </u> UPI species <u>      </u> x 5 = <u>      </u> Column Totals: <u>      </u> (A) <u>      </u> (B)  Prevalence Index = B/A = <u>      </u>
Sapling/Shrub Stratum (Plot size: <u>15'</u> )				
1. <u>Rosa multiflora</u>	<u>35</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is <3.0 <sup>1</sup> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2. <u>Rubus coccineus</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
3. <u>Sambucus racemosa</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
4. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
50% of total cover: <u>45</u> = Total Cover 20% of total cover: <u>9</u>				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  Definitions of Four Vegetation Strata:  Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  Sapling/Shrub – Woody plants, excluding vines, 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 Vine – All woody vines greater than 3.28 ft in height.
Herb Stratum (Plot size: <u>5'</u> )				
1. <u>Chytocis virginiana</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Rosa multiflora</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
3. <u>Vicia sp.</u>	<u>2</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
4. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
11. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
50% of total cover: <u>22.5</u> = Total Cover 20% of total cover: <u>9</u>				Woody Vine Stratum (Plot size: <u>30'</u> )
Woody Vine Stratum (Plot size: <u>30'</u> )				
1. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>	
50% of total cover: <u>      </u> = Total Cover 20% of total cover: <u>      </u>				

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

Sampling Point: UVC Rwy

US Army Corps of Engineers

## US Army Corps of Engineers

Sampling Point: wd 2

SOIL

Sampling Point: W1 C

[illegible]

Project/Site: Cassell County Emergency City/County: Cassell Co. Sampling Date: 29 Apr. 2013  
Applicant/Owner: Advanced Home State: OH Sampling Point: WEL 02  
Investigator(s): Mike Messeri and Craig Wilson Section, Township, Range: S46, T14N, R9W  
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 15-20  
Subregion (LRR or MLRA): LRR n Lat: 40 60 49 Long: -81 05 59 Datum: NAD83  
Soil Map Unit Name: Chambers silt loam, 3-8% slopes (CSC) NWI classification: UGc  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Yes ☒ No ☐  
Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

Weiland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (H7)		<input type="checkbox"/> Shallow Aquifer (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> FAC-Neutral Test (D5)

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Remarks:

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Pinus strobus</i>	25	✓	FACW
2. <i>Quercus rubra</i>	15	✓	FACW
3. <i>Ulmus rubra</i>	5		
4.			
5.			
6.			
7.			
45 = Total Cover			
50% of total cover: 22.5			70% of total cover: 9

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Pinus strobus</i>	10	✓	FACW
2. <i>Quercus rubra</i>	10	✓	FACW
3. <i>Acer rubrum</i>	5		UPL
4. <i>Rubus allegheniensis</i>	5		FACW
5. <i>Linnaea borealis</i>	2		FAC
6.			
7.			
8.			
9.			
32 = Total Cover			
50% of total cover: 16			70% of total cover: 6.4

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Polygonum virginicum</i>	10	✓	FACW
2. <i>Rumex crispus</i>	5	✓	FACW
3. <i>Claytonia virginica</i>	5	✓	FAC
4. <i>Polygonum sp.</i>	3		
5.			
6.			
7.			
8.			
9.			
10.			
11.			
23 = Total Cover			
50% of total cover: 11.5			70% of total cover: 6.6

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Toxicaria radicans</i>	5	✓	FAC
2.			
3.			
4.			
5.			
5 = Total Cover			
50% of total cover: 2.5			70% of total cover: 1

Sampling Point: 146 h US

U.S. Army Corps of Engineers

Project/Site: Carroll County Emergency City/County: Carroll Co Sampling Date: 27 April 2015  
Applicant/Owner: Adrianek Power State: OH Sampling Point: 26 m  
Investigator(s): Mike Mazzanti and Cedric Vance Section, Township, Range: 32 S, 14 W, R5 W  
Landform (hill/slope, terrace, etc.): Grassland Local relief (concave, convex, none): convex Slope (%): 3-7  
Subregion (LRR or MLRA): LRR Lat: 40.6067 Long: -81.0559 Datum: NAD 83  
Soil Map Unit Name: Chloris silt loam 3-8% slopes (LRR) NWI classification: peem (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Thin Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Microtopographic Relief (D4)	<input checked="" type="checkbox"/> FAC Neutral Test (D5)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Iron Deposits (B5)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Water-Stained Leaves (B9)			
<input type="checkbox"/> Aquatic Fauna (B13)			

<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



Sampling Point: W2 m

SOIL

Sampling Point: wt m

US Army Corps of Engineers

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Council Co. Arts Center City/County: Council Co. Sampling Date: 24 April 2018  
 Applicant/Owner: Adams Co. Power State: OH Sampling Point: W2 m up  
 Investigator(s): Mike Meserole and Katie Wilson Section, Township, Range: S23, T14N, R5W  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 10-17  
 Subregion (LRR or MLRA): 118B Lat: 40.6071 Long: -81.0562 Datum: NAD 83  
 Soil Map Unit Name: Wentworth - Cushman silt loam, 15-25% slopes (drain) NWI classification: UPL

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

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

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

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Filled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u>	
(includes capillary fringe)		

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

Remarks:
----------

## VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W2 m up

Tree Stratum (Plot size: <u>30'</u> )			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus rubra</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>Prunus serotina</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
3. <u>Viburnum acer</u>	<u>5</u>		
4. <u>                                  </u>			
5. <u>                                  </u>			
6. <u>                                  </u>			
7. <u>                                  </u>			
50% of total cover: <u>25</u>		20% of total cover: <u>10</u>	
Total Cover = <u>50</u>			
Sapling/Shrub Stratum (Plot size: <u>15'</u> )			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>Rubus allegheniensis</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
3. <u>Prunus serotina</u>	<u>5</u>		
4. <u>Viburnum acer</u>	<u>5</u>		
5. <u>                                  </u>			
6. <u>                                  </u>			
7. <u>                                  </u>			
8. <u>                                  </u>			
9. <u>                                  </u>			
50% of total cover: <u>20</u>		20% of total cover: <u>10</u>	
Total Cover = <u>40</u>			
Herb Stratum (Plot size: <u>5'</u> )			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Polystichum acrostichoides</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>Trisetum americanum</u>	<u>2</u>		<u>FAC</u>
3. <u>Phytolacca virginiana</u>	<u>2</u>		<u>FAC</u>
4. <u>Grass expanse</u>	<u>1</u>		<u>FAC</u>
5. <u>                                  </u>			
6. <u>                                  </u>			
7. <u>                                  </u>			
8. <u>                                  </u>			
9. <u>                                  </u>			
10. <u>                                  </u>			
11. <u>                                  </u>			
50% of total cover: <u>5</u>		20% of total cover: <u>3</u>	
Total Cover = <u>10</u>			
Woody Vine Stratum (Plot size: <u>30'</u> )			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Tricladium americanum</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>                                  </u>			
3. <u>                                  </u>			
4. <u>                                  </u>			
5. <u>                                  </u>			
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>	
Total Cover = <u>5</u>			

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

Dominance Test worksheet:	
Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
Total Number of Dominant Species Across All Strata:	<u>6</u> (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>16.67%</u> (A/B)
Prevalence Index worksheet:	
Total % Cover of:	Multiply by:
OBL species <u>          </u>	x 1 = <u>          </u>
FACW species <u>          </u>	x 2 = <u>          </u>
FAC species <u>          </u>	x 3 = <u>          </u>
FACU species <u>          </u>	x 4 = <u>          </u>
UPL species <u>          </u>	x 5 = <u>          </u>
Column Totals:	(A) <u>          </u> (B) <u>          </u>

Prevalence Index = B/A = <u>          </u>	
Hydrophytic Vegetation Indicators:	
1 - Rapid Test for Hydrophytic Vegetation	
7 - Dominance Test is >50%	
3 - Prevalence Index is >3.0 <sup>1</sup>	
4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

## Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---------------------------------	---

Sampling Point: W6 139 v1

US Army Corps of Engineers

Project/Site: Cornell Land Farming City/County: Cornell Co. Sampling Date: 2-14-1968  
Applicant/Owner: Alfred Ross State: Ill Sampling Point: W2 N  
Investigator(s): Dr. H. H. Henshaw and John H. Henshaw Section, Township, Range: S28, T4N, R5W  
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 0-3  
Subregion (LRR or MLRA): 28A Lat: 42.00N Long: -86.036 Datum: NAD 83  
Soil Map Unit Name: Wentworth (loessite with heavy to very strong wmp) NWI classification: pcm (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

HYDROLOGY

## Wetland Hydrology Indicators:

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

Sampling Point: w6 n

SOIL

Sampling Point: W2 N

US Army Corps of Engineers

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Curtis Woods Farming City/County: Curtis Co Sampling Date: 2-23-2018  
 Applicant/Owner: Arthur J. Reese State: OH Sampling Point: Wet 101  
 Investigator(s): John H. Hargrave and Colie V. Jones Section, Township, Range: S28, T14N, R5W  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 2-5  
 Subregion (I, II, or III): II Lat: 40° 6' 21" Long: -81° 05' 53" Datum: NAD 83  
 Soil Map Unit Name: W3000 (shale) - 10-25% slopes (mod) NWI classification: UPL  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (H10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

## VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: Wet 101

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus strobus</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
2. <u>Quercus rubra</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
3. <u>Carya ovata</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
4. _____			
5. _____			
6. _____			
7. _____			
50% of total cover: <u>25</u> = Total Cover			
20% of total cover: <u>10</u>			
Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
2. <u>Ulmus americana</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
3. <u>Prunus serotina</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
50% of total cover: <u>12.5</u> = Total Cover			
20% of total cover: <u>5</u>			
Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Polygonum persicaria</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
2. <u>Cornus canadensis</u>	<u>7</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
3. <u>Rosa multiflora</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
4. <u>Viburnum acerifolium</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
5. <u>Galium aparine</u>	<u>2</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
6. <u>Prunus serotina</u> (seedling)	<u>2</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% of total cover: <u>4.5</u> = Total Cover			
20% of total cover: <u>3.8</u>			
Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% of total cover: _____ = Total Cover			
20% of 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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14.3 (A/B)

Prevalence Index worksheet:

Total % Cover of: \_\_\_\_\_ Multiply by:

OBL species 1 x 1 = \_\_\_\_\_

FACW species 2 x 2 = \_\_\_\_\_

FAC species 3 x 3 = \_\_\_\_\_

FACU species 4 x 4 = \_\_\_\_\_

UPL species 5 x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is <3.0

4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Hydrophytic Vegetation? (Explain)

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

Definitions of Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ☒

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

Sampling Point: 4112

[illegible]

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Cecil County Maryland City/County: Cecil Co. Sampling Date: 25 April 2008  
Applicant/Owner: Alfred Power State: MD Sampling Point: 2A-C  
Investigator(s): Mike Hruschka and Colleen Wilson Section, Township, Range: S28, T14N, R5W  
Landform (hillslope, terrace, etc.): Levee/wall slope Local relief (concave, convex, none): convex Slope (%): 3-5  
Subregion (LRR or MLRA): LRR IV Lat: 39 00 34 Long: -78 06 16 Datum: NAD 83  
Soil Map Unit Name: Liberty silt loam s-sy, shps NWI classification: PSS  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Remarks:	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6-8"</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4"</u> (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks: <u>Soil water in places of wetland</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Sampling Point: 642 C

Tree Stratum (Plot size: <u>30'</u> )		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1.					Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2.					Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3.					Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4.					Prevalence Index worksheet:	
5.					Total % Cover of:	Multiply by:
6.					OBL species	x 1 =
7.					FACW species	x 2 =
8.					FAC species	x 3 =
9.					FACU species	x 4 =
10.					UPI species	x 5 =
11.					Column Totals:	(A) (B)
50% of total cover: <u>30'</u> 20% of total cover: <u>12'</u>				Prevalence Index = B/A =		
Sapling/Shrub Stratum (Plot size: <u>15'</u> )						
1.	<u>Quercus nigra</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	Hydrophytic Vegetation Indicators:	
2.	<u>Rosa multiflora</u>	<u>5</u>		<u>FACW</u>	1 - Rapid Test for Hydrophytic Vegetation:	
3.	<u>Ulmus rubra</u>	<u>5</u>		<u>FAC</u>	2 - Dominance Test is >50%	
4.					3 - Prevalence Index is >3.0	
5.					4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)	
6.					Problematic Hydrophytic Vegetation (Explain)	
7.					Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
8.					Definitions of Four Vegetation Strata:	
9.					Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
10.					Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
11.					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
50% of total cover: <u>30'</u> 20% of total cover: <u>12'</u>				Woody vine - All woody vines greater than 3.28 ft in height.		
Herb Stratum (Plot size: <u>5'</u> )						
1.	<u>Asplenium platyneuron</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
2.	<u>Carex lasiocarpa</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACW</u>		
3.	<u>Quercus prinus</u>	<u>5</u>		<u>FACU</u>		
4.	<u>Rubus cuneifolius</u>	<u>5</u>		<u>FAC</u>		
5.						
6.						
7.						
8.						
9.						
10.						
11.						
50% of total cover: <u>15'</u> 20% of total cover: <u>6'</u>				Remarks: (Include photo numbers here or on a separate sheet.)		
Woody Vine Stratum (Plot size: <u>3'</u> )						
1.						
2.						
3.						
4.						
5.						
50% of total cover: <u>30'</u> 20% of total cover: <u>12'</u>						

Sampling Point: 36403

[illegible]

# WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Cureitt County, Georgia City/County: Cureitt Co Sampling Date: 25 April 2018  
 Applicant/Owner: \_\_\_\_\_ State: GA Sampling Point: we 01  
 Investigator(s): Mike Atkinson, Local College, Vicksburg Section, Township, Range: 328, 714N, R5W  
 Landform (hillslope, terrace, etc.): Roll/Concave Local relief (concave, convex, none): Concave Slope (%): 3-7  
 Subregion (LRR or MLRA): LRR 14 Lat: 32.614 Long: -81.0614 Datum: NAD 83  
 Soil Map Unit Name: Cashden - heavy silt loam, 3-8% slope (LRR) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation ☒ Soil ☒ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>		
Remarks: <u>In Cureitt</u>			

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required):
Primary Indicators (minimum of one is required; check all that apply):		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C5)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (H7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	

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

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

Remarks:

## VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point: we 01

Tree Stratum (Plot size: <u>3'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
50% of total cover: _____ 20% of total cover: _____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
50% of total cover: _____ 20% of total cover: _____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is <3.0 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <u><i>Yucca filamentosa</i></u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
2. <u><i>Baccharis vulgaris</i></u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
3. <u><i>Spartina patens</i></u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>UPL</u>	
4. <u><i>Panicum sp.</i></u>	<u>2</u>	<input checked="" type="checkbox"/>	<u>UPL</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
50% of total cover: <u>6.5</u> 20% of total cover: <u>2.6</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>3'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Definitions of Four Vegetation Strata: Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub - Woody plants, excluding vines, 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 vine - All woody vines greater than 3.28 ft in height.
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
50% of total cover: _____ 20% of total cover: _____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				



Sampling Point: W2 ✓

[illegible]

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: <u>Current County Energy</u>		City/County: <u>Current Co.</u>		Sampling Date: <u>25 April 2017</u>	
Applicant/Owner: <u>Advanced Power</u>		State: <u>CA</u>		Sampling Point: <u>WE 8</u>	
Investigator(s): <u>John P. Rosenblatt and John Wilson</u>		Section, Township, Range: <u>S28, T14N, R5W</u>			
Landform (hillslope, terrace, etc.): <u>terrace</u>		Local relief (concave, convex, none): <u>concave</u>		Slope (%): <u>2-4</u>	
Subregion (LRR or MLRA): <u>LRR 4</u>		Lat: <u>34° 05' N</u>		Long: <u>-117° 05' W</u>	
Datum: <u>NAD 83</u>					
Soil Map Unit Name: <u>Buckley silt loam, 15-25% slopes (Bk0)</u>		NW1 classification: <u>PEM (not mapped)</u>			
Are climatic / hydrologic conditions on the site typical for this time of year? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (If no, explain in Remarks.)					
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed? Are "Normal Circumstances" present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic? (If needed, explain any answers in Remarks.)					
<b>SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.</b>					
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
Remarks: <u>adj to stream</u>					

<b>HYDROLOGY</b>	
<b>Wetland Hydrology Indicators:</b>	
<b>Primary Indicators (minimum of one is required; check all that apply)</b>	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Water Marks (H1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (H4)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input checked="" type="checkbox"/> Water-Stained Leaves (H9)	
<input type="checkbox"/> Aquatic Fauna (B13)	
<b>Secondary Indicators (minimum of two required)</b>	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Clayfish Burrows (C8)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Crayfish Holes (C8)
<input type="checkbox"/> Slanted or Stressed Plants (D1)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquifers (D3)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>	
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0.15"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2"</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u>	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <u>surface water in portions of wetland</u>	

Sampling Point: W 2 1<sup>st</sup>

SOIL

Sampling Point:  $w \in \mathcal{F}$

Eastern Mountains and Piedmont – Version 2.0

Project/Site: Carroll County Forest City/County: Carroll Co Sampling Date: 25 April 2013  
Applicant/Owner: Advanced Forest State: OH Sampling Point: W2 P 1P  
Investigator(s): Mike Messing and Corbin Viten Section, Township, Range: S2E, T14N, R2W  
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 6-10%  
Subregion (LRR or MLRA): LRR n Lat: 40.6046 Long: 81.0705 Datum: NAD 83  
Soil Map Unit Name: B.R. shaly silt. loam 15-25% slopes (BKO) NWI classification: CPL

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

**SUMMARY OF FINDINGS** – Attach site map showing sampling point locations, transects, important features, etc.

[illegible]

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<p>1. Frequency of water saturation</p> <p>2. Duration of water saturation</p> <p>3. Depth of water saturation</p> <p>4. Soil moisture</p> <p>5. Soil water table</p> <p>6. Soil water content</p> <p>7. Soil water potential</p> <p>8. Soil water salinity</p> <p>9. Soil water pH</p> <p>10. Soil water temperature</p> <p>11. Soil water conductivity</p> <p>12. Soil water oxygen content</p> <p>13. Soil water nitrogen content</p> <p>14. Soil water phosphorus content</p> <p>15. Soil water sulfur content</p> <p>16. Soil water iron content</p> <p>17. Soil water manganese content</p> <p>18. Soil water zinc content</p> <p>19. Soil water copper content</p> <p>20. Soil water selenium content</p> <p>21. Soil water boron content</p> <p>22. Soil water iodine content</p> <p>23. Soil water bromine content</p> <p>24. Soil water fluoride content</p> <p>25. Soil water chloride content</p> <p>26. Soil water sulfate content</p> <p>27. Soil water nitrate content</p> <p>28. Soil water phosphate content</p> <p>29. Soil water silicate content</p> <p>30. Soil water carbonate content</p> <p>31. Soil water bicarbonate content</p> <p>32. Soil water ammonium content</p> <p>33. Soil water nitrite content</p> <p>34. Soil water nitrate content</p> <p>35. Soil water nitrite content</p> <p>36. Soil water nitrate content</p> <p>37. Soil water nitrite content</p> <p>38. Soil water nitrate content</p> <p>39. Soil water nitrite content</p> <p>40. Soil water nitrate content</p>	<p>1. Soil water table</p> <p>2. Soil water content</p> <p>3. Soil water potential</p> <p>4. Soil water salinity</p> <p>5. Soil water pH</p> <p>6. Soil water temperature</p> <p>7. Soil water conductivity</p> <p>8. Soil water oxygen content</p> <p>9. Soil water nitrogen content</p> <p>10. Soil water phosphorus content</p> <p>11. Soil water sulfur content</p> <p>12. Soil water iron content</p> <p>13. Soil water manganese content</p> <p>14. Soil water zinc content</p> <p>15. Soil water copper content</p> <p>16. Soil water selenium content</p> <p>17. Soil water boron content</p> <p>18. Soil water iodine content</p> <p>19. Soil water bromine content</p> <p>20. Soil water fluoride content</p> <p>21. Soil water chloride content</p> <p>22. Soil water sulfate content</p> <p>23. Soil water nitrate content</p> <p>24. Soil water phosphate content</p> <p>25. Soil water silicate content</p> <p>26. Soil water carbonate content</p> <p>27. Soil water bicarbonate content</p> <p>28. Soil water ammonium content</p> <p>29. Soil water nitrite content</p> <p>30. Soil water nitrate content</p> <p>31. Soil water nitrite content</p> <p>32. Soil water nitrate content</p> <p>33. Soil water nitrite content</p> <p>34. Soil water nitrate content</p> <p>35. Soil water nitrite content</p> <p>36. Soil water nitrate content</p> <p>37. Soil water nitrite content</p> <p>38. Soil water nitrate content</p> <p>39. Soil water nitrite content</p> <p>40. Soil water nitrate content</p>

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

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	Absolute Dominant Indicator	Dominance Test worksheet:
--	-----------------------------	---------------------------

$\frac{470}{100} = \text{Total Cover}$		<u>Total % Cover of:</u>	<u>Multiply by:</u>
$2 \frac{470}{100} = \text{Total Cover}$		ORL species:	$\times 1 =$

1. *B. ...* 12 ✓ SAW FAC species x 3 =

3. \_\_\_\_\_ UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

5. \_\_\_\_\_ Prevalence Index = B/A = \_\_\_\_\_

8. \_\_\_\_\_ 1. Rapid Test for Hydrophytic Vegetation  
\_\_\_\_\_ 2. Penetration Test is - 50%

$$\frac{\text{Number of species}}{\text{Number of individuals}} = \text{Total Cover}$$

1. <i>Protosiphon</i> <i>salina</i>	5	✓	FAIR	— Problematic Hydrophytic Vegetation? (Explain)
-------------------------------------	---	---	------	---

3. \_\_\_\_\_

5. \_\_\_\_\_ Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or

8. \_\_\_\_\_

10. _____	... ..	m) tall.
-----------	--------	----------

50% of total cover: 5 - 20% of total cover: 3

1. \_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_ = Total Cover

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

US Army Corps of Engineers Eastern Mountains and Piedmont – Version 2.0

Sampling Point: W6 Puff

US Army Corps of Engineers

Project/Site: Carroll County Energy City/County: Carroll Co Sampling Date: 25 Apr. 1993  
Applicant/Owner: Advanced Power State: OH Sampling Point: 662Q  
Investigator(s): Mike Hines, and Gail V. Lane Section, Township, Range: S28, T14N, R5W  
Landform (hillslope, terrace, etc.): lower bench Local relief (concave, convex, none): convex Slope (%): 1-3  
Subregion (LRR or MLRA): 682a Lat: 40 00' N Long: -81 07' W Datum: NAD 83  
Soil Map Unit Name: B3-R3, shaly silt loam, 15-45% slopes (BKO) NWI classification: 2em (not mapped)  
Are climatic & hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

HYDROLOGY

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present? Yes ☒ No ☐ Depth (inches): 4"

Saturation Present? Yes ☒ No ☐ Depth (inches): 1"

(includes capillary fringe)

**Wetland Hydrology Present?** Yes ☒ No ☐

US Army Corps of Engineers

Sampling Point: 122 Q

SOIL

Sampling Point: 446 4

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Cumt County Energy City/County: Cumt Co Sampling Date: 25 April 2018  
 Applicant/Owner: Alumet Power State: OH Sampling Point: W 6-1  
 Investigator(s): Mik Messersmith and John Wilson Section, Township, Range: S26, T19N, R5W  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 10-12  
 Subregion (LRR or MLRA): LAR 2 Lat: 40.6045 Long: -81.0766 Datum: NAD83  
 Soil Map Unit Name: Bucks sandy silt loam, 15-15% slopes (AR0) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (H8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (H4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B8)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>      </u>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>      </u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>      </u>	

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

Remarks:

## VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W 6-1

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus rubra</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
2. <u>Aspen</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
3. <u>Alnus incana</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
4. <u>Quercus alba</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
5. <u>Rhus glabra</u>	<u>5</u>	<input type="checkbox"/>	<u>      </u>
6. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
7. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
50% of total cover: <u>65</u> = Total Cover			
20% of total cover: <u>13</u>			
Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Ulmus rubra</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
2. <u>Rosa multiflora</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
3. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
4. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
5. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
6. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
7. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
8. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
9. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
10. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
11. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
50% of total cover: <u>10</u> = Total Cover			
20% of total cover: <u>2</u>			
Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Cordyline constricta</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
2. <u>Polygonum verticillatum</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
3. <u>Polygonum phytoliteoides</u>	<u>3</u>	<input checked="" type="checkbox"/>	<u>FAW</u>
4. <u>Polygonum sp</u>	<u>3</u>	<input type="checkbox"/>	<u>      </u>
5. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
6. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
7. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
8. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
9. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
10. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
11. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
50% of total cover: <u>21</u> = Total Cover			
20% of total cover: <u>4.2</u>			
Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
2. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
3. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
4. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
5. <u>      </u>	<u>      </u>	<input type="checkbox"/>	<u>      </u>
50% of total cover: <u>      </u> = Total Cover			
20% of total cover: <u>      </u>			

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

Dominance Test worksheet:	
Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)
Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>25</u> (A/B)
Prevalence Index worksheet:	
Total % Cover of:	Multiply by:
OBL species <u>      </u> x 1 = <u>      </u>	
FACW species <u>      </u> x 2 = <u>      </u>	
FAC species <u>      </u> x 3 = <u>      </u>	
FACU species <u>      </u> x 4 = <u>      </u>	
UPL species <u>      </u> x 5 = <u>      </u>	
Column Totals:	(A) <u>      </u> (B) <u>      </u>

