290 W. Nationwide Blvd.
Columbus, Ohio 43215

Direct: 614.460.6988
Fax: 614.460.8403
JosephClark@nisource.com

December 20, 2019

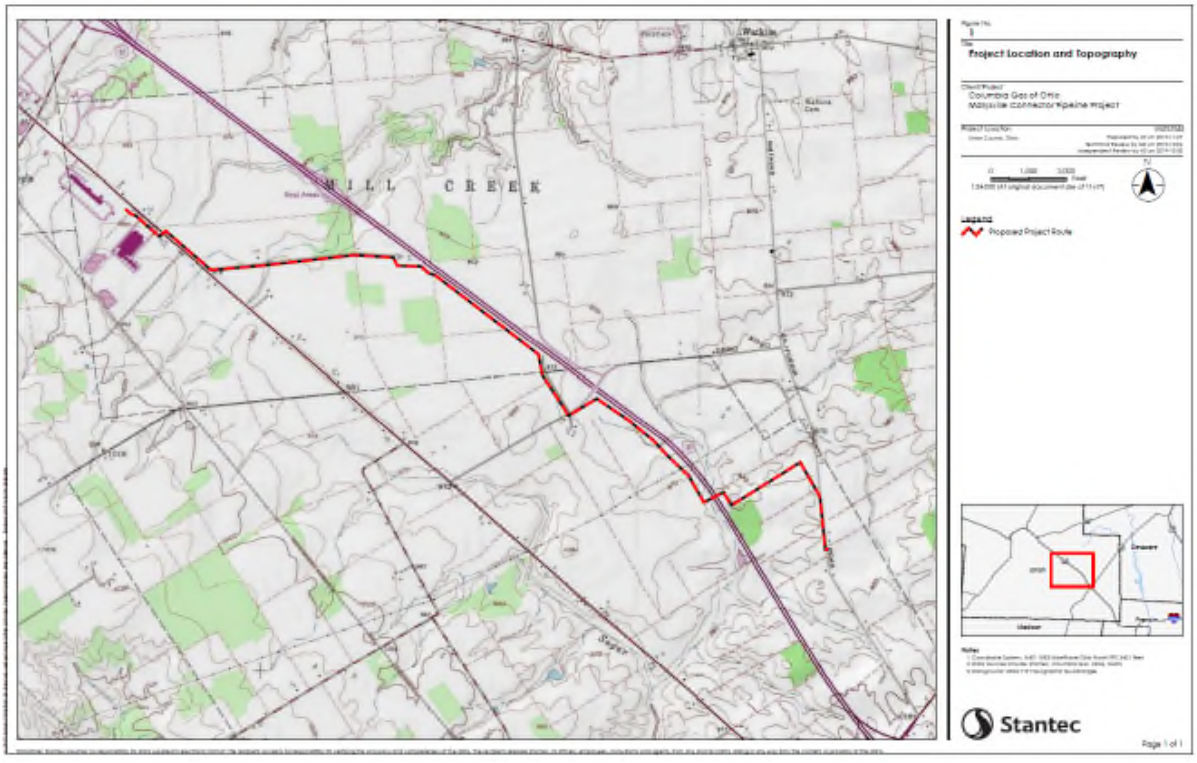
Ms. Tanowa Troupe
Secretary, Office of Administration
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215

RE: Columbia Gas of Ohio, Inc.
Letter of Notification: Marysville Connector Pipeline Project
OPSB Case No. 19-2148-GA-BLN

Dear Ms. Troupe:

Columbia Gas of Ohio, Inc. ("Columbia") submits this Letter of Notification, pursuant to R.C. 4906.03(F)(3) and Ohio Admin. Code Chapter 4906-6, concerning a proposed pipeline project known as the Marysville Connector Pipeline Project (the "Project").

Appendix A, Figure 1:



As required by Ohio Admin. Code 4906-6-05, please be advised of the following:

(B) General Information

(1) The name of the project and applicant's reference number, names and reference number(s) of resulting circuits and a brief description of the project, and why the project meets the requirements for a letter of notification.

Columbia is proposing to construct a natural gas pipeline identified as the Marysville Connector Pipeline Project (the "Project") near Marysville, Union County, Ohio. The proposed Project will be approximately 25,238 feet (4.78 miles) in length and consist of construction of a 12-inch diameter, distribution class coated steel gas main and district regulator station. The Project will provide natural gas service to new industries and residential development along the route.

The majority of the 12-inch natural gas main will be constructed within permanent private pipeline easements, with the exception of the crossing of the public rights-of-way of Watkins-California Road, U.S. Route 33, Beecher Gamble Road, Adelsberger Road, and Industrial Parkway. Directional drilling of approximately 581 feet is planned at the crossing of U.S. Route 33, as depicted in the construction plans in Appendix B. An Inadvertent Release Plan is included in Appendix F. Open cut installation methods will be utilized on the remaining public rights-of-way crossings and within the permanent private pipeline easements.

This Project meets the requirements of the Letter of Notification as it falls under R.C. 4906.03(F)(3), which states that the Ohio Power Siting Board shall review, an application for "new construction of a gas pipeline that is greater than one mile in length but not greater than five miles in length." The natural gas pipeline is being built for economic development near Marysville, Union County, Ohio.

(2) If the proposed letter of notification project is a gas or natural gas transmission line, a statement explaining the need for the proposed facility.

The purpose and need of the Project is to increase economic development and service reliability near Marysville in Union County. The Project will provide natural gas service to new industry and residential development near the Project alignment and provide existing customers with an increased capacity for reliable natural gas service.

(3) The location of the project in relation to existing or proposed lines and substations shown on an area system map of sufficient scale and size to show existing and proposed transmission facilities in the project area.

The map shown in Figure 2 illustrates the location of the Project in relation to existing infrastructure including Columbia's natural gas pipeline facilities in the area within an approximate 10-mile radius of the Project. The Project is shown as a red and black hashed line, with existing gas facilities shown in orange and yellow, hydroelectric power plants shown in green, and electrical substations shown in black.

(4) The alternatives considered and reasons why the proposed location or route is best suited for the proposed facility. The discussion shall include, but not be limited to, impacts associated with socioeconomic, ecological, construction or engineering aspects of the project.

During the initial planning stages of the Project, an area consisting of approximately 15,335 acres was reviewed to determine potential route alternatives. After this extensive review, Columbia determined that the following route should be the preferred route.

The preferred route, which is proposed herein, was developed taking into consideration where new development is likely to occur, landowner property lines, and environmental features. Therefore, the preferred route was purposely located to the back of properties along Industrial Parkway to allow for future development along Industrial Parkway. The preferred route parallels property lines and existing utility easements as much as practicable to minimize land use impacts on landowners. This preferred route avoids large forested areas and crosses four streams, four wetlands, and six known cultural resource sites. Due to minimization and avoidance measures taken by Columbia while designing the preferred route, only minimal tree clearing will be required along fence rows, three wetlands, one stream crossing, and three known cultural sites will be avoided by the Project. The route also avoids a cemetery and a residential pond on the south side of U.S. Route 33. The preferred route impacts 15 property owners and 19 parcels, and crosses four roadways. The preferred route has 106 structures within 1,000 feet of the centerline, none of which are schools or churches. The preferred route's benefits described above support utilizing this preferred route to install the pipeline.

(5) Describe the public information program to inform affected property owners and tenants of the nature of the project and the proposed timeframe for project construction and restoration activities.

Columbia began reaching out to landowners in late 2019 regarding this Project to obtain survey notice access. Columbia will be conducting extensive conversations with many of the affected landowners on this project as Columbia negotiates easements. Columbia also plans to further communicate to customers through a letter, a postcard, a website, and social media channels. The first letter will be the affected property communication required by Ohio Admin. Code 4906-6-08(B). Columbia will also host a website to provide comprehensive and up-to-date information about the project, update social media channels during construction, and send postcards to the affected residents informing them of these communication channels.

(6) The anticipated construction schedule and proposed in-service date of project.

Tree and vegetation clearing will begin in the winter of 2021. Columbia has reviewed and designed the entire pipeline right-of-way to reduce and minimize environmental impacts to potential Indiana bat (*Myotis sodalis*, federally endangered) and northern long-eared bat (*Myotis septentrionalis*, federally threatened) roosting habitat and other ecological impacts to wetlands. Columbia will adhere to the seasonal tree clearing restrictions recommended by federal and state agencies (October 1 to March 31). Columbia will not grind any tree stumps prior to obtaining the necessary stormwater permits for the Project. Installation of the proposed pipeline is scheduled to begin on or about February 21, 2022, and the in-service date (completion date) of this Project is expected to be on or about December 26, 2022.

(7) An area map of not less than 1:24,000 scale clearly depicting the facility with clearly marked streets, roads, and highways, and an aerial image.

The topographic map shown in Appendix A, Figure 1 is at 1:24,000 scale, United States Geological Survey ("USGS") 7.5-minute topographic map of Shawnee Hills and Marysville, Ohio quadrangles. Aerial images of the Project depicting streets, roads, and highways can be found in Appendix B.

(8) A list of properties for which the applicant has obtained easements, options, and/or land use agreements necessary to construct and operate the facility and a list of the additional properties for which such agreements have not been obtained.

As of the date of filing, Columbia has not obtained any easements along the right-of-way. Columbia is working to obtain easements from the individuals and entities listed in Appendix D and will not begin construction until all easements are secured.

(9) Technical features of the project.

(a) Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.

The proposed pipeline will be tested such that it will have a Maximum Allowable Operating Pressure ("MAOP") of 190 pounds per square inch gauge ("psig"). Columbia will be installing 12-inch, coated steel pipe with a wall thickness of 0.375 inches.

Columbia has begun contacting property owners along the preferred pipeline route to secure permanent and/or temporary easements. In addition to the 4.78-mile length of the pipeline right-of-way, Columbia will be obtaining land rights for staging areas that will be situated along the pipeline right-of-way and other areas needed during construction. The location of the staging areas and right-of-way are shown in the drawings attached in Appendix B.

(b) For electric power transmission lines that are within 100 feet of an occupied residence or institution, the production of electric and magnetic fields during the operation of the proposed electric power transmission line. The discussion shall include:

(i) Calculated electric and magnetic field strength levels at one meter above ground under the lowest conductors and at the edge of the right-of-way for: (a) Normal maximum loading, (b) Emergency line loading, (c) Winter normal conductor rating.

(ii) A discussion of the applicant's consideration of design alternatives with respect to electric and magnetic fields and their strength levels, including alternate conductor configuration and phasing, tower height, corridor location, and right-of-way width.

Not applicable to this Project.

(c) The estimated cost of the project.

The estimated total cost of the proposed Project is $28.0 million.

(10) Social and Ecological Impacts of the Project.

(a) A brief, general description of the land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.

The preferred route is located within Millcreek and Jerome Townships, Union County, Ohio. The current land use along the preferred route is primarily comprised of agricultural and residential/industrial properties. There are also transportation-related land use areas including four road crossings.

Currently, there are approximately 106 structures within 1,000 feet of the centerline of the Project. No churches or schools were identified based on desktop analysis.

According to the U.S. Census, the average household size in Union County is 2.70 and is 2.56 in the City of Marysville. The population of Union County in 2018 was 57,835, and was 24,267 for the City of Marysville. No planned residential developments within the study corridor were discovered as part of the survey. The Project is not expected to significantly impact existing or planned land use within the vicinity of the Project. There are no federal or state lands that would be crossed by the Project with the exception of state-owned road rights-of-way. Impacts associated with the construction of the Project will be temporary in nature due to Columbia's plan to restore the pipeline right-of-way back to pre-construction contours when the Project is complete.

(b) The acreage and general description of all agricultural land, and separately all agricultural district land, existing at least sixty days prior to submission of the application within the potential disturbance area of the project.

Parcels that are registered as Agricultural District Land were obtained from the Union County Auditor's office on November 21, 2019. Three Agricultural District Land parcels are crossed by the Project. The agricultural land impacted by the Project totals approximately 85 acres and the Agricultural District Land

impacted by the Project totals approximately 30 acres. The list of parcels with Agricultural District Land is attached as Appendix D.

(c) A description of the applicant's investigation concerning the presence or absence of significant archaeological or cultural resources that may be located within the area likely to be disturbed by the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

On behalf of Columbia, Weller & Associates, Inc. conducted a Literature Review and a Phase I Cultural Resources and Architectural Investigation for the Project. During the Phase I field survey investigations on November 4 - 5, 2019, one newly-recorded historic period scatter and single prehistoric period artifact (33UN0571) and five newly-recorded prehistoric isolated finds (33UN0567 – 33UN0570, 33UN0572) were documented. These sites are not recommended as eligible for inclusion in the National Register of Historical Places ("NRHP") and it is recommended that no further work at the sites is deemed necessary for the proposed Project. The architectural survey identified a total of nine individual resources fifty years of age or older within the study area. Only sites S-1/UNI0052313 and S-6/UBI0052213 demonstrated potential eligibility for inclusion in the NRHP. Further study found the two resources to be eligible for inclusion in the NRHP under Criterion A and Criterion C, respectively. However, given the location of the proposed Project occurring adjacent to industrial buildings and the underground nature of the Project, the proposed Project was not found to adversely impact the characteristics of the two confirmed NRHP resources. Copies of the reports will be submitted to the State Historic Preservation Office ("SHPO") and will be provided to the Ohio Power Siting Board.

Section 106 of the National Historic Preservation Act ("NHPA") requires federal agencies to take into account the effects of federally assisted undertakings on historic properties. The proposed Project will require a federal permit with federal review and authorization. Therefore, Section 106 of the National Historic Preservation Act does apply to the proposed Project. Coordination will be completed with SHPO for Section 106 of the NHPA and Columbia will receive authorization for the Project from the SHPO prior to beginning construction on the Project.

(d) A listing of the local, state, and federal government agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.

A copy of the letter of notification has been sent to the following public officials concurrently with its submittal to the Ohio Power Siting Board.

City of Marysville:

Mayor J.R. Rausch
City of Marysville
209 S. Main Street
Marysville, Oh 43040

Mr. Henk Berbee
Marysville City Council
Council Vice President
209 S. Main Street
Marysville, Oh 43040

Ms. Ashley Gaver
City of Marysville Planning & Zoning Commission
209 S. Main Street
Marysville, Oh 43040

Mr. Alan Seymour
City Council, Ward Two
209 S. Main Street
Marysville, Oh 43040

Ms. Rebecca Dible
Clerk of Council
209 S. Main Street
Marysville, Oh 43040

Mr. Jeremy Hoyt
Marysville City Engineer/Deputy Public Service Director
209 S. Main Street
Marysville, Oh 43040

Mr. Chad Wolniewicz
Marysville Planning Commission
209 S. Main Street
Marysville, Oh 43040

Ms. Emily Latham
Marysville Planning Commission
209 S. Main Street
Marysville, Oh 43040

Mr. Brett Garrett
Marysville Planning Commission
209 S. Main Street
Marysville, Oh 43040

Ms. Dana Gehman
Marysville Planning Commission
209 S. Main Street
Marysville, Oh 43040

Mr. John Kleinman
Marysville Planning Commission
209 S. Main Street
Marysville, Oh 43040

Plain City:

Mr. Darrin Lane
Mayor, Plain City
213 South Chillicothe Street
Plain City, Ohio 43064

Mr. Nathan Cahall
Village Administrator, Plain City
213 South Chillicothe Street
Plain City, Ohio 43064

Ms. Jody Carney
Village Council Member
213 South Chillicothe Street
Plain City, Ohio 43064

Ms. Kerri Ferguson
Village Council Member
213 South Chillicothe Street
Plain City, Ohio 43064

Ms. Sherry Heineman
Village Council Member
213 South Chillicothe Street
Plain City, Ohio 43064

Mr. Darren Lee
Village Council Member
213 South Chillicothe Street
Plain City, Ohio 43064

Ms. Shannon Pine
Village Council Member
213 South Chillicothe Street
Plain City, Ohio 43064

Mr. John Rucker
Village Council Member
213 South Chillicothe Street
Plain City, Ohio 43064

Mr. Matt Lewis
Plain City Planning and Zoning
213 South Chillicothe Street
Plain City, Ohio 43064

Union County:

Mr. Jeff Stauch
Union County Engineer
233 W. Sixth Street
Marysville, Oh 43040

Mr. Ron Nieman
District Conservationist
Union County SWCD
18000 State Rt. 4, Suite B
Marysville, Oh 43040

Mr. Charles Hall
Ms. Christiane Schmenk
Mr. Steve Stolte
Union County Commissioners
233 W. Sixth Street
Marysville, Oh 43040

Mr. Tim Hansley
Union County Administrator
233 W. Sixth Street
Marysville, Oh 43040

Mr. Rick Weigand
Union County Soil and Water
Conservation District
18000 State Route 4, Suite B
Marysville, Oh 43040

Millcreek Township:

Mr. Bill Lynch
Millcreek Township Trustee
10420 Watkins Road
Marysville Oh 43040

Mr. Keith Conroy
Millcreek Township Trustee
10420 Watkins Road
Marysville Oh 43040

Mr. Bill Jordan
Millcreek Township Trustee
10420 Watkins Road
Marysville Oh 43040

Jerome Township:

Mr. Ron Rhodes
Jerome Township Trustee
9777 Industrial Parkway
Plain City, Oh 43064

Mr. Joe Craft
Jerome Township Trustee
9777 Industrial Parkway
Plain City, Oh 43064

Mr. C.J. Lovejoy
Jerome Township Trustee
9777 Industrial Parkway
Plain City, Oh 43064

In addition to submitting this Letter of Notification to the Ohio Power Siting Board, the Project is subject to the following federal, state, and local agency reviews and authorizations to be received prior to construction beginning:

- U.S. Army Corps of Engineers ("USACE") Clean Water Act Section 404 Nationwide Permit #12;
- Section 106 of the NHPA compliance through the SHPO;
- Section 7 of the Endangered Species Act ("ESA") compliance through the U.S. Fish and Wildlife Service ("USFWS");
- Ohio Department of Natural Resources ("ODNR") compliance through the Division of Wildlife and Scenic Rivers Program;
- Ohio Environmental Protection Agency ("OEPA") General Construction Stormwater Permit and Stormwater Pollution Prevention Plan ("SWPPP") requirements;
- City of Marysville SWPPP requirements; and
- Ohio Department of Transportation ("ODOT") and Union County road crossing permits.

(e) A description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species, threatened species, rare species, species proposed for listing, species under review for listing, and species of special interest) that may be located within the area likely to be disturbed by the project, a statement of findings of the investigation, and a copy of any document produced as a result of the investigation.

The USFWS federally listed species by county list for Ohio that was published on January 29, 2018 was reviewed to determine the threatened and endangered species listed for Union County. USFWS's publication listed the Indiana bat (endangered); the northern long-eared bat (threatened); the Scioto madtom (*Noturus trautmani,* endangered); clubshell (*Pleurobema clava,* endangered); northern riffleshell (*Epioblasma torulosa rangiana,* endangered); rayed bean (*Villosa fabalis,* endangered); snuffbox (*Epioblasma triquetra,* endangered); rabbitsfoot (*Quadrula cylindrica cylindrica,* threatened), and the bald eagle (*Haliaeetus leucocephalus,* species of concern).

The ODNR – Division of Wildlife state listed species by county list for Ohio that was updated in June 2016 was reviewed to determine the threatened and endangered species listed for Union County. ODNR – Division of Wildlife publication listed the Indiana bat (endangered); northern harrier (*Circus*

cyaneus, endangered); loggerhead shrike (*Lanius ludovicianus*, endangered); Scioto madtom (endangered); northern riffleshell (endangered) rayed bean (endangered*)*; snuffbox (endangered*)*; rabbitsfoot (endangered); clubshell (endangered*)*; and pondhorn (*Uniomerus tetralasmus*, threatened).

A coordination letter was submitted to the USFWS and ODNR Office of Real Estate on October 31, 2019, seeking review of the proposed Project for the potential impacts on federal and state listed species and their habitats within the Project area (Appendix E).

Correspondence from USFWS was received on November 19, 2019. The response stated that the proposed Project is in the vicinity of one or more confirmed records for the Indiana bat and within the range of the northern long-eared bat. Therefore, the USFWS recommended that trees greater than 3 inches diameter breast height ("dbh") be saved whenever possible. If tree removal is necessary, the USFWS recommends tree removal occur from October 1 through March 31. Please note that, because Indiana bat presence has already been confirmed in the Project vicinity, any additional summer surveys would not constitute presence/absence surveys for this species. Due to the Project type, size, and location, USFWS does not anticipate adverse effects upon any other federally endangered, threatened, proposed, or candidate species.