Prevalence Index = B/A = <u>      </u>	
Hydrophytic Vegetation Indicators:	
<u>1</u> - Rapid Test for Hydrophytic Vegetation	
<u>2</u> - Dominance Test is >50%	
<u>3</u> - Prevalence Index is ≥3.0 <sup>1</sup>	
<u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

## Definitions of Four Vegetation Strata:

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

**Sapling/Shrub** – Woody plants, excluding vines, 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 vine** – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---------------------------------	---

Sampling Point: W2 G up

US Army Corps of Engineers

Project/Site: Crest County Energy City/County: Crest Co Sampling Date: 20 Apr 2013  
Applicant/Owner: Advanced Power State: RI Sampling Point: W2 R  
Investigator(s): Mike Plessner, Jeff Patis, & Lisa Section, Township, Range: 32S, 114W, 65N  
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-3  
Subregion (I RR or M1 HA): LRA 20 Lat: 40 6051 Long: -71 0648 Datum: NAD 83  
Soil Map Unit Name: Bucks shaly silt loam, 15-20% slopes (BKO) NWI classification: PSS (not mapped)  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

## HYDROLOGY

US Army Corps of Engineers

Sampling Point: 4, 6, R

SOIL

Sampling Point: in R

US Army Corps of Engineers



Project/Site: Cornell County Energy City/County: Cornell Co Sampling Date: 25 Apr 2008  
Applicant/Owner: Advanced Power State: WI Sampling Point: we 2 up  
Investigator(s): Mike Mazzanti and Celtic Utens Section, Township, Range: S28, T14N, R5W  
Landform (hill/slope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 15-17  
Subregion (LRR or MLRA): BR 6 Lat: 42.653 Long: -81.099 Datum: NAD 83  
Soil Map Unit Name: Bloxwich silt loam, 15-25% slope (BXO) NW1 classification: upl  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
Are Vegetation       , Soil       , or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
Are Vegetation       , Soil       , or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)  
**SUMMARY OF FINDINGS** – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes _____	No <input checked="" type="checkbox"/>			
Remarks:					

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquated (D3)	
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Tree Stratum (Plot size: 30')				Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1.	<i>Pinus strobus</i>			40	✓	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2.							Total Number of Dominant Species Across All Strata:	4 (B)
3.							Percent of Dominant Species That Are OBL, FACW, or FAC:	25 (A/B)
4.							Prevalence Index worksheet:	
5.							Total % Cover of:	Multiply by:
6.							OBL species	x 1 =
7.							FACW species	x 2 =
8.							FAC species	x 3 =
9.							FACU species	x 4 =
10.							UPL species	x 5 =
11.							Column Totals:	(A) (B)
50% of total cover: 20 = Total Cover 20% of total cover: 40							Prevalence Index = B/A =	
Sapling/Shrub Stratum (Plot size: 15')							Hydrophytic Vegetation Indicators:	
1.	<i>Acer pensilvanicum</i>			10	✓	FAC	1 - Rapid Test for Hydrophytic Vegetation	
2.	<i>Rosa multiflora</i>			5	✓	FACU	2 - Dominance Test is >50%	
3.							3 - Prevalence Index is ≤3.0 <sup>1</sup>	
4.							4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
5.							Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.							<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7.							Definitions of Four Vegetation Strata:	
8.							Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
9.							Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
10.							Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
11.							Woody vine - All woody vines greater than 3.28 ft in height.	
50% of total cover: 7.5 = Total Cover 20% of total cover: 15							Hydrophytic Vegetation Present? Yes No ✓	
Herb Stratum (Plot size: 5')							Remarks: (Include photo numbers here or on a separate sheet.)	
1.	<i>Ailanthus altissima</i>			5	✓	FACU		
2.	<i>Stellaria media</i>			3		UPL		
3.	<i>Linum catharticum</i>			3		UPL		
4.	<i>Impatiens capensis</i>			2		FACW		
5.	<i>Ceanothus americanus</i>			3		FACU		
6.								
7.								
8.								
9.								
10.								
11.								
50% of total cover: 7.5 = Total Cover 20% of total cover: 15								
Woody Vine Stratum (Plot size: 30')								
1.								
2.								
3.								
4.								
5.								
50% of total cover: = Total Cover 20% of total cover:								

Sampling Point: 422 R-1

Eastern Mountains and Piedmont – Version 2.0

## **APPENDIX B**

### **ORAM FORMS**

## Background Information

Name:	Mike Musumeci
Date:	23 April 2013
Affiliation:	Tetra Tech Inc
Address:	661 Anderson Dr, Pittsburgh, PA 15220
Phone Number:	412-920-7007
e-mail address:	mike.musumeci@tetra-tech.com
Name of Wetland:	A
Vegetation Community(ies):	PEM
HGM Class(es):	RIVERINE
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.	see attached map
Lat/Long or UTM Coordinate	40.6072, -81.02591
USGS Quad Name	Correll/40n
County	Correll Co.
Township	T14N
Section and Subsection	526, RSW
Hydrologic Unit Code	05010001
Site Visit	23 April 2013
National Wetland Inventory Map	Fig 30
Ohio Wetland Inventory Map	Fig 33
Soil Survey	Fig. d
Delineation report/map	attached

Name of Wetland:	A
Wetland Size (acres, hectares):	0.01 ac
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	<p>Emergent wetland abutting stream. Pipe from spring supports hydrology.</p>
Final score :	52
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>	

**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 I-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnsp>. 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	<b>Critical Habitat.</b> 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 17.85(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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 7/8 in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  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  Go to Question 9d	NO  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  Wetland is a Category 3 wetland  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings).</b> 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 graminaceous 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  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> 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, Ven Wert etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

Invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Typhum salicaria</i>	<i>Zizania elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cuckoo plantain</i>	<i>Carex alutica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex stricta</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buchananii</i>
<i>Phragmites australis</i>	<i>Deschampsia caespitosa</i>	<i>Carex triperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Eriophorum viridicarinatum</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarrethii</i>
<i>Ranunculus ficaria</i>	<i>Eriophorum viridicarinatum</i>	<i>Decodon verticillatus</i>	<i>Quercus pubescens</i>	<i>Gentiana andrewsii</i>
<i>Rhynchospora frangula</i>	<i>Gnaphalium spp.</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Labellia kalmii</i>	<i>Larix laricina</i>		<i>Lysichiton spicata</i>
<i>Typha glauca</i>	<i>Parnassia glauca</i>	<i>Nemophila mucronatus</i>		<i>Lysichiton quadriflorus</i>
	<i>Potamogeton fruticosus</i>	<i>Scheuchzeria palustris</i>		<i>Typhum alatum</i>
	<i>Rhynchospora alba</i>	<i>Sphagnum spp.</i>		<i>Pycnanthemum virginianum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium laciniatum</i>
	<i>Salix candida</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix myricoides</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix serotina</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Solidago ohioensis</i>	<i>Xyris difformis</i>		
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Currell Co. Energy Rater(s): mike plussing Date: 23 April 2013

## Metric 1. Wetland Area (size).

max 6 pts subtotal

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 <10.1ha) (4 pts)

☐ 3 to <10 acres (1.2 to <4ha) (3 pts)

☐ 0.3 to <3 acres (0.12 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)

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

max 14 pts subtotal

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

☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest. (5)

☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

## Metric 3. Hydrology.

max 30 pts subtotal

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

☒ High pH groundwater (5)

☒ Other groundwater (3)

☐ Precipitation (1)

☐ Seasonal/intermittent surface water (3)

☐ Perennial surface water (lake or stream) (5)

3b. Duration inundation/saturation. Score one or double check.

☐ Semi- to permanently inundated/saturated (4)

☐ Regularly inundated/saturated (3)

☐ Seasonally inundated (2)

☐ Seasonally saturated in upper 30cm (12in) (1)

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

☐ None or none apparent (12)

☒ Recovered (7)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

☐ point source (nonstormwater) filling/grading

☐ road bed/RR track

☐ dredging

☒ other rice/soybeans

## Metric 4. Habitat Alteration and Development.

max 20 pts subtotal

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

☒ None or none apparent (4)

☐ 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)

☐ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jim

Site: Currell Co. Energy Rater(s): mike plussing Date: 23 April 2013

## Metric 5. Special Wetlands.

max 10 pts 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, interspersions, microtopography.

max 20 pts subtotal

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

☐ Aquatic bed

☐ Emergent

☐ Shrub

☐ Forest

☐ Mudflats

☐ Open water

☐ Other

6b. horizontal (plan view) Interspersion. Select only one.

☐ High (5)

☐ Moderately high (4)

☒ Moderate (3)

☐ 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)

☐ Sparse 5-25% cover (-1)

☒ Nearly absent <5% cover (0)

☐ Absent (1)

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

☐ Vegetated hummocks/tussocks

☐ Coarse woody debris >15cm (6in)

☐ Standing dead >25cm (10in) dbh

☐ Amphibian breeding pools

**Vegetation 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 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

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <u>NO</u>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <u>NO</u>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <u>NO</u>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <u>NO</u>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <u>NO</u>	If yes, Category 1.
	Question 6. Bogs	YES <u>NO</u>	If yes, Category 3.
	Question 7. Fens	YES <u>NO</u>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <u>NO</u>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <u>NO</u>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <u>NO</u>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	<u>0</u>	
	Metric 2. Buffers and surrounding land use	<u>14</u>	
	Metric 3. Hydrology	<u>14</u>	
	Metric 4. Habitat	<u>13</u>	
	Metric 5. Special Wetland Communities	<u>0</u>	
	Metric 6. Plant communities, interspersed, microtopography	<u>6</u>	
	TOTAL SCORE	<u>52</u>	Category based on score breakpoints <u>2</u>

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<u>NO</u> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<u>NO</u> 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 Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<u>NO</u> 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?	<u>YES</u> Wetland is assigned to the appropriate category based on the scoring range	<u>NO</u> 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 Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<u>NO</u> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<u>NO</u> 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	<u>Category 2</u>	Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Complete Wetland Categorization Worksheet.



### Background Information

Name:	Michael Mussone/
Date:	23 April 2013
Affiliation:	Jet-Tech Inc
Address:	661 Anders Dr, Pittsburgh, PA 15220
Phone Number:	412-920 7007
e-mail address:	michael.mussone@jet-tech.com
Name of Wetland:	B
Vegetation Community(ies):	PEM
HGM Class(es):	Depressional
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	see attached report

Lat/Long or UTM Coordinate	40.6053 -81.0564
USGS Quad Name	400011N00
County	Crawford Co.
Township	T14N
Section and Subsection	528, RSW
Hydrologic Unit Code	05040001
Site Visit	23 April 2013
National Wetland Inventory Map	Fig 3A
Ohio Wetland Inventory Map	Fig. 31
Soil Survey	Fig. 1
Delineation report/map	attached

Name of Wetland:	B
Wetland Size (acres, hectares):	0.01 ac.
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
<p>Abuts stream; southern portion of wetland contains alderberry, northern portion emergent. Located at toe of slope.</p>	
Final score :	60
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
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.		<input checked="" type="checkbox"/>
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>	

**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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fans.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands</b> 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  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 8a
9a	<b>Lake Erie coastal and tributary wetlands</b> 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  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  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  Go to Question 9d	NO  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  Wetland is a Category 3 wetland  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> 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 graminaceous 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  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies</b> 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 Derby 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  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zizodensis elegans var. glauca</i>	<i>Calla palustris</i>	<i>Carex crysolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginifolia</i>	<i>Carex atlantica var. capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex etheroides</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex lasiocarpa</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex triperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarabellii</i>
<i>Ranunculus ficaria</i>	<i>Eriophorum vaginatum</i>	<i>Decodon verticillatus</i>	<i>Quercus pilulifera</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Gentiana spp.</i>	<i>Eriophorum vaginatum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Lobelia latifolia</i>	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha glauca</i>	<i>Parnassia glauca</i>	<i>Nemophila maculata</i>		<i>Lysimachia quadriflora</i>
	<i>Potentilla fruticosa</i>	<i>Sagittaria arifolia</i>		<i>Lythrum alatum</i>
	<i>Rhamnus alnifolia</i>	<i>Sagittaria arifolia</i>		<i>Pycnanthemum virginianum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Salix candida</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix myricoides</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix serotima</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Solidago ohioensis</i>	<i>Xyris difformis</i>		
	<i>Tafieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin peduncle</i>			

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

Site: Currell County Energy Rater(s): Mike Mossman Date: 23 April 2013**Metric 1. Wetland Area (size).**

0	0
max 6 pts.	subtotal

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 <10.1ha) (4 pts)

☐ 3 to <10 acres (1.2 to <4ha) (3 pts)

☐ 0.3 to <3 acres (0.12 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)

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

14	14
max 14 pts.	subtotal

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

☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest. (5)

☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction (1)

**Metric 3. Hydrology.**

20	34
max 30 pts.	subtotal

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

☒ High pH groundwater (5)

☒ Other groundwater (3)

☒ Precipitation (1)

☐ Seasonal/intermittent surface water (3)

☐ Perennial surface water (lake or stream) (5)

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)

☒ <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)

☐ Recovering (3)

☐ Recent or no recovery (1)

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)

3d. Duration inundation/saturation. Score one or dbl check.

☐ Semi- to permanently inundated/saturated (4)

☐ Regularly inundated/saturated (3)

☐ Seasonally inundated (2)

☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

☐ point source (nonstormwater)

☐ filling/grading

☐ road bed/RR track

☐ dredging

☐ other

**Metric 4. Habitat Alteration and Development.**

18	52
max 20 pts.	subtotal

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

☒ None or none apparent (4)

☐ 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)

☐ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jlm

Site: Currell County Energy Rater(s): Mike Mossman Date: 23 April 2013**Metric 5. Special Wetlands.**

0	0
max 10 pts.	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, interspersions, microtopography.**

7	60
max 20 pts.	subtotal

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

☐ Aquatic bed

☐ Emergent

☐ Shrub

☐ Forest

☐ Mudflats

☐ Open water

☐ Other

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

☒ High (5)

☐ Moderately high (4)

☐ Moderate (3)

☐ 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)

☐ Sparse 5-25% cover (-1)

☒ Nearly absent <5% cover (0)

☐ Absent (1)

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

☐ Vegetated hummocks/mounds

☐ Coarse woody debris >15cm (6in)

☐ Standing dead >25cm (10in) dbh

☐ Amphibian breeding pools

**Vegetation 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 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

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> 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	14	
	Metric 3. Hydrology	20	
	Metric 4. Habitat	18	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersal, microtopography	8	
	TOTAL SCORE	60	Category based on score breakpoints 2

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: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> 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 Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> 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 Wetland is assigned to the appropriate category based on the scoring range	<input checked="" type="radio"/> 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 within the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO 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:	Mike Mussoni
Date:	23 April 2013
Affiliation:	Tetra Tech Inc
Address:	661 Anderson Dr., Pittsburgh, PA
Phone Number:	412-920-7007
e-mail address:	michael.mussoni@tetra-tech.com
Name of Wetland:	C and D
Vegetation Community(ies):	PEM
HGM Class(es):	depression
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6043, -81.0608
USGS Quad Name	Corrollton
County	Corroll
Township	FTN
Section and Subsection	526, RSW
Hydrologic Unit Code	05040001
Site Visit	23 April 2013
National Wetland Inventory Map	F2 24
Ohio Wetland Inventory Map	F2 36
Soil Survey	23 April 2013
Delineation report/map	attached

Name of Wetland:	C and D
Wetland Size (acres, hectares):	0.21 (combined)
Sketch: include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	Depression areas in historic diversion ditch.
Final score :	27
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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Nature forested wetlands.</b> 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  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  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  Go to Question 9d	NO  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  Wetland is a Category 3 wetland  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> 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 graminaceous 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  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> 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  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex crypsolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Coccoloba plantaginifolia</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex husbanii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhynchos frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Heltanthus grosserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha x glauca</i>	<i>Lobelia latifolia</i>	<i>Nemophila mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Pycnanthemum virginicum</i>
	<i>Potamogeton fruticosus</i>	<i>Sphagnum</i> spp.		<i>Silphium terebinthinaceum</i>
	<i>Rhynchos frangula</i>	<i>Vaccinium macrocarpon</i>		<i>Spartina pectinata</i>
	<i>Rhynchos frangula</i>	<i>Vaccinium corymbosum</i>		<i>Surgistrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Solidago rigida</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Salix serotima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin patustre</i>			

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



Site: Carroll County Energy Rater(s): Mike Messing Date: 23 April 2013

**Metric 1. Wetland Area (size).**

0	0
max 0 pts	subtotal

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 <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 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)

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

5	5
max 10 pts	subtotal

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

- ☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ 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), shrub land, young second growth forest. (5)
- ☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction (1)

**Metric 3. Hydrology.**

7	12
max 30 pts	subtotal

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

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☐ Seasonal/intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3b. 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)
- ☒ <0.4m (<15.7in) (1)

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

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

3d. 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)

3e. Duration inundation/saturation. Score one or dbl check

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

Check all disturbances observed

- ☒ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ stormwater input
- ☐ point source (nonstormwater)
- ☐ filling/grading
- ☐ road bed/RR track
- ☐ dredging
- ☐ other

**Metric 4. Habitat Alteration and Development.**

11	23
max 20 pts	subtotal

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

- ☐ None or none apparent (4)
- ☒ 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)
- ☐ 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)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

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

last revised 1 February 2001 jlm

Site: Carroll County Energy Rater(s): Mike Messing Date: 23 April 2013

**Metric 5. Special Wetlands.**

23	23
max 10 pts	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, interspersions, microtopography.**

4	27
max 20 pts	subtotal

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

- ☒ Aquatic bed
- ☐ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersion. Select only one.

- ☐ High (5)
- ☐ Moderately high (4)
- ☐ Moderate (3)
- ☒ 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)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

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

- ☐ Vegetated hummocks/mounds
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☒ Amphibian breeding pools

**Vegetation 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 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

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> 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	5	
	Metric 3. Hydrology	7	
	Metric 4. Habitat	11	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersed, microtopography	4	
	TOTAL SCORE	27	Category based on score breakpoints 1

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions:  Narrative Rating Nos. 2, 3, 4, 5, 7, 8a, 9d, 10	YES  Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> 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:  Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES  Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> 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  Narrative Rating No. 5	YES  Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> 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?	<input checked="" type="radio"/> YES  Wetland is assigned to the appropriate category based on the scoring range	<input checked="" type="radio"/> 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 within the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES  Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> 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  Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO  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.

Choose one ☒ Final Category ☒ Category 1 ☐ Category 2 ☐ Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Complete Wetland Categorization Worksheet.

### Background Information

Name:	Mike Mussoneli
Date:	23 April 2013
Affiliation:	Tetra Tech
Address:	661 Anderson Dr., Pittsburgh, PA 15220
Phone Number:	412-920-7007
e-mail address:	michael.mussoneli@tetra.tech.com
Name of Wetland:	E and F
Vegetation Community(ies):	PEM
HGM Class(es):	Riverine
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Latitude and UTM Coordinate	40.6030, -81.0646
USGS Quad Name	Currenville
County	Cuyahoga
Township	34N
Section and Subsection	526, R5W
Hydrologic Unit Code	05040001
Site Visit	23 April 2013
National Wetland Inventory Map	Fig 3a
Ohio Wetland Inventory Map	Fig 3b
Soil Survey	Fig. 2
Delineation report/map	attached

Name of Wetland:	E and F
Wetland Size (acres, hectares):	0.02 ac. (combined)
Sketch: include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	Wetlands scored further based on size, proximity, and characteristics.
Final score :	52
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	<b>Critical Habitat.</b> 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 17.85(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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  Wetland should be evaluated for possible Category 3 status  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands</b> 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  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  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  Go to Question 9d	NO  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  Wetland is a Category 3 wetland  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> 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 graminaceous 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  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies:</b> 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  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

Invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zizodorus elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginifolia</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex husbanii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex triperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellia</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarbellei</i>
<i>Ranunculus ficaria</i>	<i>Fleischeria rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhynchospora fragula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Luxia laevis</i>		<i>Liatris spicata</i>
<i>Typha glauca</i>	<i>Lobelia kalmii</i>	<i>Najas macrospora</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Salix candida</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Spartina pectinata</i>
	<i>Salix serotima</i>	<i>Xyris difformis</i>		<i>Solidago rigida</i>
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glauca</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Cornell County Energy Rater(s): Mike Mussone Date: 23 April 2013

## Metric 1. Wetland Area (size).

0	0
max 6 pts	subtotal

Select one size class and assign score.

☐ >80 acres (>20.2ha) (6 pts)

☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)

☐ 10 to <25 acres (4 to <10.1ha) (4 pts)

☐ 3 to <10 acres (1.2 to <4ha) (3 pts)

☐ 0.3 to <3 acres (0.12 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)

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

3	3
max 14 pts	subtotal

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

☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest. (5)

☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

## Metric 3. Hydrology.

23	31
max 36 pts	subtotal

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

☒ High pH groundwater (5)

☒ Other groundwater (3)

☒ Precipitation (1)

☒ Seasonal/intermittent surface water (3)

☒ Perennial surface water (lake or stream) (5)

3b. 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)

☒ <0.4m (<15.7in) (1)

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

☒ None or none apparent (12)

☐ Recovered (7)

☐ Recovering (3)

☐ Recent or no recovery (1)

3d. Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

3e. Connectivity. Score all that apply

☒ 100 year floodplain (1)

☒ Between stream/fake and other human use (1)

☒ Part of wetland/upland (e.g. forest), complex (1)

☒ Part of riparian or upland corridor (1)

3f. Duration inundation/saturation. Score one or dbl check.

☐ Semi- to permanently inundated/saturated (4)

☐ Regularly inundated/saturated (3)

☐ Seasonally inundated (2)

☒ Seasonally saturated in upper 30cm (12in) (1)

## Metric 4. Habitat Alteration and Development.

17	47
max 20 pts	subtotal

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

☒ None or none apparent (4)

☐ 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)

☒ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

4d. Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jim

Site: Cornell County Energy Rater(s): Mike Mussone Date: 23 April 2013

## Metric 5. Special Wetlands.

0	47
max 10 pts	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, interspersions, microtopography.

4	52
max 20 pts	subtotal

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

☒ Aquatic bed

☐ Emergent

☐ Shrub

☐ Forest

☐ Mudflats

☐ Open water

☐ Other

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

☐ High (5)

☐ Moderately high (4)

☐ Moderate (3)

☒ 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)

☒ Sparse 5-25% cover (-1)

☐ Nearly absent <5% cover (0)

☐ Absent (1)

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

☐ Vegetated hummocks/mounds

☒ Coarse woody debris >15cm (6in)

☐ Standing dead >25cm (10in) dbh

☐ Amphibian breeding pools

**Vegetation 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 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

52

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3.
Quantitative Rating	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	8	
	Metric 3. Hydrology	23	
	Metric 4. Habitat	17	
Metric 5. Special Wetland Communities	0		
Metric 6. Plant communities, interspersed, microtopography	4		
TOTAL SCORE	52	Category based on score breakpoints 2	

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> 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 Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> 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 Wetland is assigned to the appropriate category based on the scoring range	<input checked="" type="radio"/> 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 Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO 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	<input checked="" type="radio"/> Category 2	Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Complete Wetland Categorization Worksheet.

### Background Information

Name:	Mike Mussoneli
Date:	24 April 2013
Affiliation:	Tetra Tech Inc
Address:	661 Anderson Dr.
Phone Number:	412-920-7007
e-mail address:	michael.mussoneli
Name of Wetland:	G
Vegetation Community(ies):	PEM
HGM Class(es):	Depressional
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6053, -81.0629
USGS Quad Name	Carrallton
County	Carrall
Township	T14N
Section and Subsection	528, R5W
Hydrologic Unit Code	04050001
Site Visit	24 April 2013
National Wetland Inventory Map	Fig 3a
Ohio Wetland Inventory Map	Fig 3b
Soil Survey	Fig 2
Delineation report/map	attached

Name of Wetland:	G
Wetland Size (acres, hectares):	0.16 ac.
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	Emergent wetland; portion (western) within across road.
Final score :	52
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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> Is the wetland located at an elevation less than 675 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  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 submerged aquatic vegetation.	YES  Go to Question 9d	NO  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  Wetland is a Category 3 wetland  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> 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 graminaceous 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  Wetland is a Category 3 wetland  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> 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  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginifolia</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinata</i>	<i>Carex obovata</i>	<i>Carex obovata</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex triperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Polamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne corymbosa</i>	<i>Calamagrostis canadensis</i>	<i>Carex surirellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhynchospora fragula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentiana spp.</i>	<i>Larix laricina</i>		<i>Lysichiton spicata</i>
<i>Typha x glauca</i>	<i>Lobelia latifolia</i>	<i>Nemophila mucronata</i>		<i>Lysichiton quadriflorus</i>
	<i>Fernandea glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum spp.</i>		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Salix vermiculata</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Toxifolia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Carroll County Energy Rater(s): Mike Mussomeli Date: 29 April 2013

### Metric 1. Wetland Area (size).

max 6 pts subtotal

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 <10.1ha) (4 pts)

☐ 3 to <10 acres (1.2 to <4ha) (3 pts)

☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)

☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)

☐ <0.1 acres (0.04ha) (0 pts)

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

max 14 pts subtotal

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

☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest (5)

☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

### Metric 3. Hydrology.

max 30 pts subtotal

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

☒ High pH groundwater (5)

☐ Other groundwater (3)

☐ Precipitation (1)

☐ Seasonal/intermittent surface water (3)

☐ Perennial surface water (lake or stream) (5)

3b. 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)

☒ <0.4m (<15.7in) (1)

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

☒ None or none apparent (12)

☐ Recovered (7)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

☐ point source (nonstormwater)

☐ filling/grading

☐ road bed/RR track

☐ dredging

☒ other access of in most position

3d. Duration inundation/saturation. Score one or dbl check.