Correspondence from ODNR Office of Real Estate was received on December 4, 2019. The ODNR response also states the Project is within the vicinity of existing records for the Indiana bat, a state and federally endangered species. The response letter also recommends if suitable habitat occurs within the Project area, trees be conserved. If suitable habitat must be cut, tree removal should occur from October 1 through March 31.

The proposed Project contains forested habitat in the form of ornamental trees on private residential or commercial lots, fence rows, and single trees between agricultural fields. Tree species observed within the Project area include American elm (*Ulmus americana*), shagbark hickory (*Carya ovata)*, common hackberry (*Celtis occidentalis)*, and white oak (*Quercus alba)* with a dbh ranging from 5 to 30 inches. Impacts to forested habitats will be avoided and minimized to the maximum extent practicable during construction. Please see the construction plans in Appendix B for impacted locations of forested habitat for the proposed pipeline. In addition, Columbia will adhere to seasonal tree clearing timeframes recommended by both agencies. The Project will result in a small amount of tree clearing relative to the available habitat in the immediate surrounding area; therefore, habitat removal is unlikely to result in significant impacts to bat species. Based on this information and the minimization and

avoidance measures taken by Columbia, it is not likely that direct impacts to the Indiana bat or northern long-eared bat will occur.

The ODNR response stated that the Project is within the range of the Scioto madtom (*Noturus trautmani*) a state endangered fish species and the Tippecanoe darter (*Etheostoma Tippecanoe*) a state threatened fish species. The ODNR recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to aquatic species and their habitat. In addition, ODNR stated that the Project is within the range of seven freshwater mussel species. However, ODNR stated due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this Project is not likely to impact these species.

There are four streams located within the proposed pipeline route and three streams (Streams 2, 3, and 4) are proposed to be impacted by open cut installation methods. However, these streams have a watershed of less than 10 square miles and have ephemeral or intermittent flow regime. Stream 1 is an agricultural ditch with a perennial flow regime consisting of silt and hardpan substrates which is also a watershed less than 10 square miles in size. Due to minimization and avoidance measures taken by Columbia while designing the preferred route, Stream 1 will be avoided. Streams 2-4 do not provide sufficient habitat for mussel and fish species. Therefore, impacts to federal or state threatened and/or endangered mussel and fish species are not anticipated for the proposed Project.

The ODNR response states the Project is within the range of the king rail (*Rallus elegans*), a state endangered bird. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. ODNR recommends construction be avoided in this habitat during nesting period, May 1 to August 1. Marsh vegetation found within the project area is very minimal and does not contain quality surrounding habitat for the king rail species. Therefore, impacts to the state endangered species is not anticipated for the proposed Project.

The Project is also with the range of the loggerhead shrike (*Lanius ludovicianus*), a state endangered bird. ODNR states if thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period, April 1 to August 1. If this habitat will not be impacted the Project is not likely to impact this species. The shrubbery habitat occurring within the project area is limited to narrow fence rows. Due to no dense thickets or shrubbery occurring within the Project area,

impacts to the state endangered species is not anticipated for the proposed Project.

The Project is also within the range of the northern harrier (*Circus cyaneus*), a state endangered bird. This bird is a common migrant and winter species and occasionally breed in large marshes and grasslands and often hunt over grasslands. ODNR recommends if this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period, May 15 to August 1. Large marshes or grasslands do not occur within the Project area. Therefore, impacts to the northern harrier are not anticipated for the proposed Project.

The ODNR response indicates a record of a great blue heron (*Ardea herodias*) rookery occurs within a one-mile radius of the Project. However, the record does not occur with the Project area. Therefore, impacts to the great blue heron are not anticipated for the proposed Project.

A copy of the correspondence from the USFWS and ODNR Office of Real Estate is included in Appendix E.

Section 7(a)(2) of the ESA directs all Federal agencies to ensure that any action they authorize, fund, or carry-out does not jeopardize the continued existence of an endangered or threatened species or designated or proposed critical habitat (collectively, referred to as protected resources). If there is a federal nexus for this Project, no tree clearing should occur on any portion of the Project area until consultation under Section 7 of the ESA is completed. The proposed Project does require a federal permit, federal review and/or authorization, or the use of federal funding to complete the Project. Therefore, Section 7 consultation is required for the proposed Project and Section 7 ESA consultation with the USFWS has been initiated.

(f) A description of the applicant's investigation concerning the presence or absence of areas of ecological concern (including national and state parks, floodplains, wetlands, designated or proposed wildlife areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries) that that may be located within the area likely to be disturbed by the project, a statement of findings of the investigation, and a copy of any document produced as a result of the investigation.

Stantec conducted an environmental review of the area on behalf of Columbia. According to the USFWS, there are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the Project area.

The Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Maps ("FIRM") were reviewed to identify any flood hazard areas that have been mapped for the proposed pipeline route. Specifically, map numbers 39159C0358D, 39159C0359D, 39159C0367D, and 39159C0390D mapped the area of the proposed Project. The proposed pipeline route does not impact any mapped floodplain areas. A copy of the FEMA map with coverage of the Project area is included in Appendix A.

A review of the National Wetlands Inventory ("NWI") database indicates no NWI-mapped wetlands identified within the proposed pipeline route. A copy of the NWI maps for the Project is included in Wetlands and Waterbodies Delineation Report located in Appendix C.

A wetland and waterbody field survey was conducted in a study corridor that varied in width (100 – 300-foot) on November 20, 2019. During the field survey, four streams and four wetlands were identified. Despite the size of the study corridor surveyed, the proposed pipeline route will only include a 75-foot wide (50-foot permeant easement and 25-foot temporary easement) construction footprint. Due to minimization and avoidance of delineated features during the finalization of the proposed route, three wetlands and one stream were able to be avoided. Three stream channels and one wetland are proposed to be open cut. Due to the flow regimes of these channels, it is anticipated that these streams can be crossed by open cut construction methods during low flow conditions to minimize impacts to the channels. A copy of the Wetland and Waterbodies Delineation Report is included in Appendix C.

Impacts to vegetation along the proposed pipeline route will be minimal. Forested habitat impacts will be limited to three fence rows between agricultural fields and a few isolated residential trees. Tree species observed within the Project area include American elm, shagbark hickory, common hackberry, and white oak with dbh ranging from 5 to 30 inches. Old field habitat that will be impacted by the proposed Project includes Canadian goldenrod (*Solidago canadensis*), tall ironweed (*Vernonia gigantea*), Queen Ann's lace (*Daucus carota*) and Indian grass (*Sorghastrum nutans*). The dominant species identified within maintained lawn and maintained right-of-way during the field surveys consisted of Kentucky bluegrass (*Poa pratensis*), English plantain (*Plantago*

lanceolata), common dandelion (*Taraxacum officinale*), and Canada thistle (*Cirsium arvense*). Please see the construction plans in Appendix B for locations of forested habitat that will be impacted.

(g) Any known additional information that will describe any unusual conditions resulting in significant environmental, social, health, or safety impacts.

To the best of Columbia's knowledge, no unusual conditions exist that would result in significant environmental, social, health, or safety impacts.

Should staff of the Ohio Power Siting Board desire further information or discussion of this application, please do not hesitate to reach out to me at the information listed above.

Respectfully submitted,

/s/ Joseph M. Clark

Appendix A Project Maps

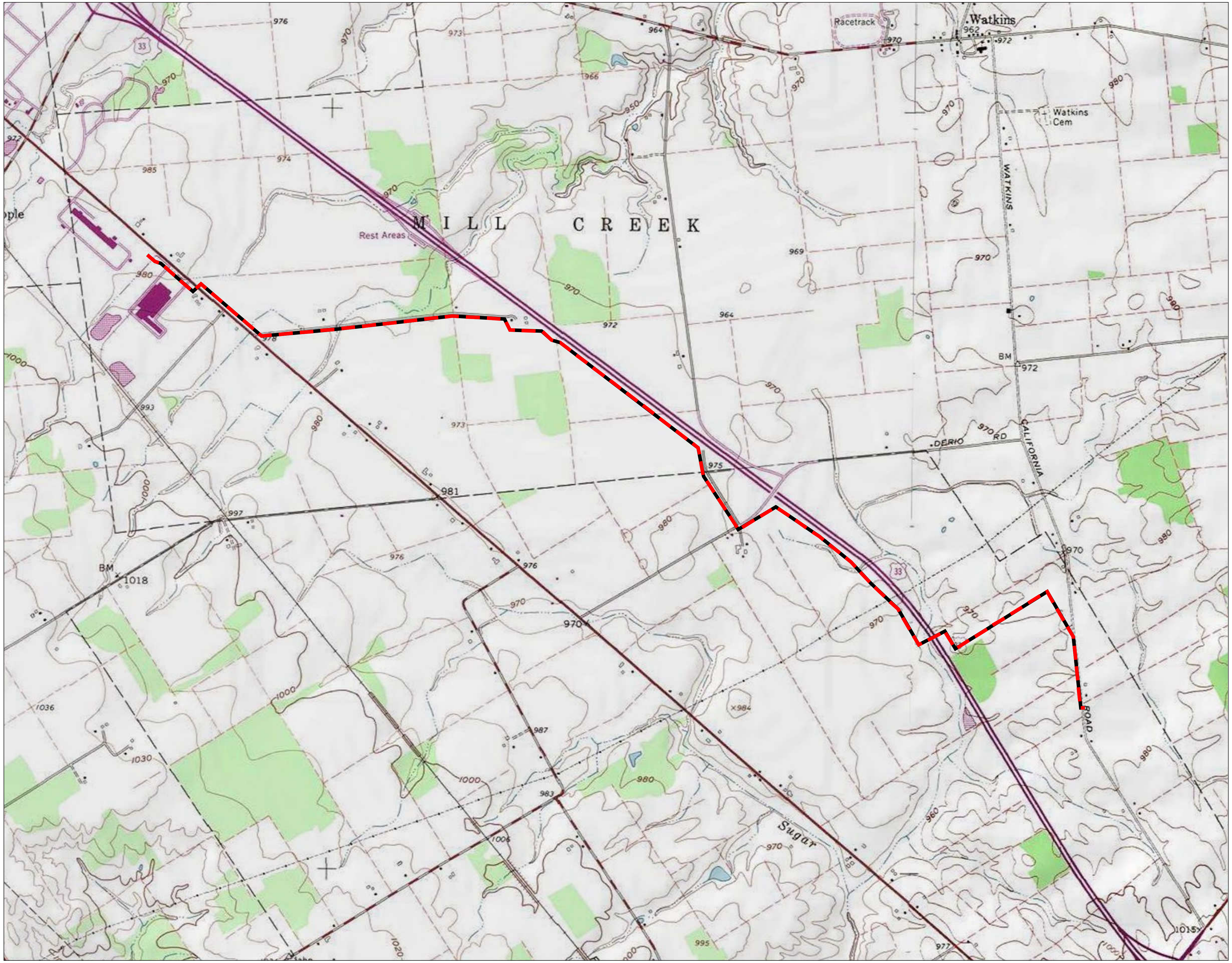


Figure No.
1

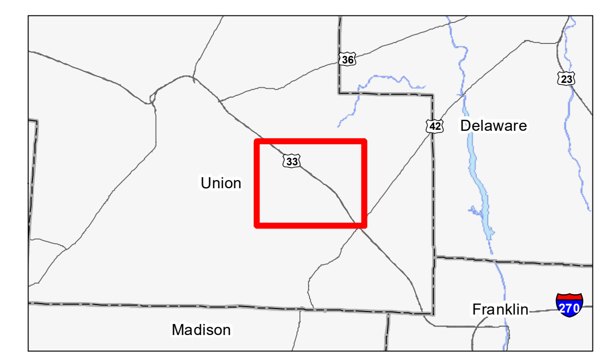
Title
Project Location and Topography

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project

Project Location 193707055
Union County, Ohio
Prepared by JD on 2019-11-27
Technical Review by MK on 2019-12-04
Independent Review by AS on 2019-12-05

0 1,000 2,000 Feet
1:24,000 (At original document size of 11x17)

Legend
Proposed Project Route



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Background: USGS 7.5' Topographic Quadrangles

Stantec

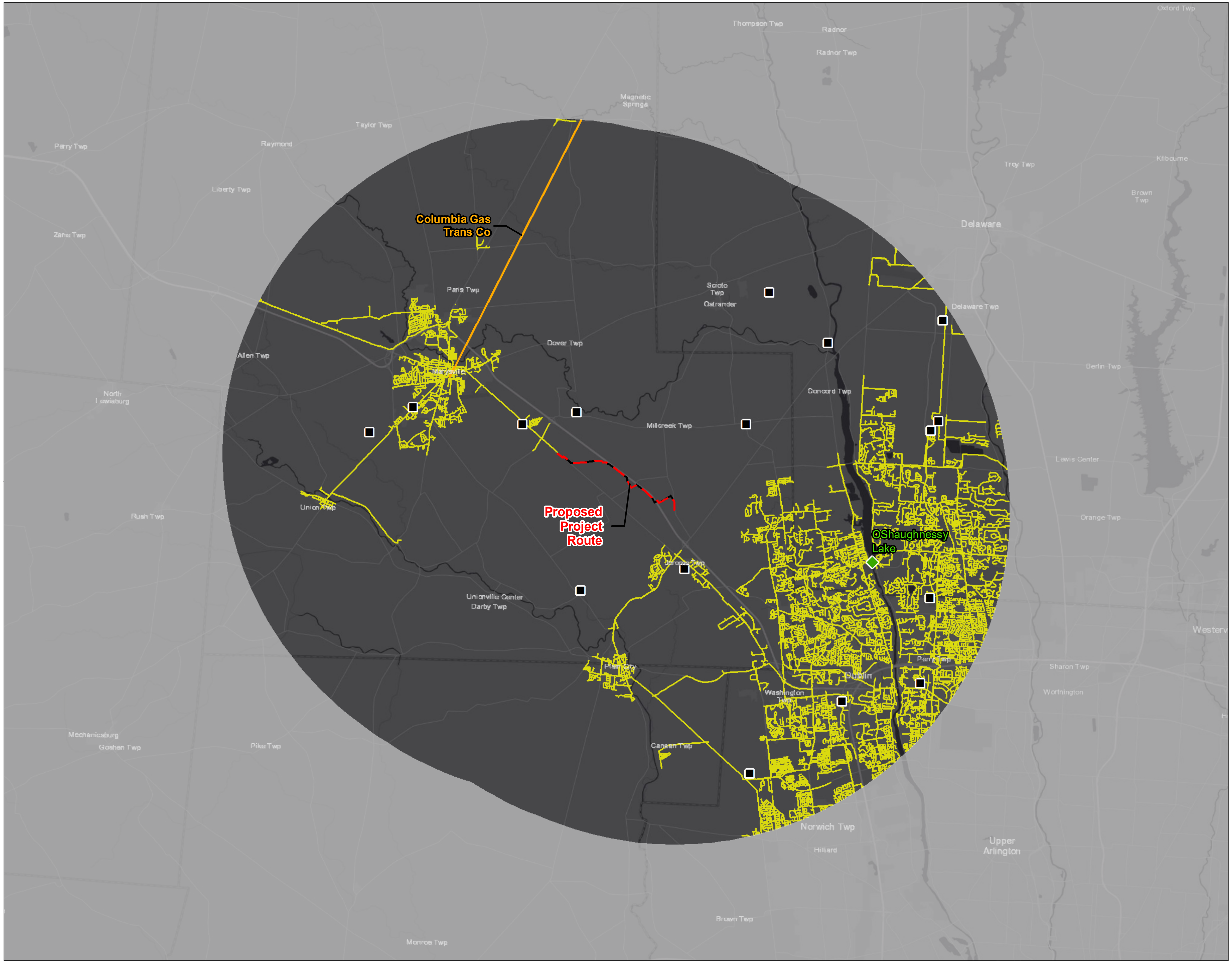


Figure No.
2

Title
Infrastructure within 10 Miles of Project Route

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project

Project Location
Union County, Ohio

193707055
Prepared by JD on 2019-11-27
Technical Review by MK on 2019-12-04
Independent Review by AS on 2019-12-05

0 1.5 3 Miles
1:190,080 (At original document size of 11x17)

N

Legend
- PennWell Power Plant
- PennWell Electrical Substation
- Proposed Project Route
- USEIA Natural Gas Pipeline
- COH Gas Pipeline

Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USEIA, PennWell
3. Background: Esri

Stantec

Figure No.
3

Title
FEMA National Flood Hazard Areas

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project

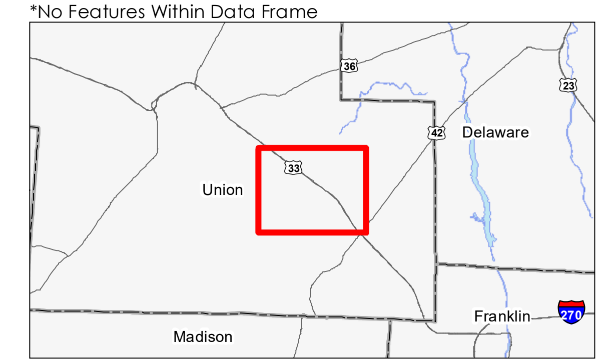
Project Location 193707055
Union County, Ohio
Prepared by JD on 2019-11-27
Technical Review by MK on 2019-12-04
Independent Review by AS on 2019-12-05

0 1,000 2,000 Feet
1:24,000 (At original document size of 11x17)

N

Legend
- Proposed Project Route
- FEMA Flood Hazard Area
  - 100-year Flood Zone
  - 100-year Floodway*
  - 500-year Flood Zone*

*No Features Within Data Frame



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS, FEMA
3. Background: OGRIP 2018

Stantec

Appendix B Construction Plans

Figure No.
1

Title
Construction Plans
Project Area Updated: 12/11/2019

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project

Project Location
Union County, Ohio

193707055
Prepared by JD on 2019-12-10
Technical Review by KC on 2019-12-10
Independent Review by MT on 2019-12-10

0 200 400 Feet
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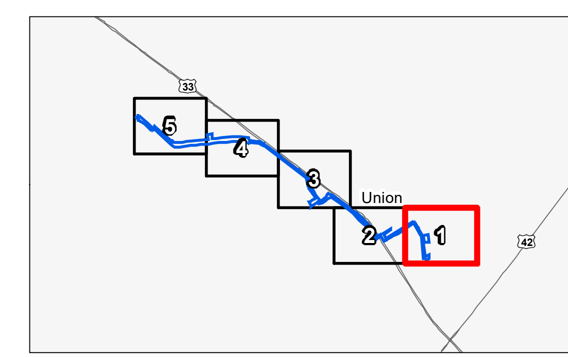
N

Legend
- Approximate Proposed Pipeline
- Temporary Construction Access
- Regulator Station
- Laydown Yard
- Additional Temporary Workspace
- Temporary Easement
- Permanent Easement
- Field Delineated Waterway
- Field Delineated Emergent Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, OGRIP LBRS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
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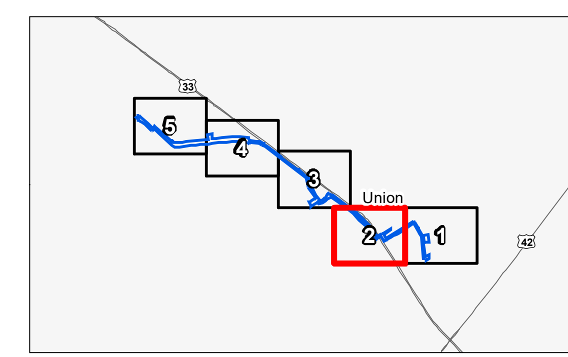

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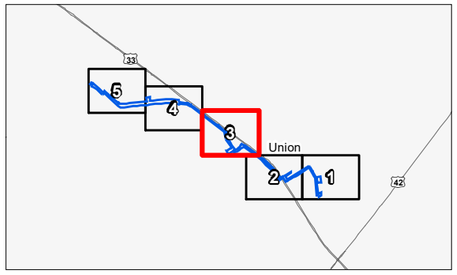