☐ Semi- to permanently inundated/saturated (4)

☐ Regularly inundated/saturated (3)

☐ Seasonally inundated (2)

☒ Seasonally saturated in upper 30cm (12in) (1)

### Metric 4. Habitat Alteration and Development.

max 20 pts subtotal

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

☒ None or none apparent (4)

☐ 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)

☐ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

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Site: Carroll County Energy Rater(s): Mike Mussomeli Date: 29 April 2013

### Metric 5. Special Wetlands.

max 10 pts 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, interspersions, microtopography.

max 20 pts subtotal

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

☒ Aquatic bed

☐ Emergent

☐ Shrub

☐ Forest

☐ Mudflats

☐ Open water

☐ Other

6b. horizontal (plan view) Interspersion. Select only one.

☐ High (5)

☒ Moderately high (4)

☐ Moderate (3)

☐ 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)

☐ Sparse 5-25% cover (-1)

☒ Nearly absent <5% cover (0)

☐ Absent (1)

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

☐ Vegetated hummocks/mounds

☐ Coarse woody debris >15cm (6in)

☐ Standing dead >25cm (10in) dbh

☒ Amphibian breeding pools

**Vegetation 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 9.68 acres)
3	High 4ha (9.68 acres) or more

**Microtopography Cover Scale**

0	Absent
1	Present 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

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End of Quantitative Rating. Complete Categorization Worksheets.

# ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <u>NO</u>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <u>NO</u>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <u>NO</u>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <u>NO</u>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <u>NO</u>	If yes, Category 1.
	Question 6. Bogs	YES <u>NO</u>	If yes, Category 3.
	Question 7. Fens	YES <u>NO</u>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <u>NO</u>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 8c. Lake Erie Wetlands - Restricted	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <u>NO</u>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Question 10. Oak Openings	YES <u>NO</u>	If yes, Category 3
	Question 11. Relict Wet Prairies	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	<u>1</u>	
	Metric 2. Buffers and surrounding land use	<u>11</u>	
	Metric 3. Hydrology	<u>14</u>	
	Metric 4. Habitat	<u>13</u>	
	Metric 5. Special Wetland Communities	<u>0</u>	
	Metric 6. Plant communities, Interspersion, microtopography	<u>8</u>	
TOTAL SCORE		<u>52</u>	Category based on score breakpoints <u>2</u>

# Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions:  Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES  Wetland is categorized as a Category 3 wetland	<u>NO</u>  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:  Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES  Wetland should be evaluated for possible Category 3 status	<u>NO</u>  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  Narrative Rating No. 5	YES  Wetland is categorized as a Category 1 wetland	<u>NO</u>  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?	<u>YES</u>  Wetland is assigned to the appropriate category based on the scoring range	<u>NO</u>  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  Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<u>NO</u>  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  Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<u>NO</u>  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	<u>Category 2</u>	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Complete Wetland Categorization Worksheet.

### Background Information

Name:	Mik Mussomeli
Date:	24 April 2013
Affiliation:	Tetra Tech, Inc.
Address:	661 Anderson Dr., P. Hebberville, PA 15270
Phone Number:	412-933-7000
e-mail address:	michael.mussomeli@tetra-tech.com
Name of Wetland:	H
Vegetation Community(ies):	PEM
HGM Class(es):	Riverine
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6012, -81.0615
USGS Quad Name	Carrollton
County	Carroll
Township	T14
Section and Subsection	S28, R5W
Hydrologic Unit Code	05040001
Site Visit	24 April 2013
National Wetland Inventory Map	Fig 3a
Ohio Wetland Inventory Map	Fig 3a
Soil Survey	Fig. 2
Delineation report/map	attached

Name of Wetland:	H
Wetland Size (acres, hectares):	0.02 ac.
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	Abundant stream, no category changes.
Final score:	S3
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	<b>Critical Habitat.</b> Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadangle 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 (55 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 percent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 50 to 100 years; an old-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> Is the wetland a forested wetland with 60% 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  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  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  Go to Question 9d	NO  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  Wetland is a Category 3 wetland  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings).</b> 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  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> 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  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

Invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zizania elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginifolia</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex stricta</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex bushamii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex triasperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Heuchera sp.</i> caespitosa	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentiana sp.</i>	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha glauca</i>	<i>Lobelia cardinalis</i>	<i>Nemophila maculata</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potamogeton fruticosus</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginicum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpum</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Sporobolus pectinatus</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Salix serotima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Typha glauca</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Currituck County Energy Rater(s): Mike Messumel Date: 24 April 2013

**Metric 1. Wetland Area (size).**

max 5 pts subtotal

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 <10.1ha) (4 pts)

☐ 5 to <10 acres (1.2 to <4ha) (3 pts)

☐ 3 to <5 acres (0.12 to <1.2ha) (2pts)

☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)

☒ <0.1 acres (0.04ha) (0 pts)

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

max 14 pts subtotal

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

☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☒ 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), shrub land, young second growth forest (5)

☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

**Metric 3. Hydrology.**

max 30 pts subtotal

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

☐ High pH groundwater (5)

☐ Other groundwater (3)

☒ Precipitation (1)

☒ Seasonal/intermittent surface water (3)

☒ Perennial surface water (lake or stream) (5)

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)

☒ <0.4m (<15.7in) (1)

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)

3d. Duration inundation/saturation. Score one or double check.

☐ Semi- to permanently inundated/saturated (4)

☐ 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)

☐ Recovered (7)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

☐ point source (nonstormwater)

☐ filling/grading

☐ road bed/RR track

☐ dredging

☐ other

**Metric 4. Habitat Alteration and Development.**

max 26 pts subtotal

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

☒ None or none apparent (4)

☐ 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)

☒ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jlm

Site: Currituck County Energy Rater(s): Mike Messumel Date: 24 April 2013

**Metric 5. Special Wetlands.**

max 10 pts 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 (1-10)

**Metric 6. Plant communities, interspersions, microtopography.**

max 20 pts subtotal

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

☒ Aquatic bed

☒ Emergent

☒ Shrub

☒ Forest

☒ Mudflats

☐ Open water

☐ Other

6b. horizontal (plan view) Interspersion. Select only one.

☐ High (5)

☐ Moderately high (4)

☒ Moderate (3)

☐ 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)

☐ Sparse 5-25% cover (-1)

☒ Nearly absent <5% cover (0)

☐ Absent (1)

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

☐ Vegetated hummocks/mounds

☒ Coarse woody debris >15cm (6in)

☐ Standing dead >25cm (10in) down

☐ Amphibian breeding pools

**Vegetation Community Cover Scale**

Score	Description
0	Absent or comprises <0.1ha (0.247 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**

Quality	Description
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**

Score	Description
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**

Score	Description
0	Absent
1	Present 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

End of Quantitative Rating. Complete Categorization Worksheets.



## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	8	
	Metric 3. Hydrology	21	
	Metric 4. Habitat	17	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersed, microtopography	7	
	TOTAL SCORE	53	Category based on score breakpoints 2

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input checked="" type="radio"/> NO	Is quantitative rating score <i>less</i> 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: Narrative Rating Nos. 1, 8b, 9b, 9a, 11	YES <input checked="" type="radio"/> 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: Narrative Rating No. 5	YES <input checked="" type="radio"/> NO	Is quantitative rating score <i>greater</i> 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 <input checked="" type="radio"/> 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 <input checked="" type="radio"/> 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 <i>moderate</i> OR <i>superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> 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 <input checked="" type="radio"/> NO	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	<input checked="" type="radio"/> Category 2	Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Complete Wetland Categorization Worksheet.

### Background Information

Name:	Mike Musumeli
Date:	24 April 2013
Affiliation:	Tetra Tech, Inc.
Address:	661 Anderson Dr, Pittsburgh, PA 15220
Phone Number:	412-920-7007
e-mail address:	michael.musumeli@tetra-tech.com
Name of Wetland:	J
Vegetation Community(ies):	PEM
HGM Class(es):	Riverine
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6062, -81.0559
USGS Quad Name	Corcoran
County	Corrall
Township	T14N
Section and Subsection	S28, R5W
Hydrologic Unit Code	05040001
Site Visit	24 April 2013
National Wetland Inventory Map	Fig. 3a
Ohio Wetland Inventory Map	Fig. 3b
Soil Survey	Fig. 2
Delineation report/map	attached

Name of Wetland:	J
Wetland Size (acres, hectares):	0.22 ac
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	PEM wetland at top of slope abutting stream.
Final score :	76
Category:	3

## 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/dnagp>. 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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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 Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status. Go to Question 10	NO 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 Go to Question 9d	NO 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 Wetland is a Category 3 wetland. Go to Question 10	NO Go to Question 9a
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 10	NO Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> 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 graminaceous 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 Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	<b>Relict Wet Prairies.</b> 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 Wetland should be evaluated for possible Category 3 status. Complete Quantitative Rating	NO Complete Quantitative Rating

**Table 1. Characteristic plant species.**

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Carex plantaginifolia</i>	<i>Carex lasiocarpa</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinula</i>	<i>Carex stricta</i>	<i>Carex altherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex stricta</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex hudsonii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex triperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellilla</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex saricellus</i>
<i>Rumex crispus</i>	<i>Eleocharis rostrata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rumex crispus</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha x glauca</i>	<i>Lobelia kalmii</i>	<i>Nemophila macrantha</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpum</i>		<i>Stiphium terebinthaceum</i>
	<i>Rhynchospora capitata</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodsia virginica</i>		<i>Solidago rigida</i>
	<i>Salix serotina</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Carroll County Energy Rater(s): Mike Mussomeli Date: 24 April 2013

## Metric 1. Wetland Area (size).

2	2
max 6 pts	subtotal

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 <10.1ha) (4 pts)

☐ 3 to <10 acres (1.2 to <4ha) (3 pts)

☒ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)

☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)

☐ <0.1 acres (0.04ha) (0 pts)

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

11	13
max 14 pts	subtotal

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

☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest. (5)

☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction (1)

## Metric 3. Hydrology.

32	45
max 30 pts	subtotal

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

☒ High pH groundwater (5)

☒ Other groundwater (3)

☒ Precipitation (1)

☒ Seasonal/intermittent surface water (3)

☒ Perennial surface water (lake or stream) (5)

3b. 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)

☒ <0.4m (<15.7in) (1)

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

☒ None or none apparent (12)

☐ Recovered (7)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

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)

3d. Duration inundation/saturation. Score one or dbl check.

☐ Semi- to permanently inundated/saturated (4)

☐ Regularly inundated/saturated (3)

☒ Seasonally inundated (2)

☒ Seasonally saturated in upper 30cm (12in) (1)

## Metric 4. Habitat Alteration and Development.

19	64
max 20 pts	subtotal

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

☒ None or none apparent (4)

☐ 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)

☐ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jlm

Site: Carroll County Energy Rater(s): Mike Mussomeli Date: 24 April 2013

## Metric 5. Special Wetlands.

0	64
max 10 pts	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, interspersions, microtopography.

12	76
max 20 pts	subtotal

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

☒ Aquatic bed

☒ Emergent

☒ Shrub

☒ Forest

☒ Mudflats

☒ Open water

☐ Other

6b. horizontal (plan view) Interspersion. Select only one.

☐ High (5)

☒ Moderately high (4)

☐ Moderate (3)

☐ 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)

☐ Sparse 5-25% cover (-1)

☒ Nearly absent <5% cover (0)

☐ Absent (1)

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

☒ Vegetated hummocks/mounds

☒ Coarse woody debris >15cm (5in)

☐ Standing dead >25cm (10in) dbh

☐ Amphibian breeding pools

**Vegetation Community Cover Scale**

0	Absent or comprises <0.1ha (0.247 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 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

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <u>NO</u>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <u>NO</u>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <u>NO</u>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <u>NO</u>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <u>NO</u>	If yes, Category 1.
	Question 6. Bogs	YES <u>NO</u>	If yes, Category 3.
	Question 7. Fens	YES <u>NO</u>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <u>NO</u>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <u>NO</u>	If yes, Category 3
Quantitative Rating	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <u>NO</u>	If yes, Category 3
	Question 11. Relict Wet Prairies	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	<u>2</u>	
	Metric 2. Buffers and surrounding land use	<u>11</u>	
	Metric 3. Hydrology	<u>32</u>	
	Metric 4. Habitat	<u>19</u>	
Metric 5. Special Wetland Communities	<u>0</u>		
Metric 6. Plant communities, interspersions, microtopography	<u>12</u>		
TOTAL SCORE	<u>76</u>	Category based on score breakpoints <u>3</u>	

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: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<u>NO</u> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<u>NO</u> 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 Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<u>NO</u> 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?	<u>YES</u> Wetland is assigned to the appropriate category based on the scoring range	<u>NO</u> 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 within the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<u>NO</u> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<u>NO</u> 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:	Mike Messumeli
Date:	24 April 2013
Affiliation:	Tetra Tech Inc
Address:	661 Anderson Dr. Pittsburgh, PA 15220
Phone Number:	412-920-7007
e-mail address:	michael.messumeli@tetra-tech.com
Name of Wetland:	J
Vegetation Community(ies):	PEM
HGM Class(es):	depression 1
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6664, -81.0557
USGS Quad Name	Circulation
County	Carroll Co.
Township	T14N
Section and Subsection	S28, PSW
Hydrologic Unit Code	05040001
Site Visit	24 April 2013
National Wetland Inventory Map	Fig 3a
Ohio Wetland Inventory Map	Fig 3a
Soil Survey	Fig. 3
Delineation report/map	attached

Name of Wetland:	J
Wetland Size (acres, hectares):	< 0.01 ac.
Sketch: include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	PEM wetland, marginal depression converging roadside drainage to stream.
Final score :	33
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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 percent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 (5.5-8.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland Go to Question 8b	NO Go to Question 8b



8b	<b>Mature forested wetlands.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 9a	NO Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 8c
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 Go to Question 9d	NO 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 Wetland is a Category 3 wetland Go to Question 10	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> 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 graminaceous 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 Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	<b>Relict Wet Prairies.</b> 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 Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

**Table 1. Characteristic plant species.**

Invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zizania elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Coccoloba plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex altherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex stricta</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Deschampsia cespitosa</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostrata</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarawellii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Typha angustifolia</i>	<i>Gentiana sp.</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha x glauca</i>	<i>Labelia kalmii</i>	<i>Larix laricina</i>		<i>Liatris spicata</i>
	<i>Parnassia glauca</i>	<i>Nemophylus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Potentilla fruticosa</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Rhamnus alnifolia</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Salix candida</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix myricoides</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix serotima</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Solidago ohioensis</i>	<i>Xyris difformis</i>		
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Cumtch County Energy Rater(s): Mike Massoneli Date: 24 April 2013

### Metric 1. Wetland Area (size).

0	0
max 5 pts	subtotal

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 <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 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)

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

8	8
max 14 pts	subtotal

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

- ☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ 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), shrub land, young second growth forest. (5)
- ☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction (1)

### Metric 3. Hydrology.

8	16
max 30 pts	subtotal

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

- ☒ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ 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)
- ☐ 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)
- ☒ <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ 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)
- ☒ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☒ stormwater input
- ☐ point source (nonstormwater)
- ☐ filling/grading
- ☐ road bed/RR track
- ☐ dredging
- ☐ other: \_\_\_\_\_

### Metric 4. Habitat Alteration and Development.

15	31
max 20 pts	subtotal

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

- ☒ None or none apparent (4)
- ☐ 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)
- ☐ 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)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

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

last revised 1 February 2001 jlm

Site: Cumtch County Energy Rater(s): Mike Massoneli Date: 24 April 2013

### Metric 5. Special Wetlands.

0	31
max 10 pts	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, interspersions, microtopography.

2	33
max 20 pts	subtotal

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

- ☒ Aquatic bed
- ☐ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersion. Select only one.

- ☐ High (5)
- ☐ Moderately high (4)
- ☐ Moderate (3)
- ☐ 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 (-6)
- ☐ 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.

- ☒ Vegetated hummocks/mounds
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☒ Amphibian breeding pools

**Vegetation 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 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

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <u>NO</u>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <u>NO</u>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <u>NO</u>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <u>NO</u>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <u>NO</u>	If yes, Category 1.
	Question 6. Bogs	YES <u>NO</u>	If yes, Category 3.
	Question 7. Fens	YES <u>NO</u>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <u>NO</u>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <u>NO</u>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <u>NO</u>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	<u>0</u>	
	Metric 2. Buffers and surrounding land use	<u>8</u>	
	Metric 3. Hydrology	<u>8</u>	
	Metric 4. Habitat	<u>15</u>	
	Metric 5. Special Wetland Communities	<u>0</u>	
	Metric 6. Plant communities, interspersion, microtopography	<u>2</u>	
	TOTAL SCORE	<u>33</u>	Category based on score breakpoints <u>2</u>

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<u>NO</u> Is quantitative rating score <i>less</i> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<u>NO</u> 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 Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<u>NO</u> Is quantitative rating score <i>greater</i> 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 Wetland is assigned to the appropriate category based on the scoring range	<u>NO</u> 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 within the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	<u>YES</u> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO 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.

Complete Wetland Categorization Worksheet.

### Background Information

Name:	Mik Messumeli
Date:	24 April 2013
Affiliation:	Tetra Tech Inc.
Address:	661 Antisun Dr. Pittsburgh, PA 15220
Phone Number:	412-920-7007
e-mail address:	michael.messumeli@tetra-tech.com
Name of Wetland:	K
Vegetation Community(ies):	<del>Decid</del> PSS
HGM Class(es):	Riverine
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.  see sketch	
Lat/Long or UTM Coordinate	40.6021, -81.0545
USGS Quad Name	Carrollton
County	Carroll Co.
Township	T14N
Section and Subsection	S28, R5W
Hydrologic Unit Code	05040001
Site Visit	24 April 2013
National Wetland Inventory Map	Fis 3A
Ohio Wetland Inventory Map	Fis 3B
Soil Survey	Fis 2
Delineation report/map	attached

Name of Wetland: K	
Wetland Size (acres, hectares): >0.13 ac	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.  	
Comments, Narrative Discussion, Justification of Category Changes:  PSS wetland continues north beyond (fenced) boundaries	
Final score:	58
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>	

**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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 old-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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 7/8 in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Go to Question 9d	NO 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 Wetland is a Category 3 wetland Go to Question 10	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings).</b> 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 graminaceous 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 Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	<b>Relict Wet Prairies.</b> 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 Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zizania aquatica</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Hydrophyllum spicatum</i>	<i>Carex plantaginifolia</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex uterocarpa</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumi</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex triglocha</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Ilex hampdenensis</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarothrae</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhynchospora fragilis</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentiana spp.</i>	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha x glauca</i>	<i>Lobelia kalmii</i>	<i>Nemophila mucronata</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum spp.</i>		<i>Pycnanthemum virginianum</i>
	<i>Rhynchospora alata</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Salix candida</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix myricoides</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix serotina</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Curroll County Energy Rater(s): Mike Messing Date: 24 April 2013

# **Metric 1. Wetland Area (size).**

max 6 pts	subtotal
1	1

Select one size class and assign score

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

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

max 14 pts	subtotal
8	9

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

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ 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), shrub land, young second growth forest. (5)
- ☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

# **Metric 3. Hydrology.**

max 30 pts	subtotal
21	30

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

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☒ Seasonal/intermittent surface water (3)
- ☒ Perennial surface water (lake or stream) (5)

3b. 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)
- ☒ <0.4m (<15.7in) (1)

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

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

3d. Check all disturbances observed

- ☐ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ stormwater input
- ☐ point source (nonstormwater)
- ☐ filling/grading
- ☐ road bed/RR track
- ☐ dredging
- ☐ other

# **Metric 4. Habitat Alteration and Development.**

max 20 pts	subtotal
13	47

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

- ☒ None or none apparent (4)
- ☐ 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)
- ☐ 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 (5)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

4d. Check all disturbances observed

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

last revised 1 February 2001 jgm

Site: Curroll County Energy Rater(s): Mike Messing Date: 24 April 2013

# **Metric 5. Special Wetlands.**

max 10 pts	subtotal
0	48

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, interspersions, microtopography.**

max 20 pts	subtotal
10	58

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

- ☒ Aquatic bed
- ☐ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflat
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersions. Select only one.

- ☐ High (5)
- ☒ Moderately high (4)
- ☐ Moderate (3)
- ☐ 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)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

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

- ☐ Vegetated hummocks/muskruts
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☒ Amphibian breeding pools

**Vegetation 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 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

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> 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	3	
	Metric 3. Hydrology	21	
	Metric 4. Habitat	18	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersed, microtopography	10	
	TOTAL SCORE	58	Category based on score breakpoints 2

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: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input checked="" type="radio"/> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES <input checked="" type="radio"/> 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: Narrative Rating No. 5	YES <input checked="" type="radio"/> 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 <input checked="" type="radio"/> 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 <input checked="" type="radio"/> 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 <input checked="" type="radio"/> NO	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.

Choose one Final Category  
Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.



### Background Information

Name:	Mike Mussone
Date:	24 April 2013
Affiliation:	Tech Tech Inc
Address:	661 Anderson Dr, Pittsburgh, PA 15220
Phone Number:	412-920-7007
e-mail address:	michael.mussone@tech-tech.com
Name of Wetland:	L
Vegetation Communities:	PEM
HGM Class(es):	Depressions I
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
Lat/Long or UTM Coordinate	40.6074, -81.0549
USGS Quad Name	Carnation
County	Cumtoll Co.
Township	714N
Section and Subsection	528, R5W
Hydrologic Unit Code	05040001
Site Visit	24 April 2013
National Wetland Inventory Map	Fig 3A
Ohio Wetland Inventory Map	Fig 3B
Soil Survey	Fig 2
Delineation report/map	attached

Name of Wetland: L	
Wetland Size (acres, hectares): 2.01 ac	
Sketch: include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
Emergent wetland at top of slope.	
Final score:	50
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	<b>Critical Habitat.</b> 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 (55 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  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  Go to Question 9d	NO  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  Wetland is a Category 3 wetland  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings):</b> 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 graminaceous 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  Wetland is a Category 3 wetland  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies:</b> 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  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zizadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex crysolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginifolia</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Clinidium mariscoides</i>	<i>Carex husbanetii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia cespitosa</i>	<i>Chamaedaphne corymbosa</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarroventii</i>
<i>Ranunculus flammula</i>	<i>Elymus canadensis</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhynchospora fragilis</i>	<i>Eriophorum viridicarmatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentiana sp.</i>	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha glauca</i>	<i>Lobelia kalmii</i>	<i>Nemophila macronata</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhynchospora alba</i>	<i>Vaccinium macrocarpum</i>		<i>Stiphium teretifolium</i>
	<i>Salix candida</i>	<i>Rhynchospora capitata</i>		<i>Sorghastrum nutans</i>
	<i>Salix myricoides</i>	<i>Vaccinium corymbosum</i>		<i>Spartina pectinata</i>
	<i>Salix serotina</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Solidago ohioensis</i>	<i>Xyris difformis</i>		
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Carroll County Energy Rater(s): M.K. Messumeli Date: 24 April 2019**Metric 1. Wetland Area (size).**

0	0
max 5 pts	subtotal

Select one size class and assign score.

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

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

11	11
max 14 pts	subtotal

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

- ☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)  
☐ 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), shrub land, young second growth forest. (5)  
☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)  
☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

**Metric 3. Hydrology.**

17	28
max 30 pts	subtotal

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

- ☒ High pH groundwater (5)  
☒ Other groundwater (3)  
☒ Precipitation (1)  
☐ Seasonal/intermittent surface water (3)  
☐ Perennial surface water (lake or stream) (5)

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)  
☒ <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)  
☐ Recovering (3)  
☐ Recent or no recovery (1)

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)

3d. Duration inundation/saturation. Score one or dbl check.

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

Check all disturbances observed <input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> well <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other
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**Metric 4. Habitat Alteration and Development.**

16	44
max 20 pts	subtotal

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

- ☐ None or none apparent (4)  
☐ 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)  
☒ 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)  
☐ Recovering (3)  
☐ Recent or no recovery (1)

Check all disturbances observed <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment
---	--

subtotal this page

last revised 1 February 2001 jjm

Site: Carroll County Energy Rater(s): M.K. Messumeli Date: 24 April 2019**Metric 5. Special Wetlands.**

44
subtotal first page

0	44
max 10 pts	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, interspersions, microtopography.**

6	50
max 20 pts	subtotal

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale

- ☐ Aquatic bed  
☒ Emergent  
☐ Shrub  
☐ Forest  
☐ Mudflats  
☐ Open water  
☐ Other

6b. Horizontal (plan view) Interspersion.