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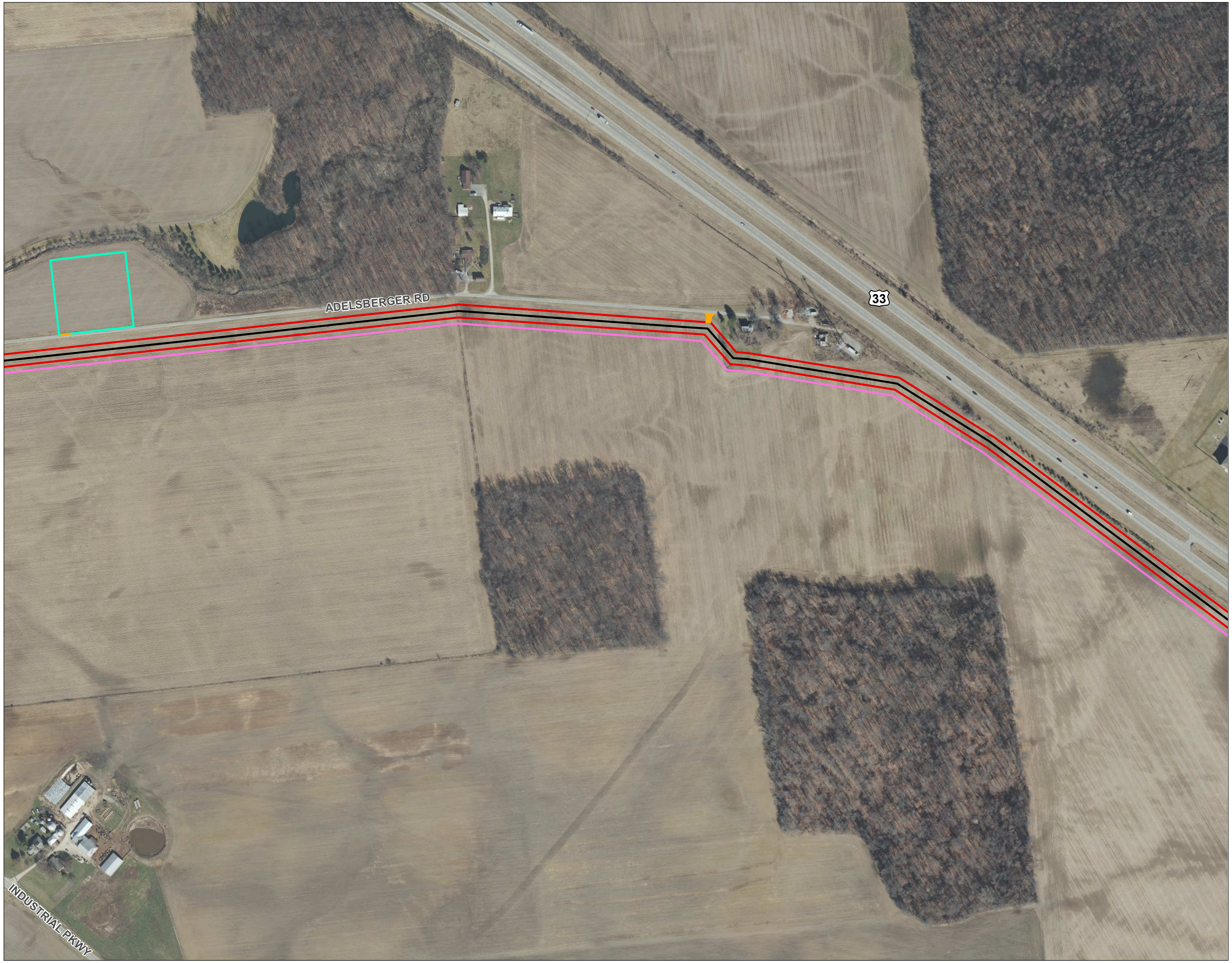

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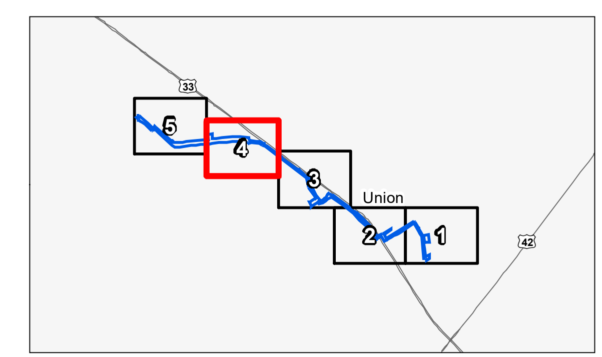

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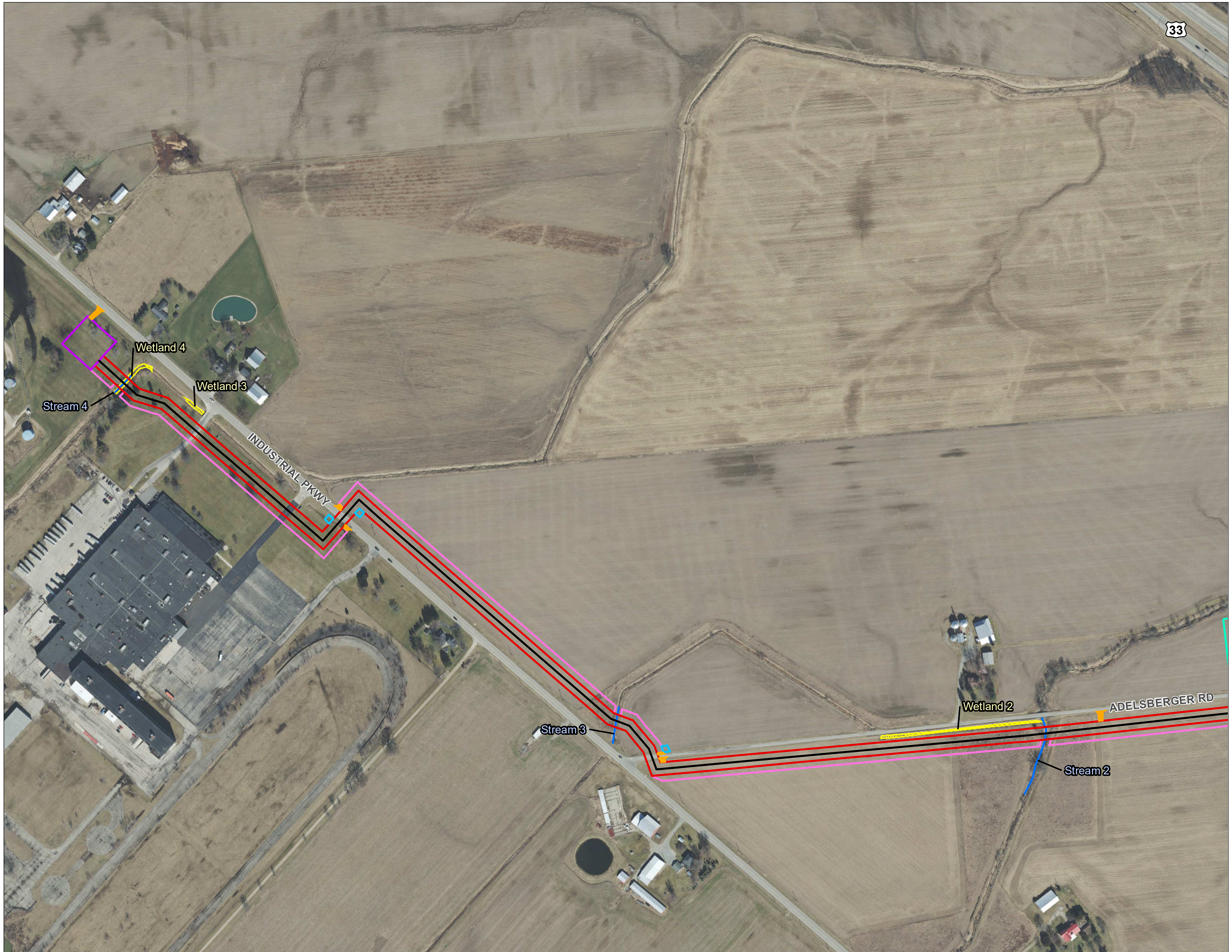

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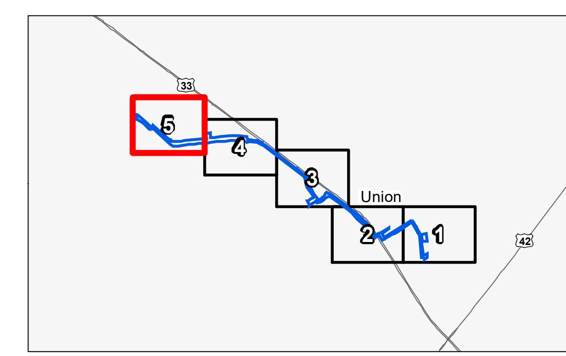

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Appendix C Wetland and Waterbodies Delineation Report

Marysville Connector Pipeline Project

Wetland and Waterbody Delineation Report

December 10, 2019

Prepared for:

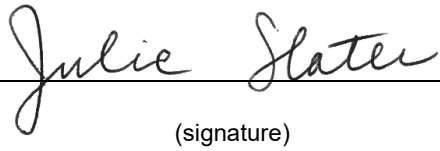
Columbia Gas of Ohio (NiSource)
1021 North Main Street
Mansfield, Ohio 44903

Prepared by:

Stantec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204

Sign-off Sheet

This document entitled Marysville Connector Pipeline Project Wetland and Waterbody Delineation Report was prepared by Stantec Consulting Services Inc. (“Stantec”) for the account of Columbia Gas of Ohio/NiSource ((the “Client”). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by 

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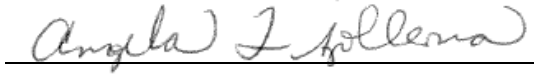
Julie Slater

Reviewed by 

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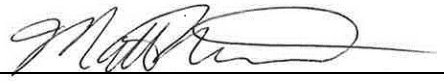
Angela Sjollema

Approved by 

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Matt Teitt

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1.0 INTRODUCTION

1.1 PURPOSE

Columbia Gas of Ohio (COH) plans to construct a new 4.78 mile 12-inch distribution class steel natural gas pipeline and one district regulator station (The Project). The length of the survey corridor is 4.78 miles with a 100- to 300-foot right-of-way (ROW). The Project is located southeast of the City of Marysville, Ohio. The proposed pipeline route begins south of the intersection of Scottslawn Road and Industrial Parkway and runs southeast towards the intersection of U.S. 33 and State Route 42 in Millcreek and Jerome Townships, Union County, Ohio (Appendix A, Figure 1).

Stantec Consulting Services Inc. (Stantec) was retained by COH to conduct a delineation of potential waters of the United States (WOUS), including wetlands, waterbodies, and potentially isolated wetlands within the Project area. The purpose of this delineation was to identify potential jurisdictional features present within the Project area.

Stantec completed the delineation of wetlands and waterbodies on November 20, 2019. The information contained in this report reflects the current site conditions that were observed during the field delineation. Datasheets and photographs of features delineated within the Project area are included in Appendices B and C, respectively.

1.2 LOCATION OF PROJECT

The Project is located in the Millcreek and Jerome Townships, Union County, Ohio (Appendix A, Figure 1). The Project area is depicted on the Marysville and Shawnee Hills, Ohio U.S. Geological Survey (USGS) 7.5-minute series topographic maps and the approximate end points of the Project in latitude and longitude coordinates are 40.200590˚N, -83.304899˚W and 40.76038˚N, -83.237842˚W, respectively. The Project area is located in the Lower Mill Creek watershed (HUC 12: 050600010604) that drains into the Scioto River and the Sugar Run watershed (HUC 12: 050600011904) that drains to Big Darby Creek.

2.0 METHODS

2.1 WETLAND DELINEATION

Prior to completing the survey, a desktop review of the Project area was conducted using the Marysville and Shawnee Hills, Ohio USGS 7.5 Minute Series topographic maps (Appendix A, Figure 1), U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of Union County, Ohio (USDA, 1975; Appendix A, Figure 2), the National Wetlands Inventory map (USFWS 2019) (Appendix A, Figure 3), and aerial imagery mapping were reviewed to assess the likelihood of occurrence and probable location of wetlands and waterbodies within the Project area.

Following this desktop review, Stantec conducted field surveys within the Project area on November 20, 2019. Wetland boundaries were assessed using the “Routine On-site Determination Method” as described in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (USACE 2010). As

Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (USACE 2010). As of August 17, 1991, the USACE was directed to utilize the USACE Wetland Delineation Manual (USACE Environmental Laboratory 1987) to identify and delineate wetlands potentially subject to regulation under Section 404 of the Clean Water Act (CWA). Wetlands were classified according to "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et al. 1979). In this classification system, wetland habitats are divided into five major systems including: (1) Marine, (2) Estuarine, (3) Lacustrine, (4) Palustrine, and (5) Riverine. Each of these systems is further divided into subsystems, classes, and subclasses. Vegetative communities were inventoried to assess the dominant plant species in each of four vegetative layers: trees, saplings/shrubs, herbs, and woody vines. The wetland indicator status for each of the dominant species was obtained using the 2016 National Wetland Plant List (Lichvar et al. 2016). The wetland soil indicators were obtained using the Munsell soil-color chart (Munsell Color 2009) and the hydric soil field indicators (USDA, NRCS 2010). The uppermost wetland boundary and sampling points were identified and surveyed using a handheld Global Positioning System (GPS) unit and mapped with Geographical Information System (GIS) software. Stantec collected data and completed relevant assessment forms, which included: USACE Wetland Determination Forms (WDF), and Ohio Rapid Assessment Method v 5.0 forms (ORAM; Mack 2001). Datasheets are provided in Appendix B.

2.2 STREAM DELINEATION

Streams that demonstrated a continuously defined channel (bed and bank), ordinary high water mark (OHWM), and the disturbance of terrestrial vegetation were delineated within the Project area, per the protocols outlined in the USACE's Guidance on Ordinary High Water Mark Identification (Regulatory Guidance Letter, No. 05-05; USACE 2005). Delineated streams were classified as ephemeral, intermittent, or perennial per definition in the Federal Register/Vol. 67, No. 10 (2002). Functional assessment of streams within the Project area was based on completion of the Ohio Environmental Protection Agency's (OEPA) Headwater Habitat Evaluation Index (HHEI; OEPA 2012) and/or Qualitative Habitat Evaluation Index (QHEI; OEPA 2006). Datasheets are provided in Appendix B. The centerline of each waterway, or both banks for streams 15 feet or wider, were identified and surveyed using a sub-meter accurate handheld GPS unit and mapped with GIS software.

2.3 OPEN WATER DELINEATION

Open water boundaries were assessed using the definition described in the "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et al. 1979) which includes wetland and deepwater habitats with most of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30 percent areal coverage; and (3) total area exceeds 20 acres (8 hectares [ha]). Similar wetland and deepwater habitats totaling less than 20 acres (8 ha) are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up most or part of the boundary, or if the water depth in the deepest part of the basin exceeds 6.6 feet (2 meters) at low water (estimated).

3.0 OVERVIEW OF PROJECT AREA

3.1 GEOLOGY AND TOPOGRAPHY

The Project is located in Union County, Ohio and lies within the Till Plains section of the Central Lowlands physiographic province. The Project lies within the Central Ohio Clayey Till Plain region, which is characterized by: (1) a surface of clayey till; (2) well-defined moraines with intervening flat-lying ground moraine and intermorainal lake basins; (3) no boulder belts; (4) silt-, clay-, and till-filled lake basins; and (5) few large streams and limited sand and gravel outwashes. The geology of the region consists of clayey, high-lime Wisconsinan-age till from a northeastern source and lacustrine materials over Lower Paleozoic-age carbonate rocks. The eastern side of the region is more shales. Elevation ranges from 700 – 1,150 feet with moderate relief (ODGS 1998).

3.2 CLIMATE

The average winter temperature in Union County is 29°F, and the average winter daily minimum temperature is 20°F. The average summer temperature is 71°F and the average daily maximum temperature is 83°F. Precipitation in Union County averages 36.58 inches per year but varies widely from year to year. Generally, precipitation is adequate and well distributed, but most frequently occurs from March to August (USDA 1975).

3.3 SOILS

The Soil Survey of Union County, Ohio (USDA 1975) and the Natural Resources Conservation Service (NRCS) Web Soil Survey were consulted to assess soil types within the Project area (USDA, NRCS 2010). A copy of the soil map is included in Appendix A, Figure 2. Soils within the Project area with respective acreages and percentages are included in Table 1. All four soils listed within the Project area were considered to be hydric as shown in Table 1.

Table 1. Soil Types Known to Occur within the Marysville Connector Pipeline Project Area, Union County, Ohio

Union County, Ohio				
Map Unit Symbol	**Map Unit Name**	**Acres in the Project Area**	**Percent within Project Area**	**Hydric?**
Blg1A1	Blount silt loam, ground moraine, 0 to 2 percent slopes	67.90	60.2	Yes
Blg1B1	Blount silt loam, ground moraine, 2 to 4 percent slopes	11.45	10.2	Yes
Pk	Pewamo silty clay loam, 0 to 1 percent slopes	31.15	27.6	Yes
We	Wetzel silty clay loam	2.21	2.0	Yes
	Totals for Project Area:	**112.71 acres**	**100.0%**	

4.0 RESULTS

4.1 EXISTING CONDITIONS

Upland habitat within the Project area consists of maintained lawn, maintained right-of-way, developed/urban, old field habitat, early successional habitat, fencerow, cropland, and pasture. The maintained lawn, maintained right-of-way, and pasture habitats consist of Kentucky bluegrass (*Poa pratensis*), common dandelion (*Taraxacum officinale*), great plantain (*Plantago major*), English plantain (*Plantago lanceolata*), Canada thistle (*Cirsium arvense*), wild strawberry (*Fragaria vesca*), Colorado blue spruce (*Picea pungens*), Norway spruce (*Picea abies*), and ground ivy (*Glechoma hederacea*). The old field habitat was dominated by Indian grass (*Sorghastrum nutans*), Canada goldenrod (*Solidago canadensis*), switchgrass (*Panicum virgatum*), Queen Anne's lace (*Daucus carota*), Fuller's teasel (*Dipsacus fullonum*), nodding foxtail (*Setaria faberi*), health aster (*Symphyotrichum ericoides*), and common milkweed (*Asclepias syriaca*). The early successional habitat is dominated by dogwood (*Cornus* sp.) in the shrub layer and Canada goldenrod, ironweed (*Vernonia* sp.), and Queen Anne's lace in the herbaceous layer. The fencerow habitat was dominated by shagbark hickory (*Carya ovata*), common hackberry (*Celtis occidentalis*), and white oak (*Quercus alba*). The cropland habitat was dominated by corn (*Zea mays*), soybeans (*Glycene max*), green foxtail, horse nettle (*Solanum carolinense*), and barnyard grass (*Echinochloa crus-galli*).

4.2 WETLAND HABITAT

Four wetlands were identified within the Project area, totaling approximately 0.96 acre (Appendix A, Figure 4). Appendix B contains the WDF and ORAM forms for the wetlands identified within the Project area. Representative photographs of the wetlands are provided in Appendix C. The wetlands are described below and summarized in Table 2.

Wetland 1

Wetland 1 is a palustrine emergent (PEM) wetland approximately 0.79 acres in size within the Project area. The functional assessment (ORAM) of Wetland 1 yielded a score of 32 and identifies this wetland as a Category 2 wetland, indicating it is a wetland of "moderate" quality. Wetland 1 is potentially jurisdictional due to its hydrological connection to Stream 1. Due to the large size of Wetland 1, two wetland sample plots were completed. The WDF for SP01 included a first soil horizon of 2 inches of silty clay loam with a chroma matrix of 10YR3/3. The next 4 inches were silty clay loam with a gley matrix (Gley 1 2.5/10Y) and redox concentrations in the pore linings (5YR4/6), meeting the Loamy Gleyed Matrix (F2). Primary hydrological indicators included surface water, high water table, saturation, and oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by hydrophytic vegetation including narrowleaf cattail (*Typha angustifolia*; OBL).

The WDF for SP03 included a first soil horizon of 3 inches of silty clay loam with low chroma matrix (10YR 3/2) and redox concentrations in pore linings (5YR 5/8) and the matrix (5YR 4/6). The next 7 inches were silty clay loam with a low chroma matrix (10YR 4/1) with redox concentrations in the matrix (5YR 4/6), meeting the Depleted Matrix (F3) hydric soil indicator. Primary hydrological indicators included high water table, saturation, and oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by

hydrophytic vegetation including reed canary grass (*Phalaris arundinacea;* FACW) and narrowleaf cattail (OBL).