Select only one

- ☐ High (5)  
☐ Moderately high (4)  
☒ Moderate (3)  
☐ 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)  
☐ Sparse 5-25% cover (-1)  
☒ Nearly absent <5% cover (0)  
☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ Vegetated hummocks/mounds  
☐ Coarse woody debris >15cm (6in)  
☐ Standing dead >25cm (10in) dbh  
☐ Amphibian breeding pools

**Vegetation 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 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

50
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End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <u>NO</u>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <u>NO</u>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <u>NO</u>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <u>NO</u>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <u>NO</u>	If yes, Category 1.
	Question 6. Bogs	YES <u>NO</u>	If yes, Category 3.
	Question 7. Fens	YES <u>NO</u>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <u>NO</u>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <u>NO</u>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <u>NO</u>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	<u>0</u>	
	Metric 2. Buffers and surrounding land use	<u>11</u>	
	Metric 3. Hydrology	<u>17</u>	
	Metric 4. Habitat	<u>16</u>	
	Metric 5. Special Wetland Communities	<u>0</u>	
	Metric 6. Plant communities, interspersed, microtopography	<u>6</u>	
	TOTAL SCORE	<u>50</u>	Category based on score breakpoints <u>2</u>

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: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<u>NO</u> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<u>NO</u> 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: Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<u>NO</u> 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?	<u>YES</u> Wetland is assigned to the appropriate category based on the scoring range	<u>NO</u> 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 within the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<u>NO</u> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<u>NO</u> 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:	Mike Mussumeli
Date:	24 April 2013
Affiliation:	TetraTech Inc.
Address:	661 Anderson Dr., Pittsburgh, PA 15227
Phone Number:	412-920-7007
e-mail address:	michael.mussumeli@tetra-tech.com
Name of Wetland:	m
Vegetation Community(ies):	PEM
HGM Class(es):	Depressional
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6069, -81.0959
USGS Quad Name	Corruption
County	Carroll
Township	714N
Section and Subsection	528 RSW
Hydrologic Unit Code	05040001
Site Visit	24 April 2013
National Wetland Inventory Map	Fig 3A
Ohio Wetland Inventory Map	Fig 3B
Soil Survey	Fig 2
Delineation report/map	attached

Name of Wetland:	m
Wetland Size (acres, hectares):	0.03 ac.
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
Depressional drainage at top of slope	
Final score :	56
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.	✓	

## 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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

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

8b	<b>Mature forested wetlands.</b> 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 Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Go to Question 9d	NO 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 Wetland is a Category 3 wetland Go to Question 10	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> 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 graminaceous 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 Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	<b>Relict Wet Prairies.</b> 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. Deke, Mercer, Miami, Montgomery, Van Wert etc.)	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

**Table 1. Characteristic plant species.**

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Typhum salvaria</i>	<i>Zizania elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginifolia</i>	<i>Carex lasiocarpa</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atheroides</i>
<i>Phalaris arundinacea</i>	<i>Carex stricta</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex bushbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne corymbosa</i>	<i>Calamagrostis canadensis</i>	<i>Carex sorrellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis racemosa</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentiana sp.</i>	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha x glauca</i>	<i>Lobelia kalmii</i>	<i>Nemophila mucronata</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Schizanthus palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpum</i>		<i>Silphium laciniatum</i>
	<i>Rhynchospora capitellata</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix cordata</i>	<i>Vaccinium myrtillus</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Salix serotina</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glauca</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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



Site: Carroll County Energy Rater(s): Mike Mussuneli Date: 24 April 2013

## Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score

☐ >50 acres (>20.2ha) (5 pts)

☐ 25 to <50 acres (10.1 to <20.2ha) (4 pts)

☐ 10 to <25 acres (4 to <10.1ha) (3 pts)

☐ 3 to <10 acres (1.2 to <4ha) (2 pts)

☐ 0.3 to <3 acres (0.12 to <1.2ha) (1 pt)

☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)

☐ <0.1 acres (0.04ha) (0 pts)

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

max 4 pts. subtotal

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

☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest (5)

☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3) (4)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

## Metric 3. Hydrology.

max 30 pts. subtotal

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

☒ High pH groundwater (5)

☐ Other groundwater (3)

☒ Precipitation (1)

☒ Seasonal/intermittent surface water (3)

☒ Perennial surface water (lake or stream) (5)

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)

☒ <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)

☐ Recovering (3)

☐ Recent or no recovery (1)

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)

3d. Duration inundation/saturation. Score one or dbl check.

☐ Semi- to permanently inundated/saturated (4)

☐ Regularly inundated/saturated (3)

☒ Seasonally inundated (2)

☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

☐ point source (nonstormwater)

☐ filling/grading

☐ road bed/RR track

☐ dredging

☐ other

## Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

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

☒ None or none apparent (4)

☐ 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)

☒ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jlm

Site: Carroll County Energy Rater(s): Mike Mussuneli Date: 24 April 2013

## Metric 5. Special Wetlands.

max 10 pts. 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/waterfowl habitat or usage (10)

☐ Category 1 Wetland. See Question 1 Qualitative Rating (10)

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

max 20 pts. subtotal

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

☐ Aquatic bed

☐ Emergent

☐ Shrub

☐ Forest

☐ Mudflats

☐ Open water

☐ Other

6b. horizontal (plan view) interspersions. Select only one.

☐ High (5)

☒ Moderately high (4)

☐ Moderate (3)

☐ 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)

☐ Sparse 5-25% cover (-1)

☒ Nearly absent <5% cover (0)

☐ Absent (1)

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

☒ Vegetated hummocks/tussocks

☐ Coarse woody debris >15cm (6in)

☐ Standing dead >25cm (10in) dbh

☐ Amphibian breeding pools

**Vegetation Community Cover Scale**

Score	Description
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**

Quality	Description
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**

Score	Description
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**

Score	Description
0	Absent
1	Present 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

End of Quantitative Rating. Complete Categorization Worksheets.

## 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.
Quantitative Rating	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.
	Metric 1. Size		0	
	Metric 2. Buffers and surrounding land use		11	
	Metric 3. Hydrology		21	
	Metric 4. Habitat		17	
	Metric 5. Special Wetland Communities		0	
	Metric 6. Plant communities, Interspersion, microtopography		7	
	TOTAL SCORE		56	Category based on score breakpoints 2

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions:  Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO Is quantitative rating score <i>less</i> 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:  Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES 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  Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO Is quantitative rating score <i>greater</i> 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 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 within the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO 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.

Choose one      Final Category  
 Category 1      Category 2      Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Complete Wetland Categorization Worksheet.

### Background Information

Name:	Mike Missorelli
Date:	25 April 2013
Affiliation:	John Tech Inc.
Address:	661 Anderson Drive, Pittsburgh PA 15220
Phone Number:	412-920-7007
e-mail address:	michael.missorelli@techinc.com
Name of Wetland:	N
Vegetation Community(ies):	PEM
HGM Class(es):	Riverine
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6027, -81.0586
USGS Quad Name	Carrollton
County	Carroll Co.
Township	714N
Section and Subsection	528
Hydrologic Unit Code	RSW
Site Visit	25 April 2013
National Wetland Inventory Map	Fig 3a
Ohio Wetland Inventory Map	Fig 3g
Soil Survey	Fig d
Delineation report/map	attached

Name of Wetland:	N
Wetland Size (acres, hectares):	0.01 ac
Sketch: include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	PEM without abutting stream at the F slope
Final score :	59
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		<input checked="" type="checkbox"/>
Step 6	Consult ORAM Manual Section 6.0 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.	<input checked="" type="checkbox"/>	

**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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 9a	NO Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Go to Question 9d	NO 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 Wetland is a Category 3 wetland Go to Question 10	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings):</b> 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 graminaceous 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 Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	<b>Relict Wet Prairies:</b> 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 Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

Invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zizania elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Coccoloba plantaginifolia</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex oshrodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex bushoniana</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trigynus</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia cespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarrothii</i>
<i>Ranunculus ficaria</i>	<i>Elenchitis rostellata</i>	<i>Desodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhynchospora fragilis</i>	<i>Eriophorum viride</i> var. <i>ornatum</i>	<i>Eriophorum virginicum</i>		<i>Hefianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha x glauca</i>	<i>Lobelia kalmii</i>	<i>Nemophanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginicum</i>
	<i>Rhynchospora alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Salix serotima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Toxifolia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Carroll County Energy Rater(s): Mike M-Schmidt Date: 25 April 2017

## Metric 1. Wetland Area (size).

max 5 pts subtotal

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 <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☒ <0.1 acres (0.04ha) (0 pts)

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

max 14 pts subtotal

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

- ☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ 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 (3)
- ☐ 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), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

## Metric 3. Hydrology.

max 30 pts subtotal

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

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

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)
- ☒ <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)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

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)

3d. Duration inundation/saturation. Score one or dbl check.

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

- | Check all disturbances observed           |   |
|---|---|
| <input checked="" type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile             | <input type="checkbox"/> filling/grading              |
| <input type="checkbox"/> dike             | <input type="checkbox"/> road bed/RR track            |
| <input type="checkbox"/> weir             | <input type="checkbox"/> dredging                     |
| <input type="checkbox"/> stormwater input | <input type="checkbox"/> other                        |

## Metric 4. Habitat Alteration and Development.

max 20 pts subtotal

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

- ☒ None or none apparent (4)
- ☐ 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)
- ☒ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☐ Poor (1)

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

- | Check all disturbances observed                               |   |
|---|---|
| <input checked="" type="checkbox"/> None or none apparent (9) | <input type="checkbox"/> shrub/sapling removal          |
| <input type="checkbox"/> Recovered (6)                        | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input type="checkbox"/> Recovering (3)                       | <input type="checkbox"/> sedimentation                  |
| <input type="checkbox"/> Recent or no recovery (1)            | <input type="checkbox"/> dredging                       |
|   | <input type="checkbox"/> farming                        |
|   | <input type="checkbox"/> nutrient enrichment            |
|   | <input type="checkbox"/> toxic pollutants               |

max 20 pts subtotal

last revised 1 February 2001 jlm

Site: Carroll County Energy Rater(s): Mike M-Schmidt Date: 25 April 2017

## Metric 5. Special Wetlands.

max 10 pts 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/waterfowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

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

max 20 pts subtotal

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersion

Select only one.

- ☐ High (5)
- ☒ Moderately high (4)
- ☐ Moderate (3)
- ☐ 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)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale

- ☐ Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☐ Amphibian breeding pools

Vegetation 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 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

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End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <u>NO</u>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <u>NO</u>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <u>NO</u>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <u>NO</u>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <u>NO</u>	If yes, Category 1.
	Question 6. Bogs	YES <u>NO</u>	If yes, Category 3.
	Question 7. Fens	YES <u>NO</u>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <u>NO</u>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <u>NO</u>	If yes, Category 3
Quantitative Rating	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <u>NO</u>	If yes, Category 3
	Question 11. Relict Wet Prairies	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	<u>0</u>	
	Metric 2. Buffers and surrounding land use	<u>8</u>	
	Metric 3. Hydrology	<u>28</u>	
	Metric 4. Habitat	<u>17</u>	
	Metric 5. Special Wetland Communities	<u>0</u>	
Metric 6. Plant communities, interspersed, microtopography	<u>6</u>		
TOTAL SCORE		<u>59</u>	Category based on score breakpoints <u>2</u>

Complete Wetland Categorization Worksheet.

## Wetland Categorization Worksheet

Choices	Circle one	NO	YES	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<u>NO</u>		Is quantitative rating score <i>less</i> than the Category 2 scoring threshold ( <i>excluding</i> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<u>NO</u>		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 Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<u>NO</u>		Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold ( <i>including</i> 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?	<u>YES</u> 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 within the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<u>NO</u>		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 <i>moderate</i> OR <i>superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<u>NO</u>		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
		<u>Category 2</u>	

End of Ohio Rapid Assessment Method for Wetlands.

### Background Information

Name:	Mike Mussone
Date:	25 April 2013
Affiliation:	Tetra Tech Inc.
Address:	661 Anderson Dr, Pittsburgh, PA 15220
Phone Number:	412-920-7007
e-mail address:	michael.mussone@tetratech.com
Name of Wetland:	0
Vegetation Community(ies):	PSS
HGM Class(es):	slough/hummock
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6099, -81.0616
USGS Quad Name	Corr. 1/4N
County	Carroll Co.
Township	714N
Section and Subsection	528, RSW
Hydrologic Unit Code	05040001
Site Visit	24 April 2013
National Wetland Inventory Map	Fig. 3A
Ohio Wetland Inventory Map	Fig. 3B
Soil Survey	Fig. 2
Delineation report/map	Attached

Name of Wetland:	0
Wetland Size (acres, hectares):	0.07
Sketch: include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
PSS wetland drains to ephemeral channel	
Final score :	56
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/dnsp>. 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	<b>Critical Habitat.</b> 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? <i>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).</i>	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  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  Go to Question 9d	NO  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  Wetland is a Category 3 wetland  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings)</b> 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 graminaceous 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  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies</b> 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  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zizania elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cuculia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex altherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladum mariscoides</i>	<i>Carex husbaumi</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex petiti</i>
<i>Potamogeton crispus</i>	<i>Deschampsia cespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarrelii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhynchos frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha glauca</i>	<i>Lobelia latifolia</i>	<i>Nemophanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potamogeton fruticosus</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhynchos frangula</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago robbellii</i>
	<i>Salix serotima</i>	<i>Yris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Carell County Energy Rater(s): Mike M. Soseni Date: 25 Apr 2013

**Metric 1. Wetland Area (size).**

max 6 pts subtotal

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 <10.1ha) (4 pts)

☐ 3 to <10 acres (1.2 to <4ha) (3 pts)

☐ 0.3 to <3 acres (0.12 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)

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

max 14 pts subtotal

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

☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest. (5)

☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

**Metric 3. Hydrology.**

max 30 pts subtotal

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

☐ High pH groundwater (5)

☒ Other groundwater (3)

☒ 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)

☐ 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)

☒ <0.4m (<15.7in) (1)

3d. Duration of inundation/saturation. Score one or double check.

☐ Semi- to permanently inundated/saturated (4)

☐ 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)

☐ Recovered (7)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

☐ point source (nonstormwater)

☐ filling/grading

☐ road bed/RR track

☐ dredging

☐ other

**Metric 4. Habitat Alteration and Development.**

max 26 pts subtotal

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

☒ None or none apparent (4)

☐ Recovered (3)

☐ Recovering (2)

☐ Recent or no recovery (1)

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

☒ Excellent (7)

☐ Very good (5)

☐ Good (5)

☐ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jlm

Site: Carell County Energy Rater(s): Mike M. Soseni Date: 25 Apr 2013

**Metric 5. Special Wetlands.**

max 10 pts 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, interspersed, microtopography.**

max 26 pts subtotal

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

☒ Aquatic bed

☐ Emergent

☐ Shrub

☐ Forest

☒ Mudflats

☒ Open water

☐ Other

6b. horizontal (plan view) Interspersion. Select only one.

☐ High (5)

☒ Moderately high (4)

☐ Moderate (3)

☐ 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)

☒ Sparse 5-25% cover (-1)

☐ Nearly absent <5% cover (0)

☐ Absent (1)

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

☐ Vegetated hummocks/mounds

☒ Coarse woody debris >15cm (6in)

☒ Standing dead >25cm (10in) dbh

☐ Amphibian breeding pools

**Vegetation 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 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

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3
Quantitative Rating	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 3
	Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	5	
	Metric 3. Hydrology	21	
	Metric 4. Habitat	19	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, Interspersion, microtopography	11	
	TOTAL SCORE	56	Category based on score breakpoints 2

## Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input checked="" type="radio"/> NO <input type="radio"/> Wetland is categorized as a Category 3 wetland	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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES <input checked="" type="radio"/> NO <input type="radio"/> Wetland should be evaluated for possible Category 3 status	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: Narrative Rating No. 5	YES <input checked="" type="radio"/> NO <input type="radio"/> Wetland is categorized as a Category 1 wetland	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 <input checked="" type="radio"/> NO <input type="radio"/> Wetland is assigned to the appropriate category based on the scoring range	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 <input checked="" type="radio"/> NO <input type="radio"/> Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	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 <input checked="" type="radio"/> NO <input type="radio"/> Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	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	<u>Category 2</u>	Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Complete Wetland Categorization Worksheet.

## Background Information

Name:	Mike Mussumeli
Date:	25 April 2013
Affiliation:	Tetra Tech Inc.
Address:	661 Anderson Dr. Pittsburgh, PA
Phone Number:	412-926-7007
e-mail address:	michael.mussumeli@tetra-tech.com
Name of Wetland:	Pond Q
Vegetation Community(ies):	PEM
HGM Class(es):	Riverine
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.	see attached report
Lat/Long or UTM Coordinate	40.6041, -81.0705
USGS Quad Name	Cleveland
County	Carrick Co.
Township	T14N
Section and Subsection	S28, R5W
Hydrologic Unit Code	05040001
Site Visit	25 April 2013
National Wetland Inventory Map	Fig. 3a
Ohio Wetland Inventory Map	Fig. 3b
Soil Survey	Fig. 2
Delineation report/map	attached

Name of Wetland:	Pond Q
Wetland Size (acres, hectares):	0.12 ac.
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	<p>PEM wetlands abutting stream with R scored separately due to distinct soil vegetation community (PSS)</p> <p>Scoring range extended for combined wetlands.</p>
Final score :	61
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	<b>Critical Habitat.</b> 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 (55 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phleis arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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 Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 submerged aquatic vegetation.	YES Go to Question 9d	NO 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 Wetland is a Category 3 wetland Go to Question 10	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings).</b> 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 graminaceous 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 Wetland is a Category 3 wetland Go to Question 11	NO Go to Question 11
11	<b>Relict Wet Prairies.</b> 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 Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

**Table 1. Characteristic plant species.**

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
<i>Typha angustifolia</i>	<i>Zizaniopsis elegans</i> var. <i>glauca</i>	<i>Culfa palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginifolia</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladonia mariscoides</i>	<i>Carex busbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarothrae</i>
<i>Hammelia ficaria</i>	<i>Eleocharis rostellata</i>	<i>Desodon verticillatus</i>	<i>Quercus palustris</i>	<i>Cicuta andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentiana sp.</i>	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha glauca</i>	<i>Lobelia kalmii</i>	<i>Nemophila mucronata</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lysimachia alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capitata</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Wormwood virginica</i>		<i>Solidago rigida</i>
	<i>Salix serotima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tafieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Carrall County, Maryland Rater(s): Mike Mussone Date: 25 April 2013

**Metric 1. Wetland Area (size).**

1	1
max 6 pts	subtotal

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 <10.1ha) (4 pts)

☐ 3 to <10 acres (1.2 to <4ha) (3 pts)

☒ 0.3 to <3 acres (0.12 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)

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

12	13
max 14 pts	subtotal

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

☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest. (5)

☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

**Metric 3. Hydrology.**

26	39
max 30 pts	subtotal

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

☒ High pH groundwater (5)

☒ Other groundwater (3)

☒ 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)

☒ 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)

☒ <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or double check.

☐ Semi- to permanently inundated/saturated (4)

☐ 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)

☐ Recovered (7)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

☐ point source (nonstormwater)

☐ filling/grading

☐ road bed/RR track

☐ dredging

☐ other

**Metric 4. Habitat Alteration and Development.**

17	56
max 20 pts	subtotal

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

☒ None or none apparent (4)

☐ 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)

☒ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jjm

Site: Carrall County, Maryland Rater(s): Mike Mussone Date: 25 April 2013

**Metric 5. Special Wetlands.**

0	56
max 10 pts	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, interspersions, microtopography.**

5	61
max 20 pts	subtotal

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

☐ 0 Aquatic bed

☐ 1 Emergent

☐ 2 Shrub

☐ 3 Forest

☐ 4 Mudflats

☐ 5 Open water

☐ 6 Other

6b. horizontal (plan view) Interspersion. Select only one.

☐ High (5)

☐ Moderately high (4)

☒ Moderate (3)

☐ 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)

☒ Sparse 5-25% cover (-1)

☐ Nearly absent <5% cover (0)

☐ Absent (1)

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

☐ 1 Vegetated hummocks/mounds

☐ 2 Coarse woody debris >15cm (6in)

☐ 3 Standing dead >25cm (10in) dbh

☐ 4 Amphibian breeding pools

**Vegetation 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 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

End of Quantitative Rating. Complete Categorization Worksheets.



## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3.
Quantitative Rating	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	12	
	Metric 3. Hydrology	26	
	Metric 4. Habitat	17	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersed, microtopography	5	
	TOTAL SCORE	61	Category based on score breakpoints 2-3 9/17

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: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> 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 Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> 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 Wetland is assigned to the appropriate category based on the scoring range	<input checked="" type="radio"/> 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 within the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO 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
		<input checked="" type="radio"/>	

- Scoring range slightly expanded - Combined wetlands

End of Ohio Rapid Assessment Method for Wetlands.

Name:	Mike Mussomeli
Date:	25 April 2013
Affiliation:	Tetra Tech, Inc
Address:	661 Anderson Dr., Pittsburgh, PA 15220
Phone Number:	412-920-7007
e-mail address:	michael.mussomeli@tetra-tech.com
Name of Wetland:	R
Vegetation Community(ies):	PSS
HGM Class(es):	Rivine
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.	See attached

Lat/Long or UTM Coordinate	40.6051, -81.8698
USGS Quad Name	Circleville
County	Crawford Co.
Township	T14N
Section and Subsection	S28, R5W
Hydrologic Unit Code	05040001
Site Visit	25 April 2013
National Wetland Inventory Map	Fig. 3A
Ohio Wetland Inventory Map	Fig. 3g
Soil Survey	Fig. 2
Delineation report/map	Attached

Name of Wetland: <u>Wetland R</u>	
Wetland Size (acres, hectares): <u>0.03</u>	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
<p>pss with a tributary stream.</p>	
Final score :	59
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	<b>Critical Habitat.</b> 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	<b>Threatened or Endangered Species.</b> 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 Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	<b>Documented High Quality Wetland.</b> Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	<b>Significant Breeding or Concentration Area.</b> Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	<b>Category 1 Wetlands.</b> 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 <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	<b>Bogs.</b> Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> 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 Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	<b>Fens.</b> 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 Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	<b>"Old Growth Forest."</b> 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 Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	<b>Mature forested wetlands.</b> 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  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	NO  Go to Question 9a
9a	<b>Lake Erie coastal and tributary wetlands.</b> 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  Go to Question 9b	NO  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  Wetland should be evaluated for possible Category 3 status.  Go to Question 10	NO  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  Go to Question 9d	NO  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  Wetland is a Category 3 wetland.  Go to Question 10	NO  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  Wetland should be evaluated for possible Category 3 status.  Go to Question 10	NO  Go to Question 10
10	<b>Lake Plain Sand Prairies (Oak Openings).</b> 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 graminaceous 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  Wetland is a Category 3 wetland.  Go to Question 11	NO  Go to Question 11
11	<b>Relict Wet Prairies.</b> 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  Wetland should be evaluated for possible Category 3 status.  Complete Quantitative Rating	NO  Complete Quantitative Rating

**Table 1. Characteristic plant species.**

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glauca</i>	<i>Calla palustris</i>	<i>Carex erytrolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Coccolus plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flacca</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buchananii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarawellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Cientiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Heliopsis grosseserrata</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Luzula latifolia</i>		<i>Liatris spicata</i>
<i>Typha x glauca</i>	<i>Lobelia kalmii</i>	<i>Nemophila mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthioides</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Solidago rigida</i>
	<i>Salix myrsinoides</i>	<i>Woodwardia virginica</i>		<i>Solidago rigida</i>
	<i>Salix serotima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Typhoidia glutinosa</i>			
	<i>Utricularia maritima</i>			
	<i>Triglochin palustre</i>			

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

Site: Cornell County Energy Rater(s): Mike Mussone Date: 25 April 2013

**Metric 1. Wetland Area (size).**

max 5 pts subtotal

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 <10.1ha) (4 pts)

☐ 3 to <10 acres (1.2 to <4ha) (3 pts)

☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)

☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)

☒ <0.1 acres (0.04ha) (0 pts)

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

max 14 pts subtotal

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

☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)

☐ 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), shrub land, young second growth forest. (5)

☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)

☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

**Metric 3. Hydrology.**

max 30 pts subtotal

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

☒ High pH groundwater (5)

☒ Other groundwater (3)

☒ Precipitation (1)

☒ Seasonal/intermittent surface water (3)

☒ Perennial surface water (lake or stream) (5)

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)

☒ <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)

☐ Recovering (3)

☐ Recent or no recovery (1)

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)

3d. Duration inundation/saturation. Score one or dbl check.

☐ Semi- to permanently inundated/saturated (4)

☒ Regularly inundated/saturated (3)

☒ Seasonally inundated (2)

☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

☐ ditch

☐ tile

☐ dike

☐ weir

☐ stormwater input

☐ point source (nonstormwater)

☐ filling/grading

☐ road bed/RR track

☐ dredging

☐ other

**Metric 4. Habitat Alteration and Development.**

max 20 pts subtotal

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

☒ None or none apparent (4)

☐ 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)

☐ 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)

☐ Recovering (3)

☐ Recent or no recovery (1)

Check all disturbances observed

☐ mowing

☐ grazing

☐ clearcutting

☐ selective cutting

☐ woody debris removal

☐ toxic pollutants

☐ shrub/sapling removal

☐ herbaceous/aquatic bed removal

☐ sedimentation

☐ dredging

☐ farming

☐ nutrient enrichment

last revised 1 February 2001 jlm

Site: Cornell County Energy Rater(s): Mike Mussone Date: 25 April 2013

**Metric 5. Special Wetlands.**

max 10 pts 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, interspersions, microtopography.**

max 20 pts subtotal

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

☒ Aquatic bed

☐ Emergent

☒ Shrub

☐ Forest

☐ Mudflats

☐ Open water

☐ Other

6b. horizontal (plan view) Interspersion. Select only one.

☐ High (5)

☒ Moderately high (4)

☐ Moderate (3)

☐ 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)

☐ Sparse 5-25% cover (-1)

☒ Nearly absent <5% cover (0)

☐ Absent (1)

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

☒ Vegetated hummocks/mounds

☐ Coarse woody debris >15cm (6in)

☐ Standing dead >25cm (10in) dbh

☐ Amphibian breeding pools

**Vegetation 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 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

End of Quantitative Rating. Complete Categorization Worksheets.

## ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
Quantitative Rating	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	9	
	Metric 3. Hydrology	25	
	Metric 4. Habitat	18	
Metric 5. Special Wetland Communities	0		
Metric 6. Plant communities, interspersed, microtopography	7		
TOTAL SCORE		59	Category based on score breakpoints 2

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: Narrative Rating Nos. 2, 3, 4, 5, 7, 8a, 9d, 1d	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> 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: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> 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 Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> 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?	<input checked="" type="radio"/> YES 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 Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> 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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO 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.

Choose one Final Category  
Category 1 ☒ Category 2 ☐ Category 3 ☐

End of Ohio Rapid Assessment Method for Wetlands.

## **APPENDIX C**

### **HHEI FORMS**

# OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): **9**

SITE NAME/LOCATION: Correll County, Ohio - 31 West River Fork  
 SITE NUMBER: 51 RIVER BASIN: North River Fork of the Ohio River DRAINAGE AREA (mi<sup>2</sup>): 4.1  
 LENGTH OF STREAM REACH (ft): 200 LAT: 40° 42' N LONG: 81° 05' W RIVER CODE: --- RIVER MILE: ---  
 DATE: 23 April 2013 SCORER: M. Parnelli COMMENTS: ephemeral channel - drainage from access road

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

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

## ADDITIONAL STREAM INFORMATION (This information must also be completed):

OHEI PERFORMED? ☐ Yes ☒ No OHEI Score: --- (If Yes, Attach Completed OHEI Form)  
 DOWNSTREAM DESIGNATED USE(S):  
☒ WWH Name: Pipes Fork Distance from Evaluated Stream: 1.09 mi  
☐ 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: Correll, Ohio NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---  
 County: Correll Township / City: Correll, Ohio

MISCELLANEOUS  
 Base Flow Conditions? (Y/N): Y Date of last precipitation: 15 April 2013 Quantity: 0.21"  
 Photograph information: see attached report  
 Elevated Turbidity? (Y/N): Y Canopy (% open): 60  
 Were samples collected for water chemistry? (Y/N): Y (Note lab sample no. or id. and attach results) Lab Number: ---  
 Field Measures: Temp (°C): 16.6 Dissolved Oxygen (mg/l): 1.6 pH (S.U.): 6.6 Conductivity (µmhos/cm): 164  
 Is the sampling reach representative of the stream (Y/N): Y If not, please explain: ---

Additional comments/description of pollution impacts: drainage from access of agricultural field

BIOLOGICAL EVALUATION  
 Performed? (Y/N): Y (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): Y Voucher? (Y/N): Y Salamanders Observed? (Y/N): Y Voucher? (Y/N): Y  
 Frogs or Tadpoles Observed? (Y/N): Y Voucher? (Y/N): Y Aquatic Macroinvertebrates Observed? (Y/N): Y Voucher? (Y/N): Y  
 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  


FLOW →

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.)				HHEI Metric Points
TYPE	PERCENT	TYPE	PERCENT	
<input type="checkbox"/> BLDR SLABS [16 pts]	<u>0</u>	<input type="checkbox"/> SILT [3 pts]	<u>0</u>	Substrate Max = 40
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<u>0</u>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>0</u>	
<input type="checkbox"/> BEDROCK [16 pts]	<u>0</u>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<u>0</u>	A + B
<input type="checkbox"/> COBBLE (63-256 mm) [12 pts]	<u>0</u>	<input type="checkbox"/> CLAY or HARDPAN [3 pts]	<u>0</u>	
<input type="checkbox"/> GRAVEL (2-64 mm) [8 pts]	<u>0</u>	<input type="checkbox"/> MUCK [3 pts]	<u>0</u>	Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>0</u>
<input type="checkbox"/> SAND (<2 mm) [8 pts]	<u>0</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<u>0</u>	
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) <u>3</u> (B) <u>1</u>				TOTAL NUMBER OF SUBSTRATE TYPES: <u>1</u>
COMMENTS: <u>---</u> MAXIMUM POOL DEPTH (centimeters): <u>0</u>				
2. Maximum Pool Depth (Measure the maximum pool depth within the 81 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes). (Check ONLY one box):				Pool Depth Max = 30
<input type="checkbox"/> > 50 centimeters [20 pts] <input type="checkbox"/> > 5 cm - 10 cm [15 pts] <input type="checkbox"/> > 22.5 - 30 cm [10 pts] <input checked="" type="checkbox"/> < 5 cm [5 pts] <input type="checkbox"/> > 10 - 22.5 cm [25 pts] <input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]				
COMMENTS: <u>---</u> MAXIMUM POOL DEPTH (centimeters): <u>0</u>				Bankfull Width Max = 30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):				
<input type="checkbox"/> > 4.0 meters (> 13') [20 pts] <input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] <input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [15 pts] <input type="checkbox"/> < 1.0 m (< 3' 3") [5 pts] <input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]				
COMMENTS: <u>---</u> AVERAGE BANKFULL WIDTH (meters): <u>5</u>				HHEI Metric Points
HHEI Metric Points: <u>4</u>				

This information must also be completed  
 RIPARIAN ZONE AND FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) as looking downstream)  
 RIPARIAN WIDTH: ☒ Wide > 10m ☐ Moderate 5-10m ☐ Narrow < 5m ☐ None  
 COMMENTS: ---  
 FLOODPLAIN QUALITY: ☒ Mature Forest, Wetland ☐ Immature Forest, Shrub or Old Field ☐ Residential, Park, New Field ☐ Fenced Pasture  
 FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☐ Stream Flowing ☒ Moist Channel, isolated pools, no flow (intermittent)  
☐ Subsurface flow with isolated pools (intermittent) ☐ Dry channel, no water (ephemeral)  
 COMMENTS: ---  
 INUNDATION (Number of bends per 81 m (200 ft) of channel) (Check ONLY one box):  
☒ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ > 3  
 STREAM GRADIENT ESTIMATE: ☐ Flat (< 1/100 ft) ☐ Flat to Moderate ☒ Moderate to Severe ☐ Severe (> 1/100 ft)



# OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 26.5

SITE NAME/LOCATION: Carroll County Energy - S2 on Pkwy Fork  
 SITE NUMBER: 52 RIVER BASIN: Piquette Fork DRAINAGE AREA (mi<sup>2</sup>): 41.1  
 LENGTH OF STREAM REACH (ft): 200 LAT: 40.6070 LONG: -81.0590 RIVER CODE: --- RIVER MILE: ---  
 DATE: 23 April 2013 SCORER: M. Musmanno COMMENTS: leaking from pipe

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

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

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 6). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> SLUR SLABS [16 pts]		<input type="checkbox"/> SILT [3 pts]	<u>15</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (63-256 mm) [12 pts]	<u>15</u> (NS)	<input type="checkbox"/> CLAY or HARDPAN [0 pts]	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [8 pts]	<u>15</u>	<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [8 pts]		<input type="checkbox"/> ARTIFICIAL [0 pts]	

Total Percentages of Bdr Slabs, Boulder, Cobble, Bedrock 15 (A) 13.5 (B) 3  
 SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth (Measure the maximum pool depth within the 81 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]  
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: MAXIMUM POOL DEPTH (centimeters): 25

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') [26 pts]  
☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]  
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [16 pts]  
☐ < 1.0 m (< 3' 3") [0 pts]

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 5

HHEI Metric Points

Substrate Max = 40  
16.5  
 A + B

Pool Depth Max = 30  
5

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)

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)		Conservation Tillage	
L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wide >10m		Mature Forest, Wetland		Urban or Industrial	
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field		<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop	
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field		Mining or Construction	
Narrow <5m		<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture			
None					

COMMENTS:

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing  
☐ Subsurface flow with isolated pools (Intermittent)  
☐ Moist Channel, isolated pools, no flow (Intermittent)  
☐ Dry channel, no water (Ephemeral)  
 COMMENTS:

MEANDER (Number of bends per 81 m (200 ft) of channel) (Check ONLY one box):  
☒ None  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat (< 1/100 ft) ☐ Flat to Moderate ☒ Moderate (2 1/100 ft) ☐ Moderate to Severe ☐ Severe (> 1/100 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: Piquette Fork Distance from Evaluated Stream: 450 m  
☐ 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: Carrollton NRCS Soil Map Page: NRCS Soil Map Stream Order:  
 County: Carroll Co Township/City: Carrollton

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 17 April 2013 Quantity: 0.21"  
 Photograph Information: see attached report  
 Elevated Turbidity? (Y/N): N Canopy (% open): 90  
 Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or lab 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:

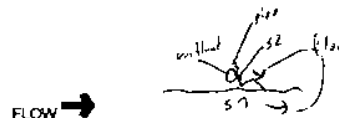
Additional comments/description of pollution impacts: leaking from pipe

## BIOTIC EVALUATION

Performed? (Y/N): Y (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): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N  
 Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): 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



# OhioEPA Primary Headwater Habitat Evaluation Form

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

49

SITE NAME/LOCATION: Carroll County, OH - S3 - West Pike Creek  
 SITE NUMBER: 53 RIVER BASIN: Pipes Lake S3 DRAINAGE AREA (mi<sup>2</sup>): 1.50  
 LENGTH OF STREAM REACH (ft): 100 LAT: 40.464 LONG: -80.0556 RIVER CODE: --- RIVER MILE: ---  
 DATE: 21 April 2013 SCORER: unpublished COMMENTS: feeding larvae and pupae during fair stream flow

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

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

MODIFICATIONS:

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.)				HHEI Metric Points
TYPE	PERCENT	TYPE	PERCENT	
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)		Substrate Max = 40 14
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)		
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)		
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	10	<input checked="" type="checkbox"/> CLAY or HARDPAN (3 pts)	12	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5	<input type="checkbox"/> MUCK (3 pts)		
<input checked="" type="checkbox"/> SAND (<2 mm) [8 pts]	15	<input type="checkbox"/> ARTIFICIAL (3 pts)		
Total of Percentages pt. Blkr Slabs, Boulder, Cobble, Bedrock: <u>10</u> (A) <u>4</u> (B) <u>5</u>				
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:				
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):				
<input type="checkbox"/> > 30 centimeters [20 pts]		<input type="checkbox"/> > 5 cm - 10 cm [15 pts]		Pool Depth Max = 30 15
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]		<input type="checkbox"/> < 5 cm [5 pts]		
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]		<input type="checkbox"/> NO WATER OR MOIST CHANNEL (0 pts)		
COMMENTS: MAXIMUM POOL DEPTH (centimeters): <u>26</u>				
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):				
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]		<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]		Bankfull Width Max=30 20
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]		
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]				
COMMENTS: AVERAGE BANKFULL WIDTH (meters): <u>1.8</u>				

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)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
<input type="checkbox"/> L <input type="checkbox"/> R	Wide >10m	<input type="checkbox"/> L <input type="checkbox"/> R	Conservation Tillage
<input checked="" type="checkbox"/> L <input checked="" type="checkbox"/> R	Moderate 5-10m	<input checked="" type="checkbox"/> L <input checked="" type="checkbox"/> R	Urban or Industrial
<input type="checkbox"/> L <input type="checkbox"/> R	Narrow <5m	<input type="checkbox"/> L <input type="checkbox"/> R	Open Pasture, Row Crop
<input type="checkbox"/> L <input type="checkbox"/> R	None	<input type="checkbox"/> L <input type="checkbox"/> R	Mining or Construction
COMMENTS:			
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):			
<input checked="" type="checkbox"/> Stream Flowing		<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)	
<input type="checkbox"/> Subsurface flow with isolated pools (Intermittent)		<input type="checkbox"/> Dry channel, no water (Ephemeral)	
COMMENTS: <u>heavy rain</u>			
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):			
<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3
STREAM GRADIENT ESTIMATE			
<input type="checkbox"/> Flat (0.1 to 0.2%)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2.1 to 10%)	<input type="checkbox"/> Moderate to Severe
<input type="checkbox"/> Severe (10.1 to 100%)			

## 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: Pipes Lake Distance from Evaluated Stream: 1.50 mi  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream: \_\_\_\_\_  
☐ BWH Name: \_\_\_\_\_ Distance from Evaluated Stream: \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION  
 USGS Quadrangle Name: Carroll NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order: \_\_\_\_\_  
 County: Carroll Township / City: Carrollton

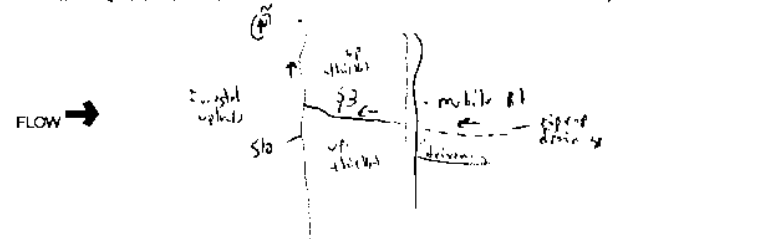
MISCELLANEOUS  
 Base Flow Conditions? (Y/N): N Date of last precipitation: 27 April 2013 Quantity: 0.57"  
 Photograph Information: SN-41  
 Elevated Turbidity? (Y/N): N Canopy (% open): 75  
 Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_  
 Field Measures: Temp (°C): N/A Dissolved Oxygen (mg/l): N/A pH (S.U.): 7.6 Conductivity (umhos/cm): N/A  
 Is the sampling reach representative of the stream (Y/N): Y If not, please explain: \_\_\_\_\_

Additional comments/description of pollution impacts: riparian deforestation opposite mobile Rt; also covering  
riparian deforestation; severe

BIOTIC EVALUATION  
 Performed? (Y/N): Y (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): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N  
 Frogs or Toads Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): Y Voucher? (Y/N): 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):

18

SITE NAME/LOCATION Cornell Hollow Run  
SITE NUMBER 54 RIVER BASIN Pipes Run Still Cr. DRAINAGE AREA (mi<sup>2</sup>) 21 mi<sup>2</sup>  
LENGTH OF STREAM REACH (ft) 200 LAT. 39.6030 LONG. -81.0655 RIVER CODE --- RIVER MILE ---  
DATE 2/23/2013 SCORER m. muscarelli COMMENTS

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

STREAM CHANNEL ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

MODIFICATIONS:

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 6). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	9
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)		<input type="checkbox"/> LEAF LACKWOODY DEBRIS (3 pts)	10
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input type="checkbox"/> COBBLE (63-256 mm) (12 pts)		<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input type="checkbox"/> GRAVEL (2-64 mm) (8 pts)		<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (8 pts)		<input type="checkbox"/> ARTIFICIAL (3 pts)	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 (A) 6 (B) 2  
SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth (Measure the maximum pool depth within the 81 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 (16 pts)  
☐ > 10 - 22.5 cm (12 pts)  
☐ > 5 cm (8 pts)  
☐ NO WATER OR MOIST CHANNEL (0 pts)

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):  
☐ > 4.0 meters (> 13') (16 pts)  
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') (12 pts)  
☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") (8 pts)  
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") (4 pts)  
☐ ≤ 1.0 m (≤ 3' 3") (0 pts)

COMMENTS: AVERAGE BANKFULL WIDTH (meters):

HHEI Metric Points

Substrate Max = 40

8

A + B

Pool Depth Max = 30

5

Bankfull Width Max = 16

5

This information must also be completed  
RIPARIAN ZONE AND FLOODPLAIN QUALITY \*NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN ZONE		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/> Wide >10m	<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Conservation Tillage	<input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Open Pasture, Row Crop	<input type="checkbox"/> Mining or Construction
<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> Residential, Park, New Field		
<input type="checkbox"/> None	<input type="checkbox"/> Fenced Pasture		

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing  
☐ Subsurface flow with isolated pools (intermittent)  
☐ Moist Channel, isolated pools, no flow (intermittent)  
☐ Dry channel, no water (ephemeral)

COMMENTS:

SEDIMENTITY (Number of bands per 61 m (200 ft) of channel) (Check ONLY one box):  
☒ None  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat (0 to 1/100 ft) ☐ Flat to Moderate ☐ Moderate (2 to 10 ft) ☒ Moderate to Severe ☐ Severe (10 to 100 ft)

## ADDITIONAL STREAM INFORMATION (This information must also be completed):

QHE PERFORMED? ☐ Yes ☒ No QHE Score (If Yes, Attach Completed QHE Form)

DOWNSIDE DESIGNATED USE(S)

☒ WWH Name: Pipes Run Distance from Evaluated Stream: 1.25 mi  
☐ 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: Cornell Hollow NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---

County: Cornell Co. Township/City: Cornell Hollow

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 19 April 2013 Quantity: 0.71"

Photograph Information: add photo

Elevated Turbidity? (Y/N): --- Canopy (% open): 30

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

Field Measures: Temp (°C): 14.1 Dissolved Oxygen (mg/L): 1.1 pH (S.U.): 6.1 Conductivity (µmhos/cm): 11.3

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

Additional comments/description of pollution impacts: downy corn field

## NOTIC EVALUATION

Performed? (Y/N): Y (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)

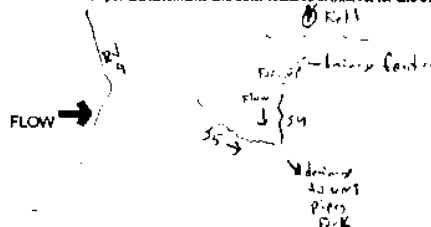
Fish Observed? (Y/N): --- Voucher? (Y/N): --- Salamanders Observed? (Y/N): --- Voucher? (Y/N): ---

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): **24**

SITE NAME/LOCATION: Carell County, Ohio - 401 p. 100  
 SITE NUMBER: 55 RIVER BASIN: Big Rock Still Cr. DRAINAGE AREA (mi<sup>2</sup>): < 1 mi<sup>2</sup>  
 LENGTH OF STREAM REACH (ft): 200 LAT: 40.6630 LONG: -81.2659 RIVER CODE: --- RIVER MILE: ---  
 DATE: 23 April 2013 SCORER: M. J. J. J. COMMENTS: ---

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

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

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
<input type="checkbox"/> BLDR SLABS (16 pts)	---	<input type="checkbox"/> SILT (3 pts)	85
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)	---	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	---
<input type="checkbox"/> BEDROCK (16 pts)	---	<input type="checkbox"/> FINE DETRITUS (3 pts)	---
<input type="checkbox"/> COBBLE (63-256 mm) (12 pts)	---	<input type="checkbox"/> CLAY or HARDPAN (0 pts)	---
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) (8 pts)	35	<input type="checkbox"/> MUCK (0 pts)	---
<input type="checkbox"/> SAND (<2 mm) (6 pts)	---	<input type="checkbox"/> ARTIFICIAL (3 pts)	---

Total Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 (A) 12 (B) 2  
 SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

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 (16 pts)  
☐ > 10 - 22.5 cm (12 pts)  
☐ NO WATER OR MOIST CHANNEL (0 pts)

COMMENTS: --- MAXIMUM POOL DEPTH (centimeters): 2.5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):  
☐ > 4.0 meters (> 13') (20 pts)  
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') (16 pts)  
☐ > 1.5 m - 3.0 m (> 4' 9" - 9' 7") (12 pts)  
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 9") (16 pts)  
☐ < 1.0 m (< 3' 3") (0 pts)

COMMENTS: --- AVERAGE BANKFULL WIDTH (meters): 0.30

HHEI Metric Points

Substrate Max = 40

**14**

A + B

Pool Depth Max = 30

**5**

Bankfull Width Max = 20

**5**

This information must also be completed  
 RIPARIAN ZONE AND FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) is looking downstream)

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L/R	(Per Bank)	L/R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	Wide >10m	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	Intermediate Forest, Shrub or Old Field
<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	None	<input type="checkbox"/>	Fenced Pasture
<input type="checkbox"/>		<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>		<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>		<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>		<input type="checkbox"/>	Mining or Construction

COMMENTS: ---

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing  
☐ Subsurface flow with isolated pools (Intermittent)  
☐ 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  
☐ 0.5  
☒ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat (< 0.5/100 ft) ☐ Flat to Moderate ☒ Moderate (> 0.5/100 ft) ☐ Moderate to Severe ☐ Severe (> 1.0/100 ft)

## ADDITIONAL STREAM INFORMATION (This information must also be completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score: --- (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S):  
☒ WWH Name: Big Rock Still Cr. Distance from Evaluated Stream: 1.35 mi  
☐ CWM 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 Quadangle Name: Carell 10 NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---  
 County: Carell 10 Township / City: Carell 10

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 19 April 2013 Quantity: 0.21"

Photograph Information: attached

Elevated Turbidity? (Y/N): --- Canopy (% open): 35

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

Field Measures: Temp (°C): 14.2 Dissolved Oxygen (mg/l): 9.2 pH (S.U.): 7.6 Conductivity (µmhos/cm): 174

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

Additional comments/description of pollution impacts: downy Fern Gird

## BIOTIC EVALUATION

Performed? (Y/N): Y (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)

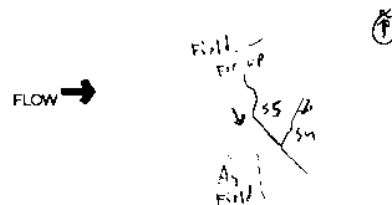
Fish Observed? (Y/N): Y Voucher? (Y/N): --- Salamanders Observed? (Y/N): Y Voucher? (Y/N): ---

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



# OhioEPA Primary Headwater Habitat Evaluation Form

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

28

SITE NAME/LOCATION: Council County, Ohio

SITE NUMBER: 56 RIVER BASIN: Pipes Fork Still Creek DRAINAGE AREA (mi<sup>2</sup>): 41 mi<sup>2</sup>

LENGTH OF STREAM REACH (ft): 200 LAT: 40.6663 LONG: -81.0634 RIVER CODE: --- RIVER MILE: ---

DATE: 2/14/12 SCORER: Andrew COMMENTS: Large farmstead

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

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

MODIFICATIONS:

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY one 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
<input type="checkbox"/> SLUR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	30
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input checked="" type="checkbox"/> COBBLE (63-256 mm) (12 pts)	10	<input type="checkbox"/> CLAY or HARDPAN (0 pts)	30
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) (8 pts)	10	<input type="checkbox"/> MUCK (0 pts)	
<input checked="" type="checkbox"/> SAND (<2 mm) (8 pts)	30	<input type="checkbox"/> ARTIFICIAL (3 pts)	

Total Percentages of Bdr Slabs, Boulder, Cobble, Bedrock: 10 (A) 3 (B) 5  
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

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 (15 pts)  
☒ > 10 - 22.5 cm (10 pts)  
☐ NO WATER OR MOIST CHANNEL (0 pts)

COMMENTS: MAXIMUM POOL DEPTH (centimeters): 5.5

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 (> 4' 9" - 9' 7") (20 pts)

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 6.76

HHEI Metric Points

Substrate Max = 40

8

A + B

Pool Depth Max = 30

15

Bankfull Width Max = 30

5

This information must also be completed  
RIPARIAN ZONE AND FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) is looking downstream)

RIPARIAN ZONE		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/> Wide >10m	<input checked="" type="checkbox"/> (Per Bank)	<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Conservation Tillage
<input type="checkbox"/> Moderate 5-10m		<input type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> Narrow <5m		<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Open Pasture, Row Crop
<input type="checkbox"/> None		<input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> Mining or Construction

COMMENTS:

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing  
☐ Subsurface flow with isolated pools (Intermittent)  
☐ 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  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat (0 to <1/100 ft) ☐ Flat to Moderate ☒ Moderate (2 to 1/100 ft) ☐ Moderate to Severe ☐ Severe (10 to 1/100 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: Pipes Fork Distance from Evaluated Stream: 1.65 mi  
☐ CWH Name: Distance from Evaluated Stream: ---  
☐ BWH Name: Distance from Evaluated Stream: ---

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

USGS Quadrangle Name: Council Bluffs NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---

County: Council Bluffs Township / City: Council Bluffs

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6/24/11 Quantity: 0.5"

Photograph information: 5/14/11

Elevated Turbidity? (Y/N): N Canopy (% open): 50

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

Field Measures: Temp (°C): 14.4 Dissolved Oxygen (mg/l): ~6.1 pH (S.U.): ~6.1 Conductivity (µmhos/cm): ~112

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): Y (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)

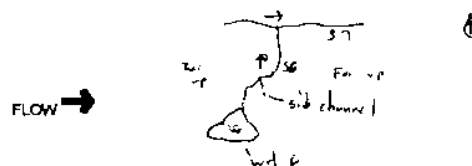
Fish Observed? (Y/N): N Voucher? (Y/N): --- Salamanders Observed? (Y/N): N Voucher? (Y/N): ---

Frogs or Toads Observed? (Y/N): N Voucher? (Y/N): --- Aquatic Macroinvertebrates Observed? (Y/N): 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



# OhioEPA Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION: Carell Creek, facing west side of R.R.  
 SITE NUMBER: 57-1 RIVER BASIN: Pipe Run - 5711 DRAINAGE AREA (mi<sup>2</sup>): 21.4  
 LENGTH OF STREAM REACH (ft): 200 LAT: 40.4091 LONG: -81.0597 RIVER CODE: --- RIVER MILE: ---  
 DATE: 29 April 2013 SCORER: Dr. Messing COMMENTS: sample point 1

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

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

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 6). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input checked="" type="checkbox"/> BLOR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pts]	
<input checked="" type="checkbox"/> BOULDER (>256 mm) [16 pts]	5	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	10	<input type="checkbox"/> CLAY or HARDPAN [0 pts]	
<input type="checkbox"/> GRAVEL (2-64 mm) [8 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input checked="" type="checkbox"/> SAND (<2 mm) [8 pts]	80	<input type="checkbox"/> ARTIFICIAL [0 pts]	

Total Percentages of Substrate: 15 (A) 9 (B) 4  
 SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth (Measure the maximum pool depth within the 50 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] ☐ > 5 cm - 10 cm [15 pts]  
☐ > 22.5 - 30 cm [16 pts] ☐ < 5 cm [5 pts]  
☐ > 10 - 22.5 cm [25 pts] ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: MAXIMUM POOL DEPTH (centimeters): 7.6

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):  
☐ > 4.0 meters (> 13') [15 pts] ☐ > 1.0 m - 1.5 m (> 3' - 4' 8") [15 pts]  
☐ > 3.0 m - 4.0 m (> 9' 8" - 13') [25 pts] ☐ < 1.0 m (< 3' 3") [5 pts]  
☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 8") [20 pts]

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 1.85

HHEI Metric Points

Substrate Max = 40

**13**

A + B

Pool Depth Max = 30

**15**

Bank Full 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 & FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS:

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing ☐ Moist Channel, isolated pools, no flow (Intermittent)  
☐ Subsurface flow with isolated pools (Intermittent) ☐ Dry channel, no water (Ephemeral)  
 COMMENTS:

SINUOSITY (Number of bends per 51 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 (< 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):

GHEI PERFORMED? ☐ Yes ☒ No GHEI Score: (If Yes, Attach Completed GHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Pipe Run Distance from Evaluated Stream: 1.45 mi  
☐ 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: Carell Hill NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---  
 County: Carell Co. Township / City: Carell Hill

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 29 April 2013 Quantity: 0.57"

Photograph Information: attached

Elevated Turbidity? (Y/N): Y Canopy (% open): 50

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

Field Measures: Temp (°C): 14 Dissolved Oxygen (mg/L): 11.7 pH (S.U.): 7.4 Conductivity (µmhos/cm): 167

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

Additional comments/description of pollution impacts: Increase from field/pasture

## BIOTIC EVALUATION

Performed? (Y/N): Y (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)

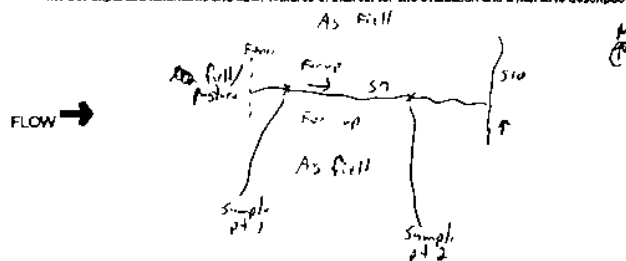
Fish Observed? (Y/N): N Voucher? (Y/N): --- Salamanders Observed? (Y/N): N Voucher? (Y/N): ---

Frogs or Toads Observed? (Y/N): N Voucher? (Y/N): --- Aquatic Macroinvertebrates Observed? (Y/N): Y Voucher? (Y/N): ---

Comments Regarding Biology: Platycodon sp.