Wetland 2

Wetland 2 is a PEM wetland approximately 0.10 acre in size. The functional assessment (ORAM) of Wetland 2 yielded a score of 25 and identifies this wetland as a Category 1 wetland, indicating it is a wetland of "poor" quality. Wetland 2 is potentially jurisdictional due to its hydrological connection to Streams 2 and 3. A WDF was completed, and the first soil horizon was 10 inches of clay loam with low chroma matrix (10YR 4/2) and redox concentrations in pore linings (5YR 4/6), meeting the Depleted Matrix (F3) hydric soil indicator. Primary hydrological indicators included oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by hydrophytic vegetation including reed canary grass (FACW).

Wetland 3

Wetland 3 is a PEM wetland approximately 0.02 acre in size. The functional assessment (ORAM) of Wetland 3 yielded a score of 15 and identifies this wetland as a Category 1 wetland, indicating it is a wetland of "poor" quality. Wetland 3 is potentially jurisdictional due to its hydrological connection to Stream 4 and Wetland 4 (via upland drainage features). A WDF was completed, and the first soil horizon was 7 inches of clay loam with low chroma matrix (10YR 4/2) and redox concentrations in pore linings (5 YR 4/6), meeting the Depleted Matrix (F3) hydric soil indicator. Primary hydrological indicators included surface water, high water table, saturation, and oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by hydrophytic vegetation including narrowleaf cattail (OBL) and reed canary grass (FACW).

Wetland 4

Wetland 4 is a PEM wetland approximately 0.06 acre in size. The functional assessment (ORAM) of Wetland 4 yielded a score of 34 and identifies this wetland as a Category 2 wetland, indicating it is a wetland of "moderate" quality. Wetland 4 is potentially jurisdictional due to its hydrological connection to Stream 4. A WDF was completed, and the first soil horizon was 7 inches of clay loam with low chroma matrix (10YR 4/2) and redox concentrations in pore linings (5YR 4/6), meeting the Depleted Matrix (F3) hydric soil indicator. Primary hydrological indicators included high water table, saturation, and oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by hydrophytic vegetation including reed canary grass (FACW).

Table 2. Potential Wetlands Identified in the Marysville Connector Pipeline Project Area, Union County, Ohio

Wetland Name	Latitude	Longitude	Classification	ORAM Score	ORAM Regulatory Category	Total Acreage in Project Area
Wetland 1	40.183979	-83.254306	PEM	32	2	**0.79**
Wetland 2	40.196261	-83.29241	PEM	25	1	**0.10**
Wetland 3	40.199725	-83.3033	PEM	15	1	**0.02**
Wetland 4	40.200044	-83.304206	PEM	34	2	**0.06**
					Total Delineated Wetland	**0.97 acres**

4.3 STREAM HABITAT

Four streams were identified within the Project area, totaling approximately 751 linear feet (Appendix A, Figure 4). Appendix B contains the QHEI and HHEI datasheets. Representative photographs of the streams are provided in Appendix C. The streams are described below and summarized in Table 3.

Stream 1

Stream 1 is a perennial stream with approximately 200 linear feet within the Project area. The functional assessment (QHEI) of Stream 1 yielded a score of 37, indicating it is a stream of "poor" quality. The stream had a bankfull width of 4 feet and a bankfull depth of 1.5 feet and was flowing at the time of site visit. Substrates observed were primarily hardpan and bedrock. Stream 1 drains into Sugar Run outside the Project area.

Stream 2

Stream 2 is an intermittent stream with approximately 321 linear feet within the Project area. The functional assessment (QHEI) of Stream 2 yielded a score of 41, indicating it is a stream of "poor" quality. The stream had a bankfull width of 3.2 feet and a bankfull depth of 3.5 feet and had isolated shallow pools at the time of site visit. Substrates observed were primarily hardpan and silt. Stream 2 drains into Mill Creek outside the Project area.

Stream 3

Stream 3 is an intermittent stream with approximately 144 linear feet within the Project area. The functional assessment (HHEI) of Stream 3 yielded a score of 31, indicating it is a Modified Class II PHWH stream. The stream had a bankfull width of 3 feet and a bankfull depth of 1.5 feet and had isolated shallow pools at the time of site visit. The substrate observed was primarily hardpan. Stream 3 drains into Wetland 2 outside Project area, which drains into Stream 2.

Stream 4

Stream 4 is an ephemeral stream with approximately 92 linear feet within the Project area. The functional assessment (HHEI) of Stream 4 yielded a score of 21, indicating it is Modified Class I-PHWH stream. The stream had a bankfull width of 3 feet and a bankfull depth of 0.5 feet and had isolated shallow pools at the time of site visit. The substrate observed was primarily hardpan. Stream 4 drains into Wetland 4 within the Project area.

Table 3. Potential Streams Identified in the Marysville Connector Pipeline Project Area, Union County, Ohio

Stream Name	Latitude	Longitude	OHWM Width (feet)	OHWM Depth (feet)	Classification	Evaluation Method	Score	Total Linear Feet in Project Area
Stream 1	40.179487	-83.249033	3	1.5	Perennial	QHEI	37	200
Stream 2	40.195947	-83.291216	2	0.5	Intermittent	QHEI	41	321
Stream 3	40.196278	-83.297254	2	0.5	Intermittent	HHEI	31	144
Stream 4	40.199952	-83.304342	2.5	0.3	Ephemeral	HHEI	21	92
						Total Linear Footage in Project Area		**756**

5.0 CONCLUSION

Stantec conducted a delineation of potential WOUS within the Project area located in the Millcreek and Jerome townships, Union County, Ohio. The purpose and objective of the wetland and waterbody delineation was to identify the extent and spatial arrangement of potential jurisdictional wetlands and waterbodies within the Project area. Four potentially jurisdictional wetlands and four potentially jurisdictional streams were identified within the Project area. A total of approximately 0.85 acre of delineated Category 2 PEM wetlands and 0.12 acre of delineated Category 1 PEM wetlands were identified in the Project area. A total of 200 linear feet of perennial stream, 465 linear feet of intermittent stream, and 92 linear feet of ephemeral stream for a total length of 756 linear feet of potentially jurisdictional stream were identified within the Project area.

Stantec's opinion regarding the presence/absence of jurisdictional WOUS and isolated wetlands is preliminary. Only the USACE can provide an official determination of the presence and extent of jurisdictional WOUS. Wetlands that are considered WOUS are subject to regulation under Section 404 of the CWA and the jurisdictional regulatory authority lies with the USACE. Additionally, the OEPA has regulatory authority over isolated wetlands under Ohio Revised Code 61111.021. Stantec recommends that Columbia Gas of Ohio/NiSource contact the USACE for final jurisdictional review and concurrence with Stantec's opinion regarding the presence/absence of WOUS within the Project area prior to construction activities associated with this Project.

6.0 REFERENCES

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APPENDICES

Appendix A FIGURES

A.1 FIGURE 1 – PROJECT LOCATION AND TOPOGRAPHY MAP

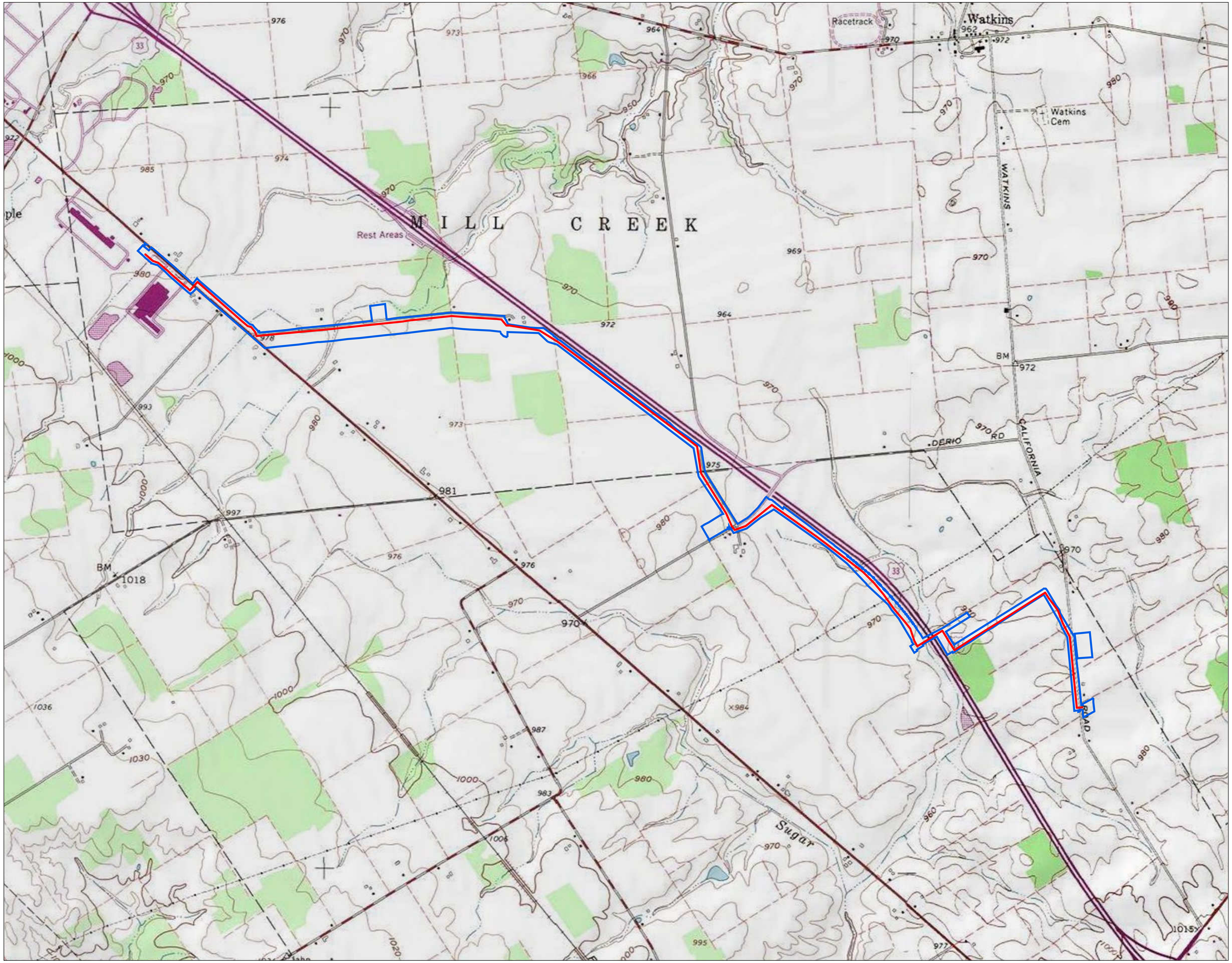


Figure No.
1

Title
Project Location and Topography

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

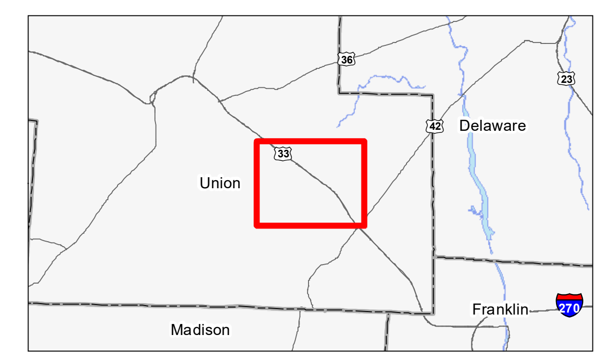
Project Location 193707055
Union County, Ohio
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 1,000 2,000 Feet
1:24,000 (At original document size of 11x17)