## 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):

55

SITE NAME/LOCATION: Carell Creek Facility - West River Fork  
 SITE NUMBER: 57-2 RIVER BASIN: Pipes Fork - Still Creek DRAINAGE AREA (mi<sup>2</sup>): 21 mi<sup>2</sup>  
 LENGTH OF STREAM REACH (ft): 200 LAT: 39.4671 LONG: -79.0392 RIVER CODE: --- RIVER MILE: ---  
 DATE: 17 April 2013 SCORER: M. P. Samsel COMMENTS: Sample point 2 on 57

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

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

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
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)	5	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input type="checkbox"/> COBBLE (63-256 mm) (12 pts)	15	<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) (9 pts)	25	<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (5 pts)	50	<input type="checkbox"/> ARTIFICIAL (0 pts)	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 20 (A) 15 (B) 5  
 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

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 (10 pts)  
☐ > 10 - 22.5 cm (5 pts)  
☐ > 5 cm - 10 cm (15 pts)  
☐ < 5 cm (5 pts)  
☐ NO WATER OR MOIST CHANNEL (0 pts)

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box).  
☐ > 4.0 meters (> 13') (10 pts)  
☐ > 3.0 - 4.0 m (> 9' 7" - 13') (5 pts)  
☒ > 1.5 - 3.0 m (> 4' 8" - 9' 7") (20 pts)  
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") (15 pts)  
☐ ≤ 1.0 m (≤ 3' 3") (5 pts)

COMMENTS: AVERAGE BANKFULL WIDTH (meters):

HHEI Metric Points

Substrate Max = 40

20

A + B

Pool Depth Max = 30

15

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	FLOODPLAIN QUALITY
<input checked="" type="checkbox"/> Wide >10m	<input checked="" type="checkbox"/> Mature Forest, Wetland
<input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Immature Forest, Shrub or Old Field
<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> Residential, Park, New Field
<input type="checkbox"/> None	<input type="checkbox"/> Fenced Pasture
	<input type="checkbox"/> Conservation Tillage
	<input type="checkbox"/> Urban or Industrial
	<input type="checkbox"/> Open Pasture, Row Crop
	<input type="checkbox"/> Mining or Construction

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: heavy rain

SINUOSITY (Number of bends per 61 m (200 ft) of channel). (Check ONLY one box)  
☐ None  
☒ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat (0.5 m/100 ft) ☐ Flat to Moderate ☒ Moderate (2 m/100 ft) ☐ Moderate to Severe ☐ Severe (10 m/100 ft)

## ADDITIONAL STREAM INFORMATION (This information must also be completed):

GHEI PERFORMED? ☐ Yes ☒ No GHEI Score: (If Yes, Attach Completed GHEI Form)

DOWNSIDE DESIGNATED USE(S)  
☒ WWH Name: Pipes Fork Distance from Evaluated Stream: 1.50  
☐ 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: Carellton NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---  
 County: Carell Co. Township / City: Carellton

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 24 April 2013 Quantity: 0.57"  
 Photograph Information: attached  
 Elevated Turbidity? (Y/N): N Canopy (% open): 95  
 Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: ---  
 Field Measures: Temp (°C): N/A Dissolved Oxygen (mg/L): N/A pH (S.U.): N/A Conductivity (µmhos/cm): N/A  
 Is the sampling reach representative of the stream (Y/N): Y If not, please explain:

Additional comments/description of pollution impacts:

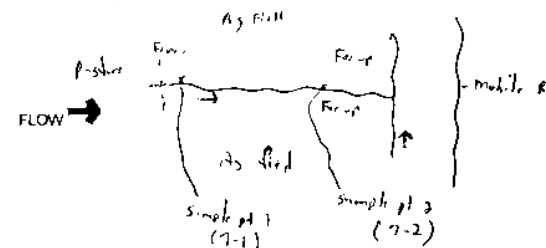
## BIOIC EVALUATION

Performed? (Y/N): Y (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): N Voucher? (Y/N): --- Salamanders Observed? (Y/N): N Voucher? (Y/N): ---  
 Frogs or Toads Observed? (Y/N): Y Voucher? (Y/N): --- Aquatic Macroinvertebrates Observed? (Y/N): Y Voucher? (Y/N): N  
 Comments Regarding Biology: Brown sp. - Tadpoles, Plecoptera sp.

## 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) :

22

SITE NAME/LOCATION: Carroll County, Ohio, S.D. - V.M. River Fork  
SITE NUMBER: 58 RIVER BASIN: 001 Pgs. E. of Phila DRAINAGE AREA (mi<sup>2</sup>): 1.1  
LENGTH OF STREAM REACH (ft): 50 LAT: 39.6668 LONG: -81.0577 RIVER CODE: --- RIVER MILE: ---  
DATE: --- SCORER: A. Wilson/PA COMMENTS: ephemeral stream

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

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

MODIFICATIONS:

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
<input type="checkbox"/> BLDR SLABS [16 pts]		<input type="checkbox"/> SILT [3 pts]	
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [10 pts]	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	30	<input type="checkbox"/> MUCK [10 pts]	
<input checked="" type="checkbox"/> SAND (<2 mm) [8 pts]	20	<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 (A) 9 (B) 3  
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9 TOTAL NUMBER OF SUBSTRATE TYPES: 3

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):	
<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [20 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: --- MAXIMUM POOL DEPTH (centimeters): 0.4

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):	
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> < 1.0 m (< 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS: --- AVERAGE BANKFULL WIDTH (meters): 0.61

HHEI Metric Points

Substrate Max = 40

12

A + B

Pool Depth Max = 30

5

Bankfull Width Max = 30

5

## 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: River Fork Distance from Evaluated Stream: 1.50 mi  
☐ 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: Carroll, Ohio NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---

County: Carroll Co Township/City: Carrollton

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 27 April 2013 Quantity: 0.57"

Photograph Information: 4 photos

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

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

Field Measures: Temp (°C): 14.1 Dissolved Oxygen (mg/l): 1.1 pH (S.U.): 7.1 Conductivity (µmhos/cm): 112

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): Y (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)

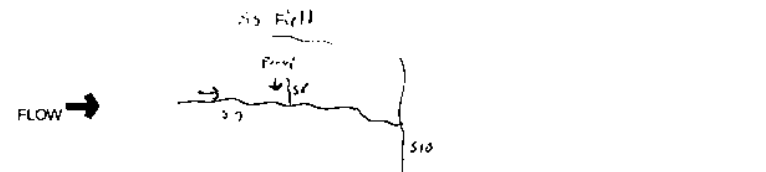
Fish Observed? (Y/N): Y Voucher? (Y/N): N/A Salamanders Observed? (Y/N): Y Voucher? (Y/N): N/A

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

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):

17

SITE NAME/LOCATION: Carroll County, Ohio, 59-001, Pipe Run  
SITE NUMBER: 59 RIVER BASIN: Pipe Run-Still Cr DRAINAGE AREA (mi<sup>2</sup>): 41 mi<sup>2</sup>  
LENGTH OF STREAM REACH (ft): 40 LAT: 40° 54' LONG: 81° 05' RIVER CODE: RIVER MILE:  
DATE: 2/14/12 SCORER: C. Wilcox COMMENTS: ephemeral roadside drainage

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

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY  
MODIFICATIONS: roadside drainage

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 6). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	
<input type="checkbox"/> BOULDER (>256 mm) (18 pts)		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (2 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input checked="" type="checkbox"/> COBBLE (65-256 mm) (12 pts)	5	<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input type="checkbox"/> GRAVEL (2-64 mm) (9 pts)		<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (6 pts)		<input type="checkbox"/> ARTIFICIAL (3 pts)	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 5 (A) 3 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

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)

<input type="checkbox"/> > 30 centimeters (20 pts)	<input type="checkbox"/> > 5 cm - 10 cm (15 pts)
<input type="checkbox"/> > 22.5 - 30 cm (30 pts)	<input checked="" type="checkbox"/> < 5 cm (5 pts)
<input type="checkbox"/> > 10 - 22.5 cm (25 pts)	<input type="checkbox"/> NO WATER OR MOIST CHANNEL (0 pts)

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

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

<input type="checkbox"/> > 4.0 meters (> 13') (30 pts)	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") (15 pts)
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') (25 pts)	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") (5 pts)
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") (20 pts)	

COMMENTS: AVERAGE BANKFULL WIDTH (meters):

HHEI Metric Points

Substrate Max = 40

7

A + B

Pool Depth Max = 30

5

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)

RIPARIAN WIDTH (Per Bank)		FLOODPLAIN QUALITY (Most Predominant per Bank)	
L	R	L	R
<input checked="" type="checkbox"/> Wide >10m	<input checked="" type="checkbox"/> Moderate 5-10m	<input checked="" type="checkbox"/> Mature Forest, Wetland	<input checked="" type="checkbox"/> Immature Forest, Shrub or Old Field
<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> None	<input type="checkbox"/> Residential, Peds, New Field	<input type="checkbox"/> Fenced Pasture
<input type="checkbox"/> None		<input type="checkbox"/> Conservation Tillage	<input type="checkbox"/> Urban or Industrial
		<input type="checkbox"/> Open Pasture, Row Crop	<input type="checkbox"/> Mining or Construction

COMMENTS:

4. FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing  
☐ Subsurface flow with isolated pools (intermittent)  
☐ Moist Channel, isolated pools, no flow (intermittent)  
☐ Dry channel, no water (ephemeral)

COMMENTS: heavy rain

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.0	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.0	<input type="checkbox"/> 2.5	<input type="checkbox"/> 3.0	<input type="checkbox"/> >3
--	------------------------------	------------------------------	------------------------------	------------------------------	------------------------------	------------------------------	-----------------------------

6. STREAM GRADIENT ESTIMATE

☒ Flat (< 1 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (> 4 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)

☒ BWH Name: Pipe Run 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 Quadangle Name: Carroll Co NRCS Soil Map Page: NRCS Soil Map Stream Order:

County: Carroll Co Township/City: Carroll Co

## MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 2/14/12 Quantity: 0.57"

Photograph Information: 9/14/12

Elevated Turbidity? (Y/N): N Canopy (% open): 75

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: roadside drainage

## BIOTIC EVALUATION

Performed? (Y/N): Y (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)

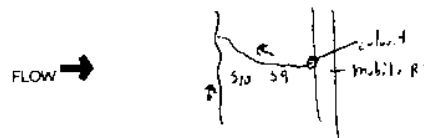
Fish Observed? (Y/N): N Voucher? (Y/N): Salamanders Observed? (Y/N): N Voucher? (Y/N):

Frogs or Toads Observed? (Y/N): N Voucher? (Y/N): Aquatic Macroinvertebrates Observed? (Y/N): 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):

61

SITE NAME/LOCATION: Carroll County Quarry - West Pike Park  
 SITE NUMBER: 510 RIVER BASIN: Pipes Fork - St. Albans DRAINAGE AREA (mi<sup>2</sup>): 0.7  
 LENGTH OF STREAM REACH (ft): 300 LAT: 38.4056 LONG: -81.0562 RIVER CODE: - RIVER MILE: -  
 DATE: 24 Apr 2008 SCORER: M. J. R. / J. R. / J. R. COMMENTS: -

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

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

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
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input checked="" type="checkbox"/> COBBLE (63-256 mm) (12 pts)	50	<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) (8 pts)	25	<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (8 pts)	15	<input type="checkbox"/> ARTIFICIAL (3 pts)	

HHEI Metric Points  
 Substrate Max = 40  
 26  
 A + B

Total of Percentages of Big Stone, Boulder, Cobble, Bedrock: 50 (A) 21 (B) 5  
 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 21 TOTAL NUMBER OF SUBSTRATE TYPES: 5

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 (10 pts)  
☒ > 10 - 22.5 cm (5 pts)  
☐ NO WATER OR MOIST CHANNEL (0 pts)

Pool Depth Max = 30  
 15

COMMENTS: - MAXIMUM POOL DEPTH (centimeters): 10

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box).  
☐ > 4.0 meters (> 13') (10 pts)  
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') (6 pts)  
☒ > 1.5 m - 3.0 m (> 4' 9" - 9' 7") (3 pts)  
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 9") (15 pts)  
☐ ≤ 1.0 m (≤ 3' 3") (0 pts)

Bank Full Width Max = 30  
 25

COMMENTS: - AVERAGE BANKFULL WIDTH (meters): 25

This information must also be completed  
 RIPARIAN ZONE AND FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) as looking downstream)

RIPARIAN ZONE		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/> (Per Bank)	<input checked="" type="checkbox"/> (Per Bank)	<input checked="" type="checkbox"/> (Most Predominant per Bank)	<input checked="" type="checkbox"/> (Most Predominant per Bank)
<input type="checkbox"/> Wide >10m	<input type="checkbox"/> Wide >10m	<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Mature Forest, Wetland
<input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Immature Forest, Shrub or Old Field
<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Residential, Park, New Field
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> Fenced Pasture
<input type="checkbox"/> Conservation Tillage	<input type="checkbox"/> Conservation Tillage	<input type="checkbox"/> Urban or Industrial	<input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> Open Pasture, Row Crop	<input type="checkbox"/> Open Pasture, Row Crop	<input type="checkbox"/> Mining or Construction	<input type="checkbox"/> Mining or Construction

COMMENTS: -

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing  
☐ Subsurface flow with isolated pools (Intermittent)  
☐ Dry channel, no water (Ephemeral)  
☐ Moist Channel, isolated pools, no flow (Intermittent)  
☐ Dry channel, no water (Ephemeral)

COMMENTS: -

BIODIVERSITY (Number of bends per 61 m (200 ft) of channel). (Check ONLY one box):  
☐ None  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat (0 to <100 ft)  
☐ Flat to Moderate  
☒ Moderate (> 100 ft)  
☐ Moderate to Steep  
☐ Steep (> 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: Pipes Fork Distance from Evaluated Stream: 1.5 mi  
☐ 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: Carroll Co. NRCS Soil Map Page: - NRCS Soil Map Stream Order: -

County: Carroll Co. Township / City: Carroll Co.

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 24 Apr 2008 Quantity: 0.57"

Photograph Information: 4 Photos

Elevated Turbidity? (Y/N): Y Canopy (% open): 25%

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

Field Measures: Temp (°C): 11 Dissolved Oxygen (mg/l): 11 pH (S.U.): 7.4 Conductivity (µmhos/cm): 11

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

Additional comments/description of pollution impacts: Drainage pipe at Carroll County Quarry drainage from Double Rd. (3 within reach) documents that channel from field.

## BIOLOGIC EVALUATION

Performed? (Y/N): Y (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)

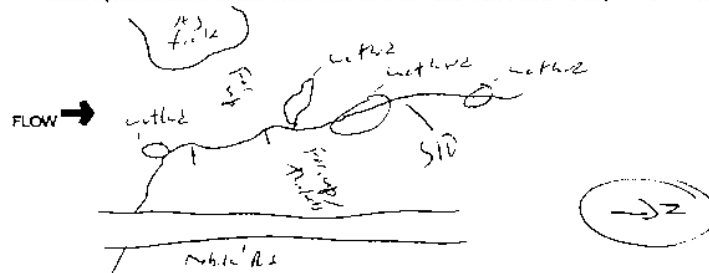
Fish Observed? (Y/N): Y Voucher? (Y/N): Y Salamanders Observed? (Y/N): Y Voucher? (Y/N): Y

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

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):

45

SITE NAME/LOCATION Carell Creek, Seneca - Stillman River Fork  
 SITE NUMBER 511 RIVER BASIN Big Fork - Still Fork DRAINAGE AREA (mi<sup>2</sup>) 21.2  
 LENGTH OF STREAM REACH (ft) 50' LAT. 40.4440 LONG. -81.864 RIVER CODE --- RIVER MILE ---  
 DATE 23 April 2013 SCORER M. M. M. M. COMMENTS drainage from culvert

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

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

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 6). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> SLUR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input checked="" type="checkbox"/> COBBLE (63-256 mm) (12 pts)	25	<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input type="checkbox"/> GRAVEL (2-64 mm) (8 pts)	5	<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (8 pts)	15	<input type="checkbox"/> ARTIFICIAL (0 pts)	

Total Percentages of Bior Slabs, Boulder, Cobble, Bedrock 30 (A) 15 (B) 5  
 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth (Measure the maximum pool depth within the 51 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 (20 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):

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):  
☐ > 4.0 meters (> 13') (20 pts)  
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') (25 pts)  
☒ > 1.5 m - 3.0 m (> 4' 9" - 9' 7") (20 pts)  
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 9") (15 pts)  
☐ < 1.0 m (< 3' 3") (0 pts)

COMMENTS: AVERAGE BANKFULL WIDTH (meters):

HHEI Metric Points

Substrate Max = 40

30

A + B

Pool Depth Max = 30

5

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 or FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS:

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing  
☐ Subsurface flow with isolated pools (intermittent)  
☐ 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  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE

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

## ADDITIONAL STREAM INFORMATION (This information must also be completed):

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

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Pipe Run Distance from Evaluated Stream 0.50  
☐ 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: Carell Fork NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Carell Township / City: Carell Fork

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 15 April 2013 Quantity: 0.21

Photograph Information: 4/11/13

Elevated Turbidity? (Y/N): N Canopy (% open): 75

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

Field Measures: Temp (°C) 14.4 Dissolved Oxygen (mg/l) 1.1 pH (S.U.) 6.4 Conductivity (µmhos/cm) 164

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

Additional comments/description of pollution impacts: runoff drainage

## BIOIC EVALUATION

Performed? (Y/N): Y (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)

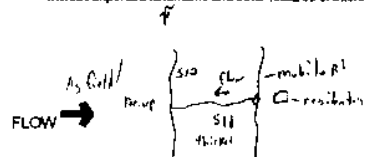
Fish Observed? (Y/N): N Voucher? (Y/N): Salamanders Observed? (Y/N): N Voucher? (Y/N):

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

36

SITE NAME/LOCATION: Cecil Creek, Perry - 512-1 wet place  
 SITE NUMBER: 512-1 RIVER BASIN: Perry Fr. St. H. Cr. DRAINAGE AREA (mi<sup>2</sup>): 41 mi<sup>2</sup>  
 LENGTH OF STREAM REACH (ft): 200 LAT: 40.5653 LONG: -81.0400 RIVER CODE: --- RIVER MILE: ---  
 DATE: 25 Apr 2013 SCORER: PHH/2013/1 COMMENTS: Heavy rain from Wetland 0

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

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

MODIFICATIONS:

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
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input checked="" type="checkbox"/> COBBLE (65-256 mm) (12 pts)	5	<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) (8 pts)	15	<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (5 pts)	5	<input type="checkbox"/> ARTIFICIAL (3 pts)	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 5 (A) 12 (B) 4  
 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

A + B

2. Maximum Pool Depth (Measure the maximum pool depth within the 51 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) ☒ > 5 cm - 10 cm (15 pts)  
☐ > 22.5 - 30 cm (10 pts) ☐ < 5 cm (5 pts)  
☐ > 10 - 22.5 cm (25 pts) ☐ NO WATER OR MOIST CHANNEL (0 pts)

Pool Depth Max = 30

5

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box).  
☐ > 4.0 meters (> 13') (30 pts) ☐ > 1.0 m - 1.5 m (> 3' - 4' 8") (15 pts)  
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') (25 pts) ☐ < 1.0 m (< 3' 3") (5 pts)  
☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") (20 pts)

Bankfull Width Max = 30

15

COMMENTS: AVERAGE BANKFULL WIDTH (meters):

This information must also be completed  
 RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN ZONE QUALITY		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/> Per Bank	<input checked="" type="checkbox"/> Per Bank	<input checked="" type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Conservation Tillage
<input type="checkbox"/> Wide >10m	<input type="checkbox"/> Moderate 5-10m	<input checked="" type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Urban or Industrial
<input checked="" type="checkbox"/> Narrow <5m	<input type="checkbox"/> None	<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Open Pasture, Row Crop
<input type="checkbox"/> None	<input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> Mining or Construction	

COMMENTS: Substrate system from 1-13 - COB  
 FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing ☐ Moist Channel, isolated pools, no flow (intermittent)  
☐ Subsurface flow with isolated pools (interstitial) ☐ Dry channel, no water (Ephemeral)  
 COMMENTS: heavy rain 24 Apr 2013

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 to 100 ft) ☐ Flat to Moderate ☐ Moderate (2 to 100 ft) ☐ Moderate to Severe ☐ Severe (10 to 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: Perry Fork Distance from Evaluated Stream: 1.65 mi  
☐ CWH Name: Distance from Evaluated Stream: ---  
☐ EWH Name: Distance from Evaluated Stream: ---

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

USGS Quad/angle Name: Cecil NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---

County: Berrie County Township / City: Cecil

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 24 April 2013 Quantity: 0.5"

Photograph information: 4/24/13

Elevated Turbidity? (Y/N): Y Canopy (% open): 35

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

Field Measures: Temp (°C): 13 Dissolved Oxygen (mg/l): 1.0 pH (S.U.): 7.3 Conductivity (umhos/cm): 113

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

Additional comments/description of pollution impacts: Abandoned gravel pit

## BIOLOGICAL EVALUATION

Performed? (Y/N): Y (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)

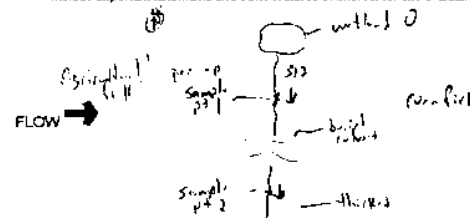
Fish Observed? (Y/N): Y Voucher? (Y/N): --- Salamanders Observed? (Y/N): Y Voucher? (Y/N): ---

Frogs or Tadpoles Observed? (Y/N): Y Voucher? (Y/N): --- Aquatic Macroinvertebrates Observed? (Y/N): Y 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) : **24**

SITE NAME/LOCATION: Cornell Creek, Perry Township, Adams County, Ohio  
 SITE NUMBER: 512-2 RIVER BASIN: Perry Fork - Shawnee DRAINAGE AREA (mi<sup>2</sup>): <1 mi<sup>2</sup>  
 LENGTH OF STREAM REACH (ft): 300 LAT: 40 40 55 LONG: 81 06 55 RIVER CODE: --- RIVER MILE: ---  
 DATE: 13 April 2013 SCORER: M. Morrison COMMENTS: ---

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

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

MODIFICATIONS:

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
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)	<u>3</u>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input checked="" type="checkbox"/> COBBLE (65-256 mm) (12 pts)	<u>25</u>	<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input type="checkbox"/> GRAVEL (2-64 mm) (8 pts)	<u>10</u>	<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (6 pts)		<input type="checkbox"/> ARTIFICIAL (3 pts)	
Total of Percentages of Bltr Slabs, Boulder, Cobble, Bedrock: <u>30</u>		(A) <u>15</u>	
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:		TOTAL NUMBER OF SUBSTRATE TYPES: <u>1</u>	
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):			
<input type="checkbox"/> > 30 centimeters (20 pts)	<input type="checkbox"/> > 5 cm - 10 cm (15 pts)		
<input type="checkbox"/> > 22.5 - 30 cm (20 pts)	<input type="checkbox"/> < 5 cm (5 pts)		
<input type="checkbox"/> > 10 - 22.5 cm (25 pts)	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL (0 pts)		
COMMENTS: <u>---</u>		MAXIMUM POOL DEPTH (centimeters): <u>---</u>	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):			
<input type="checkbox"/> > 4.0 meters (> 13') (30 pts)	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' - 4' 8") (15 pts)		
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') (25 pts)	<input type="checkbox"/> < 1.0 m (< 3' 3") (5 pts)		
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") (20 pts)			
COMMENTS: <u>---</u>		AVERAGE BANKFULL WIDTH (meters): <u>6.46</u>	

HHEI Metric Points

Substrate Max = 40

15

A + B

Pool Depth Max = 30

0

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)

RIPARIAN ZONE QUALITY		FLOODPLAIN QUALITY	
L	R	L	R
<input type="checkbox"/> (Per Bank)	<input type="checkbox"/> (Most Predominant per Bank)	<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Conservation Tillage
<input type="checkbox"/> Wide >10m	<input type="checkbox"/> Mature Forest, Shrub or Old Field	<input type="checkbox"/> Urban or Industrial	<input type="checkbox"/> Open Pasture, Row Crop
<input checked="" type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Mining or Construction	
<input checked="" type="checkbox"/> Narrow <5m	<input type="checkbox"/> Fenced Pasture		
<input type="checkbox"/> None			

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☐ Stream Flowing  
☐ Subsurface flow with isolated pools (Intermittent)  
☒ 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  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat to 1:1000  
☒ Flat to Moderate  
☐ Moderate (2:1000)  
☐ Moderate to Severe  
☐ Severe (1:1000)

## 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: Perry Fork Distance from Evaluated Stream: 1.66 mi  
☐ CWH Name: --- Distance from Evaluated Stream: ---  
☐ BWH Name: --- Distance from Evaluated Stream: ---

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

USGS Quadrangle Name: Cornell NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---

County: Adams County Township / City: Cornell

## MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 19 April 2013 Quantity: 0.21"  
 Photograph Information: attached  
 Elevated Turbidity? (Y/N): N/A Canopy (% open): 50  
 Were samples collected for water chemistry? (Y/N): --- (Note lab sample no. and attach results) Lab Number: ---  
 Field Measures: Temp (°C): 12 Dissolved Oxygen (mg/L): 12 pH (S.U.): 7.2 Conductivity (µmhos/cm): 213  
 Is the sampling reach representative of the stream (Y/N): Y If not, please explain: ---

Additional comments/description of pollution impacts: Debris from culvert/road

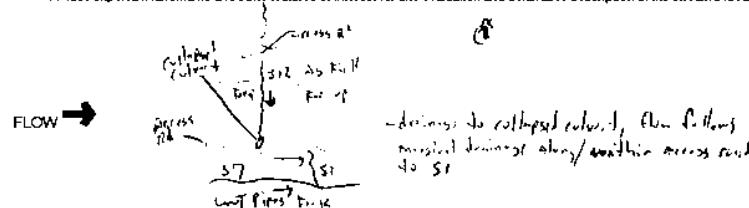
## BIOTIC EVALUATION

Performed? (Y/N): Y (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): N Voucher? (Y/N): --- Salamanders Observed? (Y/N): N Voucher? (Y/N): ---  
 Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): --- Aquatic Macroinvertebrates Observed? (Y/N): 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) :

17

SITE NAME/LOCATION Carroll County, Ohio, Pipe Run  
SITE NUMBER 513-1 RIVER BASIN Pipe Run DRAINAGE AREA (mi<sup>2</sup>) 0.1  
LENGTH OF STREAM REACH (ft) 200 LAT. 40.6054 LONG. -81.0654 RIVER CODE --- RIVER MILE ---  
DATE 25 April 2013 SCORER M. M. M. M. COMMENTS ephemeral reach of channel

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

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

MODIFICATIONS:

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
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input type="checkbox"/> COBBLE (63-256 mm) (12 pts)		<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input type="checkbox"/> GRAVEL (2-64 mm) (8 pts)	10	<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (6 pts)	20	<input type="checkbox"/> ARTIFICIAL (3 pts)	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock (A) 9 (B) 3  
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

12

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).

<input type="checkbox"/> > 30 centimeters (20 pts)	<input type="checkbox"/> > 5 cm - 10 cm (15 pts)
<input type="checkbox"/> > 22.5 - 30 cm (10 pts)	<input type="checkbox"/> < 5 cm (5 pts)
<input type="checkbox"/> > 10 - 22.5 cm (5 pts)	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL (0 pts)

Pool Depth Max = 30

0

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

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

<input type="checkbox"/> > 4.0 meters (> 13) (30 pts)	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3'3" - 4'8") (15 pts)
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9'7" - 13) (25 pts)	<input type="checkbox"/> < 1.0 m (< 3'3" - 4'8") (5 pts)
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4'8" - 9'7") (20 pts)	

Bankfull Width Max=30

5

COMMENTS: AVERAGE BANKFULL WIDTH (meters):

This information must also be completed  
RIPARIAN ZONE AND FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) as looking downstream)

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	(Most Predominant per Bank)	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>
None			
COMMENTS			

FLOW REGIME (At Time of Evaluation) (Check ONLY one box)  
☐ Stream Flowing  
☒ Subsurface flow with isolated pools (intermittent)  
COMMENTS: dry rain 24 April 2013

SINUOSITY (Number of bends per 61 m (200 ft) of channel). (Check ONLY one box)  
☒ None  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat (< 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):

QHE PERFORMED? ☐ Yes ☒ No QHE Score (If Yes, Attach Completed QHE Form)

DOWNSIDE DESIGNATED USE(S)

☒ WWH Name: Pipe Run Distance from Evaluated Stream: 0.16 mi  
☐ 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: Carroll Co. NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Carroll Co. Township / City: Carrollton

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 24 April 2013 Quantity: 0.57"

Photograph Information: attached

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

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

Field Measures: Temp (°C) 14 Dissolved Oxygen (mg/l) 2.1 pH (S.U.) 6.1 Conductivity (umhos/cm) 142

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

Additional comments/description of pollution impacts: leaking from RR c, fights

## BIOLOGIC EVALUATION

Performed? (Y/N): Y (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)

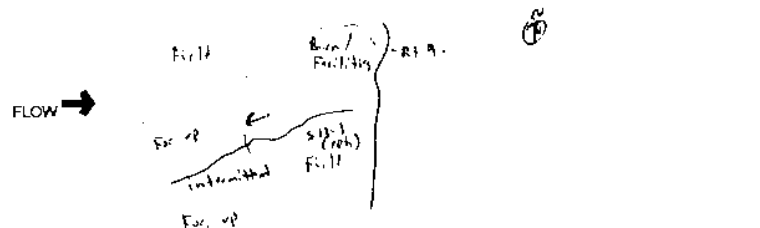
Fish Observed? (Y/N): Y Voucher? (Y/N): Y Salamanders Observed? (Y/N): Y Voucher? (Y/N): Y

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

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):

33

SITE NAME/LOCATION: Cornell Creek (nearby - 100 ft) - Pipe Run  
 SITE NUMBER: 513-2 RIVER BASIN: Pipe Run DRAINAGE AREA (mi<sup>2</sup>): 4.1 mi<sup>2</sup>  
 LENGTH OF STREAM REACH (ft): 200' LAT: 40.1443 LONG: -84.0344 RIVER CODE: --- RIVER MILE: ---  
 DATE: 15 Apr 2011 SCORER: M. M. M. M. M. COMMENTS: inhabited area of river

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

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

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 5). Final metric score is sum of boxes A & B)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input type="checkbox"/> SILT [3 pts]	65
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	5	<input type="checkbox"/> CLAY or HARDPAN [0 pts]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	15	<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]	20	<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 5 (A) 9  
 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9 TOTAL NUMBER OF SUBSTRATE TYPES: 4  
 (B) 4  
 A + B: 13

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] ☐ > 5 cm - 10 cm [15 pts]  
☐ > 22.5 - 30 cm [30 pts] ☐ < 5 cm [5 pts]  
☐ > 10 - 22.5 cm [25 pts] ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: MAJUM POOL DEPTH (centimeters): 30

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):  
☐ > 4.0 meters (> 13') [30 pts] ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ☐ < 1.0 m (< 3' 3") [5 pts]  
☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 1.5

This information must also be completed  
 RIPARIAN ZONE AND FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) as looking downstream\*)

RIPARIAN ZONE QUALITY	FLOODPLAIN QUALITY
<input checked="" type="checkbox"/> (Per Bank) Wide >10m	<input type="checkbox"/> (Most Predominant per Bank) Mature Forest, Wetland
<input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Immature Forest, Shrub or Old Field
<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> Residential, Park, New Field
<input type="checkbox"/> None	<input type="checkbox"/> Fenced Pasture
COMMENTS:	<input type="checkbox"/> Conservation Tillage
	<input type="checkbox"/> Urban or Industrial
	<input type="checkbox"/> Open Pasture, Row Crop
	<input type="checkbox"/> Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing ☐ Moist Channel, isolated pools, no flow (Intermittent)  
☐ Subsurface flow with isolated pools (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 (0.2 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):

GHEI PERFORMED? ☐ Yes ☒ No GHEI Score: --- (If Yes, Attach Completed GHEI Form)

DOWNSTREAM DESIGNATED USE(S)  
☒ WWH Name: Pipe Run Distance from Evaluated Stream: 0.17 mi  
☐ 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 Quadangle Name: Cornell Creek NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---  
 County: Cornell Co Township / City: Cornell

## MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of last precipitation: 15 Apr 2011 Quantity: 0.57"  
 Photograph Information: +  
 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) 4.1 Dissolved Oxygen (mg/l) 2.1 pH (S.U.) 6.1 Conductivity (µmhos/cm) ---  
 Is the sampling reach representative of the stream (Y/N) Y If not, please explain: ---

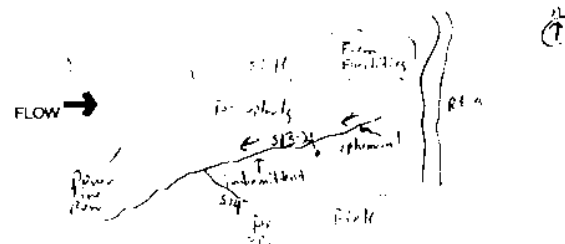
Additional comments/description of pollution impacts:

## BOTIC EVALUATION

Performed? (Y/N) Y (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) N Voucher? (Y/N) --- Salamanders Observed? (Y/N) N Voucher? (Y/N) ---  
 Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) --- Aquatic Macroinvertebrates Observed? (Y/N) Y Voucher? (Y/N) N  
 Comments Regarding Biology: Plenty of fish

## 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): **24**

SITE NAME/LOCATION: Currill Run, Carroll Co., OH  
 SITE NUMBER: 514 RIVER BASIN: Pipe Run DRAINAGE AREA (mi<sup>2</sup>): <1 mi<sup>2</sup>  
 LENGTH OF STREAM REACH (ft): 200' LAT: 40.6034 LONG: -81.6442 RIVER CODE: --- RIVER MILE: ---  
 DATE: 25 April 2013 SCORER: C. V. Jones / R. S. Jones COMMENTS: ---

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

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

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
<input type="checkbox"/> BLDR SLABS (16 pts)		<input type="checkbox"/> SILT (3 pts)	
<input type="checkbox"/> BOULDER (>256 mm) (16 pts)		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (3 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (3 pts)	
<input type="checkbox"/> COBBLE (65-256 mm) (12 pts)		<input type="checkbox"/> CLAY or HARDPAN (0 pts)	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) (9 pts)	<u>30</u>	<input type="checkbox"/> MUCK (0 pts)	
<input type="checkbox"/> SAND (<2 mm) (6 pts)		<input type="checkbox"/> ARTIFICIAL (3 pts)	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 30 (A) **12** (B) **2**  
 SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: 12 TOTAL NUMBER OF SUBSTRATE TYPES: 2

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 (10 pts)  
☒ > 22.5 - 30 cm (10 pts)  
☐ > 10 - 22.5 cm (5 pts)  
☐ NO WATER OR MOIST CHANNEL (0 pts)

COMMENTS: --- MAXIMUM POOL DEPTH (centimeters): 1.2

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):  
☐ > 4.0 meters (> 13') (10 pts)  
☒ > 3.0 m - 4.0 m (> 9' 7" - 13') (5 pts)  
☐ > 1.5 m - 3.0 m (> 4' 9" - 9' 7") (0 pts)  
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 9") (5 pts)  
☐ ≤ 1.0 m (≤ 3' 3") (5 pts)

COMMENTS: --- AVERAGE BANKFULL WIDTH (meters): 0.76

HHEI Metric Points  
 Substrate Max = 40  
**14**

Pool Depth Max = 30  
**5**

Bankfull Width Max = 10  
**5**

This information must also be completed  
 RIPARIAN ZONE AND FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) as looking downstream)

RIPARIAN ZONE		FLOODPLAIN QUALITY	
L	R	L	R
<input type="checkbox"/> (Per Bank)	<input type="checkbox"/> (Per Bank)	<input type="checkbox"/> (Most Predominant per Bank)	<input type="checkbox"/> (Most Predominant per Bank)
<input type="checkbox"/> Wide >10m	<input type="checkbox"/> Wide >10m	<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Mature Forest, Wetland
<input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Immature Forest, Shrub or Old Field
<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Residential, Park, New Field
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> Fenced Pasture

COMMENTS: ---

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☒ Stream Flowing  
☐ Subsurface flow with isolated pools (Intermittent)  
☐ Moist Channel, isolated pools, no flow (Intermittent)  
☐ Dry channel, no water (Ephemeral)

COMMENTS: heavy rain - 25 April 2013

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  
☐ None  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☐ Flat (< 5%/100 ft) ☐ Flat to Moderate ☒ Moderate (5 to 100 ft) ☐ Moderate to Severe ☐ Severe (> 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: Pipe Run Distance from Evaluated Stream: 200' (0.35 mi)  
☐ 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: Carroll Co. NRCS Soil Map Page: --- NRCS Soil Map Stream Order: ---  
 County: Carroll Co. Township / City: Carroll Co.

### MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 24 April 2013 Quantity: 0.57"  
 Photograph Information: ---  
 Elevated Turbidity? (Y/N): N Canopy (% open): 30  
 Were samples collected for water chemistry? (Y/N): Y (Note lab sample no. or id. and attach results) Lab Number: ---  
 Field Measures: Temp (°C): 14 Dissolved Oxygen (mg/L): 10 pH (S.U.): 7.5 Conductivity (µmhos/cm): 100  
 Is the sampling reach representative of the stream (Y/N): Y If not, please explain: ---

Additional comments/description of pollution impacts: ---

### BIOTIC EVALUATION

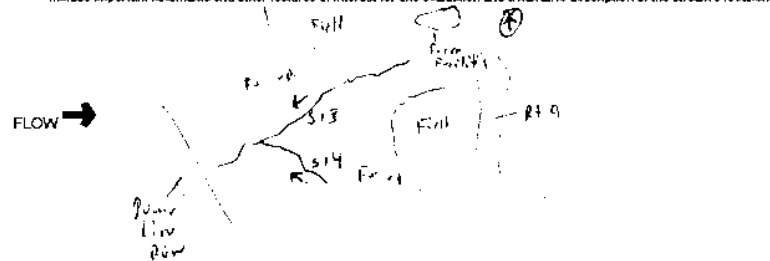
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): Y Voucher? (Y/N): --- Salamanders Observed? (Y/N): Y Voucher? (Y/N): ---  
 Frogs or Tadpoles Observed? (Y/N): Y Voucher? (Y/N): --- Aquatic Macroinvertebrates Observed? (Y/N): Y 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





## **APPENDIX D**

### **PHOTOGRAPHS OF THE SITE**



**Photo 1** PEM Wetland A, located within the north-central portion of the Study Area, looking east, with abutting Stream 2 in background.



**Photo 2** PEM Wetland B, located within the eastern portion of the Study Area, at toe-of steep slope and abutting unnamed tributary of Pipes Fork (Stream 10), looking south.





**Photo 3** PEM Wetland C, located within the east-central portion of the Study Area in a historic, diversion, side slope ditch, looking north.



**Photo 4** Wetland D, located within the east-central portion of the Study Area in a historic, diversion, side slope ditch, looking south.



**Photo 5** PEM Wetland E, located adjacent to the south-central portion of the Study Area abutting Stream 4, looking north.



**Photo 6** PEM Wetland F, located adjacent to the south-central portion of the Study Area, looking north.





**Photo 7** PEM Wetland G, located within the north-central portion of the Study Area, looking north.



**Photo 8** PEM Wetland H, located within the north-central portion of the Study Area, looking north from bank of abutting Stream 7.



**Photo 9** PEM Wetland I, located within the eastern portion of the Study Area, at toe-of steep slope and abutting Stream 9 and Stream 10, looking south.



**Photo 10** PEM Wetland J, a marginal drainageway/depression located within the eastern portion of the Study Area, looking southwest toward confluence with abutting Stream 10.





**Photo 11** PSS Wetland K, marginal depression on steep slope adjacent to Stream 10, looking south within the eastern portion of the Study Area.



**Photo 12** PEM Wetland L, marginal depression on steep slope adjacent to Stream 10, looking south within the eastern portion of the Study Area.



**Photo 13** PEM Wetland M, located within the eastern portion of the Study Area Stream 10, looking southwest.



**Photo 14** PEM Wetland N, located within the southeastern portion of the Study Area abutting Stream 10, looking west from head of adjacent slope.





**Photo 15** PSS Wetland O, located within the northern portion of the Study Area, looking northeast.



**Photo 16** PEM Wetland P, located within the southwestern portion of the Study Area abutting Stream 13 and Stream 14, looking west.





**Photo 17** PEM Wetland Q, located within the southwestern portion of the Study Area abutting Stream 13, looking east.



**Photo 18** PEM Wetland R, located within the southwestern portion of the Study Area abutting Stream 13, looking north.





**Photo 19** Stream 1, ephemeral unnamed tributary (UNT) of Pipes Fork, looking south from access road.



**Photo 20** Stream 2, intermittent, UNT of Pipes Fork, looking southeast.





**Photo 21** Stream 3, ephemeral UNT of Pipes Fork, looking east toward collapsed culvert adjacent to Mobile Road NE.



**Photo 22** Stream 4, ephemeral UNT of Pipes Fork, looking south.





**Photo 23** Stream 5, ephemeral UNT of Pipes Fork, looking west across channel.



**Photo 24** Stream 6, ephemeral UNT of Pipes Fork, looking north.



**Photo 25** Stream 7, showing upper reach of intermittent UNT of Pipes Fork, looking east.



**Photo 26** Stream 7, showing lower reach of intermittent UNT of Pipes Fork, looking west.





**Photo 27** Stream 8, ephemeral UNT of Pipes Fork, looking east across channel.



**Photo 28** Stream 9, ephemeral UNT of Pipes Fork within the eastern portion of the Study Area, looking west.



**Photo 29** Perennnial UNT of Pipes Fork (Stream 10), looking north.



**Photo 30** Intermittent UNT of Pipes Fork (Stream 11) within the eastern portion of the Study Area, looking west.





**Photo 31** Upper reach of ephemeral Stream 12 a UNT of Pipes Fork located within the northern portion of the Study Area in between two (2) agricultural fields, looking north.



**Photo 32** Lower reach of ephemeral Stream 12 a UNT of Pipes Fork, looking north.





**Photo 33** Ephemeral portion of Stream 13 a UNT of Pipe Run, looking west.



**Photo 34** Intermittent portion of UNT of Pipe Run (Stream 13), looking east.



**Photo 35** Stream 14, ephemeral UNT of Pipe Run, looking south.

## **APPENDIX E**

### **HYDRIC SOILS LIST**

map unit symbol	map unit name	component name and phase	percent composition	landforms
BnD	Bethesda channery clay loam, 8 to 25 percent slopes	poorly drained soils	5	Depressions
BnF	Bethesda channery clay loam, 25 to 70 percent slopes	poorly drained soils	5	Depressions
BoF	Bethesda channery silty clay loam, 25 to 70 percent slopes	poorly drained soils	10	
Ek	Elkinsville silt loam, rarely flooded	Peoga	5	Depressions
FaD	Fairpoint channery clay loam, 8 to 25 percent slopes	poorly drained soils	5	Depressions
FbA	Fitchville silt loam, 0 to 2 percent slopes	poorly drained soils	10	Depressions
FbB	Fitchville silt loam, 2 to 6 percent slopes	Sebring	5	Drainageways
FcA	Fitchville silt loam, 0 to 3 percent slopes	Flood pool areas	5	Flood plains
FcA	Fitchville silt loam, 0 to 3 percent slopes	Sebring	5	Depressions
FcB	Fitchville silt loam, 3 to 8 percent slopes	Flood pool areas	3	Flood plains
FcB	Fitchville silt loam, 3 to 8 percent slopes	Sebring	6	Depressions
GeB	Glenford silt loam, 2 to 6 percent slopes	poorly drained soils	5	Depressions
GfB	Glenford silt loam, 3 to 8 percent slopes	Areas of poorly drained soils	5	Depressions
GfC	Glenford silt loam, 8 to 15 percent slopes	Areas of poorly drained soils	5	Depressions
GhC	Glenford silt loam, 6 to 15 percent slopes	poorly drained soils	5	Hills
HkA	Holly silt loam, 0 to 2 percent slopes, frequently flooded	Holly	95	Flood plains
Ho	Holly silt loam, ponded	Holly	90	Flood plains
Ho	Holly silt loam, ponded	Flood pool areas	3	Flood plains
JwA	Jimtown silt loam, 0 to 3 percent slopes	poorly drained soils	5	Depressions
LbB	Library Variant silt loam, 3 to 8 percent slopes	Poorly drained soils	3	Draws
Lo	Lorain silty clay loam, silty substratum	Lorain	95	Terraces
Lo	Lorain silty clay loam, silty substratum	Sebring	5	Depressions
MrD	Morristown shaly silty clay loam, 8 to 25 percent slopes	Poorly drained soils	5	Depressions
Or	Orrville silt loam, occasionally flooded	Holly	5	Flood plains
OvA	Orrville silt loam, 0 to 2 percent slopes, occasionally flooded	Holly	5	Flood plains
Pe	Peoga silt loam, rarely flooded	Peoga	85	Terraces
Pe	Peoga silt loam, rarely flooded	Flood pool areas	5	Flood plains
Sb	Sebring silt loam	Sebring	85	Terraces
Sb	Sebring silt loam	Lorain	5	Depressions
Sg	Sebring-Urban land complex	Sebring	50	Drainageways

## **APPENDIX F**

### **RESUMES**

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**MICHAEL J. MUSSOMELI, PWS**  
**ENVIRONMENTAL SCIENTIST IV**  
**PITTSBURGH, PA**

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**EDUCATION:** B.S., Natural Resources Management, Rutgers University, Jan. 1999

**CERTIFICATIONS/  
REGISTRATIONS:** Professional Wetland Scientist, PWS No. 2179

**TRAINING:** Wetlands Delineation Certificate-Rutgers Professional Continuing Education, 2000  
Endangered Species of New Jersey-Rutgers Professional Continuing Education, 2001  
Advanced Techniques in Wetland Delineation- Massachusetts Conservation Commission, 2003  
Hydrology of Wetlands- Rutgers Professional Continuing Education, 2005  
Ecological Restoration Symposium- NJ Pinelands Nursery, 2006  
Maryland State Highway Administration Soil Erosion and Sediment Control Training  
-MDE Introductory Training: June 2007  
-Basic Erosion and Sediment Control Class: July 2007  
-Recertification: October 2011  
Identification of Freshwater Wetland Sedges, Grasses, and Rushes- Institute for Wetland and Environmental Education and Research, September 2007  
Planning, Site Selection, and Hydrology Models for Constructed Wetlands- Wetlands Training Institute, September 2008  
Wetland Construction Design- Rutgers Continuing Education, December 2009  
40 Hour HAZWOPER Health and Safety Training, March 2012

**EXPERIENCE SUMMARY:**

Michael Mussomeli is an environmental scientist with experience in wetland ecology, wildlife surveys, vegetation sampling, and construction monitoring throughout the northeast. Mike has performed hundreds of wetland delineations as well as numerous wildlife surveys and habitat assessments. He has provided environmental consultation to clients in the public and private sectors to ensure compliance with local, state, and federal environmental regulations and ordinances, guidance through the environmental permitting process, and minimization of impacts to aquatic and terrestrial resources. This permitting, documentation, and guidance includes the preparation of 404 and related state and local permits, environmental impact statements, GIS screenings, National Environmental Policy Act documentation, and preparation of other environmental reports.



**PROJECT EXPERIENCE:**

**Senior Environmental Scientist; MarkWest Liberty Midstream and Resources, LLC; Various Gas Pipeline Projects; Washington, Greene, and Fayette Counties, PA; January 2012 to present.** Conducted wetland delineations for over twenty (20) gas pipeline projects, totaling over 50 miles of right-of-way. Also prepared wetland delineation and stream assessment reports for each project in support of PASPGP-3 submissions.

**Senior Environmental Scientist; Multiple Award Remediation Contract; Rock Island Arsenal Remediation Project; Rock Island, Illinois. March 2012- April 2012.** Conducted wetland delineation on 20-acre landfill site in support of remediation activities. Also prepared a wetland report detailing findings for submission to USACE in support of permit requirements.

**Senior Environmental Scientist; MarkWest Liberty Midstream and Resources, LLC; Boy Scout Camp Pipeline; Harrison County, Ohio; May 2012 to July 2012.** Mr. Mussomeli led a team that conducted a wetland delineation, performed Ohio Rapid Assessment Method, and stream evaluation for Ohio a 3.5-mile pipeline. Mike also assisted in preparation and submission of preconstruction notice for Nationwide Permit 12 for the project.

**Senior Environmental Scientist; U.S. Environmental Protection Agency; Sauer Dump Site; Baltimore County, Maryland. February 2012- April 2012.** Conducted wetland delineation on 2.50-acre site in support of Superfund listing for hazardous waste site in Dundalk, Maryland. Also prepared wetland report detailing for submission to USEPA and responsible party.

**Senior Environmental Scientist; Enervest Operating, LLC; Phase I Indiana Bat Assessment; Stark and Tuscarawas Counties, Ohio; May 2012 to July 2012.** Conducted a Phase I habitat assessment for Indiana bat (*Myotis sodalis*) along a 1.5-mile corridor for proposed gas pipeline. Mr. Mussomeli also prepared a report of findings for submission to U.S. Fish and Wildlife Service for concurrence.

**Senior Environmental Scientist; Chevron Appalachia, LLC; Wetland Delineation and Habitat Assessments for Water Withdrawal Activities; Various locations, Fayette, Greene, and Westmoreland Counties; January 2012 to present.** Conducted wetland delineations and habitat assessments in support of water withdrawal activities. Mr. Mussomeli also prepared reports summarizing results of onsite resources as well as summarizing impacts associated with proposed activities. Habitat assessments/surveys at various sites for endangered, threatened, and species of special concern included Allegheny woodrat (*Neotoma magister*), heartleaf meehania (*Meehania cordata*), wild oats (*Chasmanthium latifolium*), purple rocket (*Iodanthus pinnatifidus*), harbinger-of-spring (*Erigenia bulbosa*), and white trout lily (*Erythronium albidum*).

**Senior Environmental Scientist; Williams/Laurel Mountain Midstream Operations, LLC; Dunlap Creek Botanical Survey and Habitat Assessment; Luzerne and Redstone Townships, Fayette County, PA; June 2012 to July 2012.** Conducted survey and habitat assessment for State-endangered tall larkspur (*Delphinium exaltatum*) along 3.5-mile corridor for proposed gas pipeline. Mr. Mussomeli also prepared a report of findings for submission to Pennsylvania Department of Conservation and Natural Resources.

**Senior Environmental Scientist; Pennsylvania Department of Transportation; Tub Mill Run Bridge Replacement Project/Casselman River Bridge Replacement Project; Township of Elk Lick and Borough of Salisbury, PA; September 2010 to October 2011.** Conducted



wetland delineations and field investigations for two (2) bridge replacement/rehabilitation projects: SR 0669 over Casselman River and SR 0069 over Tub Mill Run. Mr. Mussomeli also prepared wetland reports for each project.

**Senior Environmental Scientist; South Jersey Transportation Authority; Atlantic City International Airport Grassland Restoration and Invasive Species Control Project; Township of Egg Harbor, NJ; May 2005 to September 2008.** Responsible for vegetation monitoring as part of Habitat Evaluation Procedure (HEP) for management of airport lands for grassland habitat restoration to enhance habitat for State threatened grasshopper sparrow (*Ammodramus savannarum*), State endangered upland sandpiper (*Bartramia longicauda*) and control of invasive plant species [Chinese bush clover (*Lespedeza cuneata*)]. Also responsible for conducting survey for State threatened frosted elfin (*Collophrys irus*) and assisted in supplemental planting of frosted elfin larval host plant, wild indigo (*Baptisia tinctoria*), to enhance frosted elfin habitat.

**Environmental Scientist; New Jersey Transit; Access to the Region's Core. Secaucus, NJ and New York City, NY; October 2006 to November 2007.** Responsible for assisting in preparation of Draft Environmental Impact Statement (DEIS) for proposed construction of four-track right-of-way from Secaucus, NJ to New York City, with a portion of the 9.3-mile project corridor bisecting the Meadowlands District. Responsibilities include preparation and review of technical reports, document preparation, subconsultant coordination/oversight, and agency coordination (Federal Transit Administration, NJDEP, USACE, NJ Meadowlands Commission).

**Environmental Scientist; County of Monmouth (NJ); Monmouth County Bridges R4 and R7 Consolidated Coastal Wetland Mitigation Site; Township of Hazlet, Borough of Keyport, Borough of Union Beach, NJ. January 2006 to October 2007.** Responsible for preparation of New Jersey Department of Environmental Protection (NJDEP) CAFRA, Waterfront Development Permit, and Coastal Wetland Permit and U.S. Army Corps of Engineers (USACE) Nationwide Permits for the replacement of Monmouth County Bridges R4 and R7. This also includes the development of the mitigation plan and NJDEP approval for the R4 Consolidated Mitigation Site, which is proposed to be utilized as mitigation credit for R4, R7, and up to eight other bridge replacement/rehabilitation projects.

**Project Manager; Maryland State Highway Administration; MD 328 over Tuckahoe Creek Bridge Replacement and Wetland Mitigation Project; Counties of Caroline and Talbot, MD; October 2007 to December 2011.** As onsite environmental consultant to Maryland State Highway Administration (MDSHA), Mr. Mussomeli was responsible for wetland delineation and preparation of Joint Permit Application for USACE Individual Permit and Maryland Department of Public Works Tidal Wetlands License, as well as supervising wetland mitigation site searches and wetland mitigation design for bridge replacement project. Mr. Mussomeli also prepared Invitation for Bids and other advertisement documents on behalf of MDSHA.

**Environmental Scientist; PSE&G; Route 1/9T Gas Line Replacement; City of Jersey City, NJ; April 2005 to August 2005.** Responsible for environmental screening, including GIS background data search and field investigations, to assess environmental impacts and identify necessary permits for PSE&G gas line replacement in Jersey City.

**Environmental Scientist; New Jersey Department of Transportation; Route 49/55 Interchange Improvement Project; City of Millville, NJ; May 2006 to March 2008.** During preliminary design for this interchange improvement project, responsibilities included wetland

delineation, preparation of Category Exclusion Document (CED) including Technical Environmental Study (Ecology), environmental justice, Section 4(f) compliance, and Section 10 Reforestation Determination. During final design, responsibilities include preparation and submission of Statewide General Permits 10A and 11 for minor road crossing and construction of an outfall structure within wetlands, wetland transition areas, and State open waters, and preparation of Environmental Report and Individual Flood Hazard Area Permit and Hardship Waiver. Mr. Mussomeli also coordinated mitigation strategies for impacts to riparian zone.

**Environmental Project Manager; Maryland State Highway Administration; I-695 MD 26 (Liberty Road) and Milford Mill Road Interchange Improvements; Baltimore County, MD. December 2007 to August 2011.** As an onsite consultant for Maryland State Highway Administration (MDSHA), Mr. Mussomeli delineated wetlands within the 2.5-mile project corridor, identified significant trees within the project limits, prepared a wetland delineation report, and coordinated permitting requirements for Stimulus-funded bridge and roadway improvement project.

**Environmental Scientist; United Water New Jersey/United Water New York; Various Projects in Bergen and Ocean Counties, NJ and Rockland County, NY; March 2006 to October 2007.** Mr. Mussomeli was client point of contact for assessment of wetlands and wildlife permitting and issues for site improvements at a multitude of locations in northern and central NJ and southeastern New York. Responsibilities included client coordination, field investigations to determine the regulatory impacts for proposed site improvements and preparation of necessary permits (if applicable), wetland identification and delineation, permit preparation and submission, agency coordination, tree survey and location by GPS, GIS screenings, and report preparation.

**Environmental Project Manager; Maryland State Highway Administration; U.S. 40 over Patapsco River Bridge Rehabilitation Project. Baltimore and Howard Counties, MD. October 2007 to December 2011.** As an onsite consultant for Maryland State Highway Administration, Mr. Mussomeli served as environmental project manager for large bridge rehabilitation project and was responsible for wetland delineation, development of permitting/design strategies to minimize environmental impacts, consultant oversight, and agency coordination for replacement of structurally deficient bridge within high volume traffic corridor. Mr. Mussomeli also conducted a survey for State-listed rare ostrich fern (*Matteuccia struthiopteris*).

**Environmental Scientist; Bordentown Hospitality; Bordentown Hospitality Hotel and Amenities Project. Township of Bordentown, NJ; August 2005 to October 2007.** Responsible for wetland delineation, preparation of wetland report and preparation of General Permit 10A and Transition Area Waiver for development of 38-acre parcel for hotel, restaurant, offices, and amenities.

**Wetland Scientist; Grumpy's Restaurant; Grumpy's Site Expansion Project. Town of Dennis, MA; July 2003 to August 2003.** Responsibilities included wetland delineation, preparation of wetland report, and preparation and submission of Notice of Intent for proposed restaurant expansion.

**Environmental Project Manager; Maryland State Highway Administration; U.S. 50 over Sinepuxent Bay Bridge Replacement; Ocean City, MD; October 2007 to September 2011.** Project manager responsible for wetland delineation, mitigation site search, DEIS review, agency coordination, and preparation of Preferred Alternatives for Conceptual Mitigation Report for future replacement of U.S. 50 bridge to Ocean City. Mr. Mussomeli proposed an alternative form of

mitigation that consisted of contribution to Maryland Department of Natural Resources' Coastal Wetlands Initiative involving wetland enhancement through plugging ditches. Mr. Mussomeli coordinated with state and federal regulatory agencies for approval of this cost saving approach.

**CHRONOLOGICAL WORK HISTORY:**

Environmental Scientist IV; Tetra Tech, Inc.; Pittsburgh, PA, January 2012 – Present.

Senior Environmental Scientist; Parsons Brinckerhoff; Princeton, NJ and Baltimore, MD, October 2004 – December 2011.

Environmental Scientist; Gravatt, Geller, and Associates; Freehold, NJ, April 2004 – October 2004.

Wetlands Specialist; A.M. Wilson and Associates; Marstons Mills, MA, (May 2003 – April 2004).

Natural Resource Specialist; Northeast Environmental Management Systems; Lodi, NJ, May 2002 – May 2003.

**OTHER:**

New Jersey Meadowlands Commission- Environmental Program Leader/Naturalist - Lead special events and presentations, including canoe and boat trips; hikes; nature interpretation; and programs on wetlands, wildlife, Meadowlands ecology, and beekeeping; professional development seminars for teachers; and design of educational museum exhibits at the Meadowlands Commission's Environment Center, in Lyndhurst, New Jersey.

Maryland Quality Initiative (MDQI)- On behalf of PB and MDSHA, performed education outreach program for elementary and high school students interested in engineering and science careers.

Allegheny woodrat (*Neotoma magister*) population study- Picatinny Arsenal, Morris County, NJ. As an undergraduate student at Rutgers University, assisted in population study including trapping and radio telemetry tracking of State endangered Allegheny woodrat.

James A. McFaul Environmental Center- Worked as park naturalist leading special events and presentations, design of museum exhibits, wildlife rehabilitation, animal care, park security, administration, maintenance of grounds and trails, and park planning for environmental center in Wyckoff, New Jersey.

Bogota Environmental Commission- 1999 to 2001

Tenaflly Nature Center- Part-time Naturalist

National Wildlife Federation Backyard Habitat Stewardship Program

North Jersey Beekeepers Association

**PROFESSIONAL AFFILIATIONS:**

Society of Wetland Scientists

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**Preston R Smith**  
**DEPARTMENT MANAGER/BIOLOGIST/ECOLOGIST**  
**PITTSBURGH, PA**

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**EDUCATION:** B.S. Biology (Environmental Science); University of Pittsburgh; Dec. 2000  
M.S. Biological Sciences; Wright State University; March 2010

**EXPERIENCE SUMMARY:**

Mr. Preston Smith is a Biologist with 12+ total years of professional experience. Mr. Smith currently manages the Wetlands and Ecological Services Department for the Appalachian Basin Oil and Gas Services Group. Since starting at Tetra Tech, Mr. Smith has been involved in wetland delineations, habitat studies, and related report generation for commercial Oil and Gas clients in Western Pennsylvania, West Virginia, and Ohio. His current responsibilities including staff management, workload delegation including scheduling personnel for field work and report writing, and QA/QC of work products and deliverables. Mr. Smith has also been involved in NEPA Categorical Exclusion, Environmental Assessment, and Environmental Impacts Statement projects in several capacities serving as Project Manager, Deputy Project Manager, Water Resources Specialist, and Ecologist for various clients including the US Coast Guard, Department of Energy, Federal Energy Regulatory Commission, Nuclear Regulatory Commission, and Tennessee Department of Transportation. Additionally, Mr. Smith has served as an Ecological Risk Assessor for various DoD sites for the Navy and Air Force, and non-DoD sites for USEPA and commercial clients. He also has experience performing herpetological and small mammal surveys in Western Pennsylvania.

**TRAINING:** OSHA 1910.120 40-Hour HAZWOPER Training; June 22, 2007  
OSHA 1910.120(e)(4) 8-Hour HAZWOPER Supervisory; October 17, 2008  
OSHA 1910.120 8-Hour HAZWOPER Refresher; June 13, 2011  
ACOE-based 40-hour Wetland Delineation Certification; June 26, 2009

**RELEVANT PROJECT EXPERIENCE:**

**Project Biologist; Confidential Client; Fayette County, PA; 2010.** As a Project Biologist, Mr. Smith completed a field survey for presence/absence and potential habitat survey for the Allegheny woodrat, *Neotoma magister*, and submitted the report to the PA Game Commission for expedited review for Marcellus Shale-related activities. The survey was approved by the PA Game Commission.

**Biologist/Wetland Delineator/Manager; Confidential Client; Western PA/Northern West Virginia/Easter Ohio; 2009-present.** As a wetland delineator, Mr. Smith conducts and manages wetland investigations based on the 1987 US Army Corps of Engineers Wetland Delineation Manual and Regional Supplements. The investigations involved identifying wetland vegetation, soils, and hydrology along linear pipelines and well pad sites and preparing Wetland Reports for Marcellus Shale-related activities. A post construction wetland investigation and report were also prepared.

**Biologist/Wetland Delineator/Manager; Confidential Client; Eastern OH; 2011-present.** As a wetland delineator, Mr. Smith conducted wetland investigations based on the 1987 US Army Corps of Engineers Wetland Delineation Manual and Regional Supplements. The investigations

involved identifying wetland vegetation, soils, and hydrology along linear pipelines and preparing Wetland Reports for Marcellus Shale-related activities.

**Biologist; Confidential Client; Eastern OH; 2012.** As a Biologist, Mr. Smith conducted a habitat survey for Indiana Bat roost tree suitability. The investigations involved identifying suitable habitat for the Indiana bat (*Myotis sodalis*) and preparing a report for submittal with a Nationwide Permit 12 to the Army Corps of Engineers.

**Project Permit Manager; Confidential Client; West Virginia; 2011**As the Project Permitting Manager, Mr. Smith coordinated with USFWS and WV Department of Natural Resources (WV DNR) to secure the permitting for Nationwide Permit 12 for a natural gas pipeline project. Mr. Smith also prepared a Stream Activity Application Report for submittal to the WV DNR as par of this project.

**Project Permit Manager; Confidential Client; Ohio; 2012.** As the Project Permitting Manager, Mr. Smith coordinated with USFWS and US Army Corps of Engineers to secure the permitting for Nationwide Permit 12 for an approximately 5-mile natural gas pipeline project. Mr. Smith also prepared a Pre-Construction Notification for the ACOE as part of this permit.

**Project Permit Manager; Confidential Client; Ohio; 2012.** As the Project Permitting Manager, Mr. Smith coordinated with US Army Corps of Engineers to secure the permitting for Nationwide Permit 12 for an approximately 3.2-mile natural gas pipeline project. Mr. Smith also prepared a Pre-Construction Notification for the ACOE as part of this permit.

**NEPA Analyst/Environmental Scientist; FERC-regulated Environmental Assessment for an Interstate Natural Gas Pipeline; West Virginia and Pennsylvania; 2010-present.** As a NEPA analyst, Mr. Smith drafted the Aquatic Resource section of a FERC-regulated EA for a commercial Oil and Gas client for Marcellus Shale-related activities.

**Biologist/Field Operations Leader; TX Energy Environmental Report; Eastman Chemical; Beaumont, TX; 2008.** As the Field Operations Leader, Mr. Smith coordinated and participated in Biological surveys including fish and benthic sampling on the Neches River and a site habitat characterization in Beaumont, TX.

**Ecologist; Endangered Species Review; Munitions Response Program; MCB Quantico; 2007-2008.** As an Ecologist, Mr. Smith prepared the endangered species section of the Munitions Response Program at the Marine Corps Base Quantico. He gathered information on species occurring at the base and determined the Federal and State status of those species and identified locations where those species are likely to occur.

**Project Manager; Wetland Delineation for the New Station Lake Charles; U.S. Coast Guard; Lake Charles, LA. 2011-present.** As a project manager, Mr. Smith is currently managing all aspects of the Wetland Delineation for a proposed site of a new USCG facility in Lake Charles, LA. His duties included client management, budget monitoring, workload delegation, and review of the jurisdictional determination.

**CHRONOLOGICAL WORK HISTORY:**

**Wetlands and Ecological Services Department Manager, Tetra Tech NUS, Inc.; Pittsburgh, PA; November 2011-present.**

**Biologist/Ecological Risk Assessor; Tetra Tech NUS, Inc.; Pittsburgh, PA; January 2007-November 2011.**

**Research Assistant/Lab Manager; Wright State University; Dayton, OH; September 2003-December 2006.**

Managed an aquatic toxicology laboratory. Responsibilities included maintaining laboratory cultures and supplies, managing grant related research projects (see descriptions above), supervising undergraduate students, writing technical reports, conducting literature reviews, and maintaining laboratory and field equipment.

**Research Assistant; Indiana University of Pennsylvania; Indiana, PA; September 2002-August 2003.**

Provided support in maintaining laboratory insect cultures and supplies. Conducted small mammal surveys; endangered reptile surveys (Eastern Massasauga Rattlesnake); collected and identified amphibians and reptiles in Western Pennsylvania for the Pennsylvania Herpetological Atlas; identified benthic macroinvertebrates for Abandoned Mine Drainage projects.

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**CODIE VILENO**  
**ENVIRONMENTAL SCIENTIST**  
**PITTSBURGH, PENNSYLVANIA**

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**EDUCATION:** M.S., Environmental Geography, State University College at Buffalo, (anticipated) 2013  
B.A., Anthropology, State University College at Buffalo, 2007

**TRAINING:** 38 Hour ACOE Wetland Delineation Training Program, November 2009  
Engineering for Ecosystem Restoration Workshop, June 2010  
American Red Cross Adult First Aid/CPR/AED, October 2011  
16 Hour Wilderness First Aid, November 2012  
40 hours EPA 165.5 HAZWOPER Health and Safety Worker 2012  
Williams Contractor Safety Training 2012

**EXPERIENCE SUMMARY:**

Mr. Vilenko has worked in the environmental field for over five years. His experience includes conducting and assisting on wetland delineations, habitat assessments, and endangered species surveys. He has additional experience performing and supervising Phase 1 archaeological surveys. Mr. Vilenko's educational background includes studies in wetland ecology, stream ecology, hydrology, wetland/stream restoration methods, geology, environmental impact assessments, and archaeology.

**PROJECT EXPERIENCE:**

**Environmental Assessment**

**Environmental Scientist; MarkWest Liberty Midstream & Resources, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Pennsylvania.** Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southwestern Pennsylvania. Specific tasks included field survey, report preparation, and wetland functional assessments.

**Environmental Scientist; MarkWest Ohio Gathering Company, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ohio.** Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in eastern Ohio. Specific tasks included field survey, report preparation, and completion of Ohio EPA specific wetland and stream assessments.

**Environmental Scientist; Antero Resources Appalachian Corp.; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ritchie and Doddridge Counties, West Virginia.** Responsible for performing and assisting with wetland delineations for various proposed natural gas well pads and access roads in northern West Virginia. Specific tasks included field survey and report preparation.

**Environmental Scientist; Stone Energy; Wetland Delineation for Mercer 1 Well Pad; Sisterville, Tyler County, West Virginia; September 2012.** Performed wetland delineation for proposed natural gas well pad and associated access road. Specific tasks included field survey and report preparation.

**Environmental Scientist; Laurel Mountain Midstream Operating, LLC; Endangered Species Survey (Yellow Passionflower) for Miller to Headlee Pipeline Project; Greene and Cumberland Townships, Greene County, Pennsylvania; September 2012.** Assisted with botanical survey for yellow passionflower along the proposed Miller to Headlee natural gas pipeline right-of-way and access roads. Tasks included pre-survey research, field survey, and report preparation.

**Environmental Scientist; Laurel Mountain Midstream Operating, LLC; Endangered Species Survey (Drooping Bluegrass) for Nickelville Pipeline Project; Nickelville, Venango County, Pennsylvania; July 2012.** Assisted with botanical survey for drooping bluegrass along the proposed Nickelville natural gas pipeline right-of-way. Specific tasks included field survey and report preparation.

**Environmental Scientist; Laurel Mountain Midstream Operating, LLC; Endangered Species Survey (Tall Larkspur) for Dunlap Creek Pipeline Project; Luzerne and Redstone Townships, Fayette County, Pennsylvania; June 2012.** Assisted with botanical survey for tall larkspur along the proposed Dunlap Creek natural gas pipeline right-of-way and access roads. Specific tasks included field survey and report preparation.

**Environmental Scientist; Laurel Mountain Midstream Operating, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Pennsylvania.** Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southwestern Pennsylvania. Specific tasks included field survey and report preparation.

**Environmental Scientist; Enervest Operating, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ohio.** Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southeastern Ohio. Specific tasks included field survey, report preparation, and completion of Ohio EPA specific wetland and stream assessments.

**Environmental Scientist; NAVFAC Washington; Marine Corps Base Quantico Wetland Functional Analysis; Quantico, Virginia; April 2012.** Assisted with wetland functional assessments in support of remedial activities.

**Environmental Scientist; NASA; Wallops Flight Facility Remedial Action Contract; Wallops Island, Virginia; March 2012.** Assisted with wetland delineation and wetland functional assessments in support of remedial activities.

**Environmental Scientist; Burnett Oil Company, Inc.; New Salem, Pennsylvania; December 2011 to February 2012.** Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southwestern Pennsylvania. Specific tasks included field survey and report preparation.



**Scientist; Army Corps of Engineers; South Park Lake Dredge Project; Buffalo, New York; October 2011.** Supervised Phase 1 archaeological survey in preparation of dredging activities.

**Scientist; Dominion East Ohio; Monroe County Gas Pipeline Project; Indiana Bat Habitat Assessment and Wetland Delineation; Woodsfield, Ohio; July 2011 to September 2011.** Assisted with Indiana Bat Habitat assessment and wetland delineation along a proposed natural gas pipeline right-of-way. Specific tasks included field survey and completion of Ohio EPA specific wetland and stream assessments. Other responsibilities included Phase 1A archaeological assessment

**Archaeological Technician; National Grid; Lockport to Mortimer; Rochester, New York; May 2011 to October 2011.** Performed Phase 1 archaeological survey in support of transmission line replacement. Assisted with report preparation.

**Scientist; National Fuel Gas Company; Tioga Pipeline Expansion; Tioga County, Pennsylvania; June 2011 to September 2011.** Assisted with wetland delineation along proposed natural gas pipeline right-of-way. Other responsibilities included performing a Phase 1A archaeological assessment and supervising a Phase 1 archaeological survey.

**Archaeological Technician; National Fuel Gas Company; Allegheny National Forest Pipeline Project; Warren, Pennsylvania; September 2009 to October 2009.** Performed Phase 1 archaeological survey along proposed natural gas pipeline right-of-way.

**Archaeological Technician; Dominion East Ohio; Pipeline Replacement; Wooster, Ohio; June 2008 – July 2009.** Performed Phase 1 archaeological survey along proposed natural gas pipeline right-of-way.

**Archaeological Technician; Horizon Wind Energy, LLC.; Arkwright Wind Farm; Arkwright, New York; September 2008 – March 2009.** Performed Phase 1 archaeological survey on proposed turbine pads and transmission lines.

### **Sampling**

**On-Call Research Assistant; City of Buffalo, NY; Buffalo, New York; May 2009 to August 2009.** Utilized YSI multiparameter sondes, and collected water samples during storm events to support City of Buffalo Combined Sewer Overflow monitoring program.

### **CHRONOLOGICAL WORK HISTORY:**

Environmental Scientist III; Tetra Tech, Inc.; Pittsburgh, Pennsylvania; 2011 – Present

Scientist I; Tetra Tech, Inc.; Buffalo, New York; June 2008 – November 2011

Research Assistant; State University of New York Research Foundation; Buffalo, New York; October 2009 – January 2010

On-Call Research Assistant; State University of New York Research Foundation; Buffalo, New York; May 2009 – August 2009

Report Writer; Test America Laboratories; Amherst, New York; November 2007 – June 2008

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Summary: Application - Appendix A electronically filed by Mr. Michael J. Settineri on behalf of Carroll County Energy LLC