N

Legend

Approximate Proposed Pipeline
Survey Corridor



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Background: USGS 7.5' Topographic Quadrangles

Stantec

A.2 FIGURE 2 – NRCS SOIL SURVEY DATA AND HYDRIC RATINGS MAP

Figure No.
2

Title
NRCS Soil Survey Data and Hydric Ratings

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

193707055

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

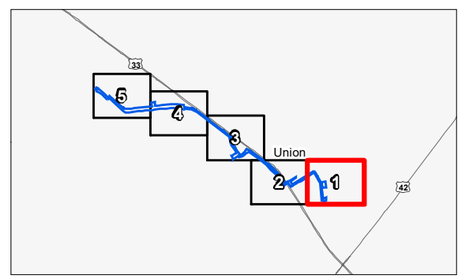
N

Legend
- Survey Corridor
- Approximate Proposed Pipeline

NRCS Soil Survey Data

Hydric Ratings
- Predominantly Hydric Soil
- Partially Hydric Soil
- Non-Hydric Soil

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NRCS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
2

Title
NRCS Soil Survey Data and Hydric Ratings

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

193707055
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

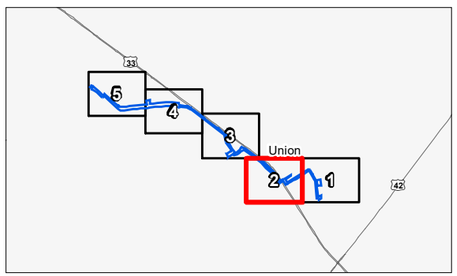
N

Legend
- Survey Corridor
- Approximate Proposed Pipeline

NRCS Soil Survey Data

Hydric Ratings
- Predominantly Hydric Soil
- Partially Hydric Soil
- Non-Hydric Soil

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
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2. Data Sources Include: Stantec, Columbia Gas, USGS, NRCS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

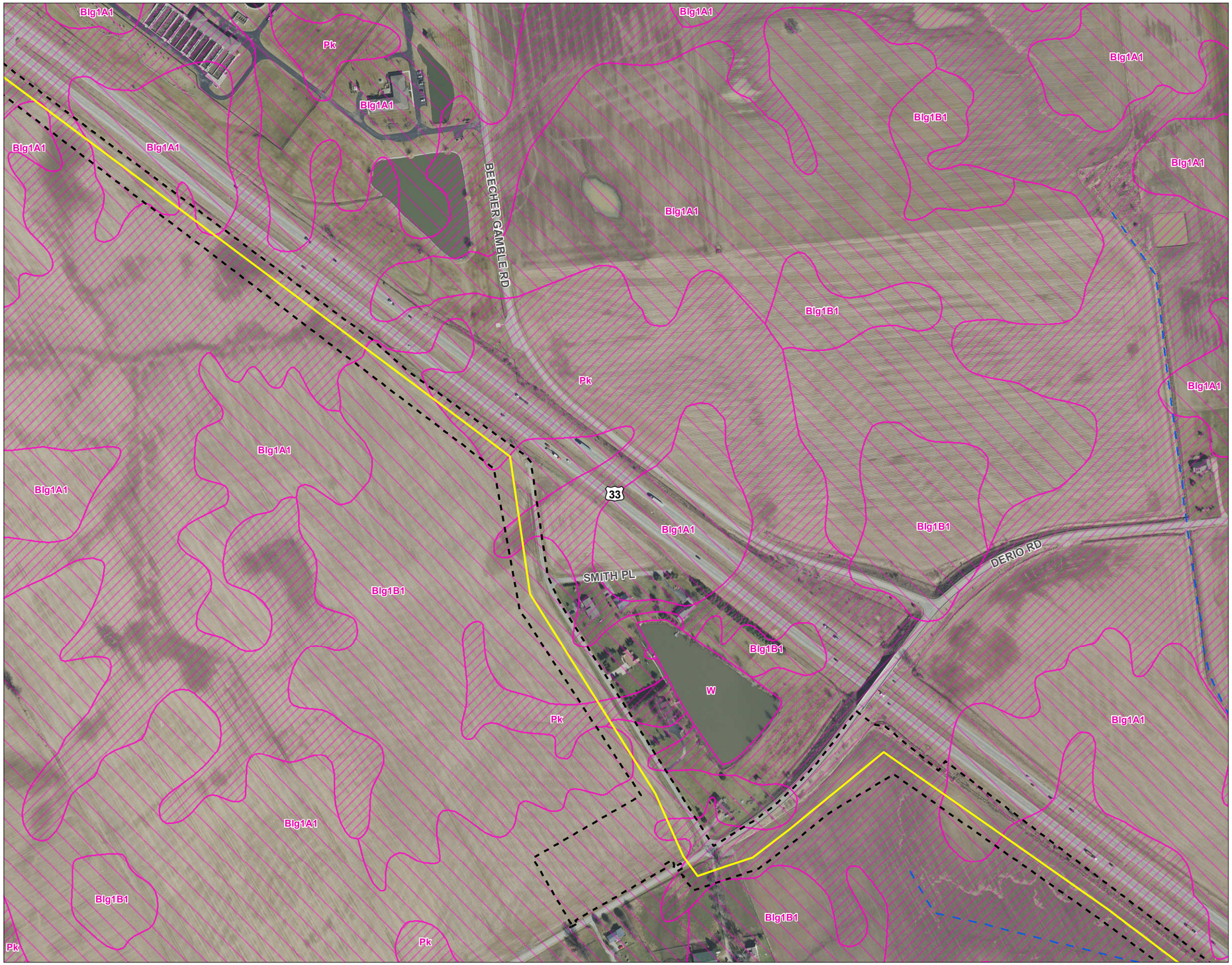


Figure No.
2

Title
NRCS Soil Survey Data and Hydric Ratings

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

193707055
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

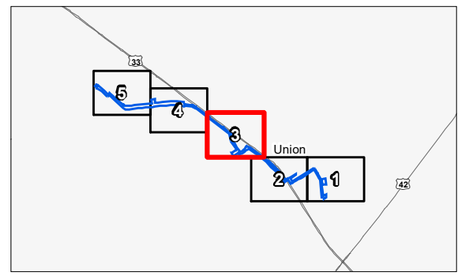
N

Legend
- Survey Corridor
- Approximate Proposed Pipeline

NRCS Soil Survey Data

Hydric Ratings
- Predominantly Hydric Soil
- Partially Hydric Soil
- Non-Hydric Soil

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NRCS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
2

Title
NRCS Soil Survey Data and Hydric Ratings

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location 193707055
Union County, Ohio

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

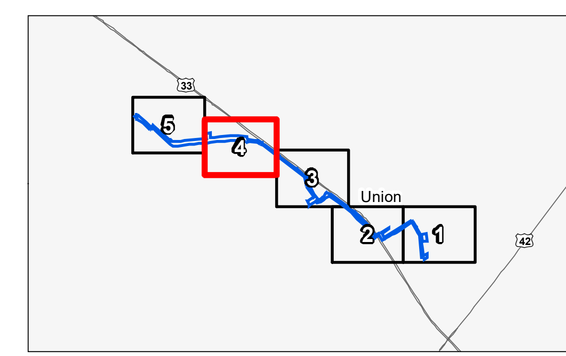
N

Legend
- Survey Corridor
- Approximate Proposed Pipeline

NRCS Soil Survey Data

Hydric Ratings
- Predominantly Hydric Soil
- Partially Hydric Soil
- Non-Hydric Soil

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NRCS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
2

Title
NRCS Soil Survey Data and Hydric Ratings

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

193707055
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

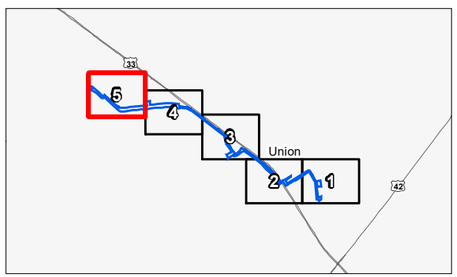
N

Legend
- Survey Corridor
- Approximate Proposed Pipeline

NRCS Soil Survey Data

Hydric Ratings
- Predominantly Hydric Soil
- Partially Hydric Soil
- Non-Hydric Soil

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NRCS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

A.3 FIGURE 3 – NATIONAL WETLANDS INVENTORY MAP

Figure No.
3

Title
National Wetlands Inventory Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

193707055

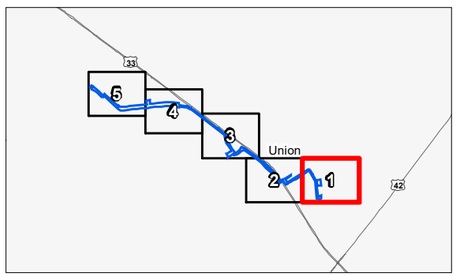
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- National Wetlands Inventory Feature

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, USFWS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
3

Title
National Wetlands Inventory Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

193707055

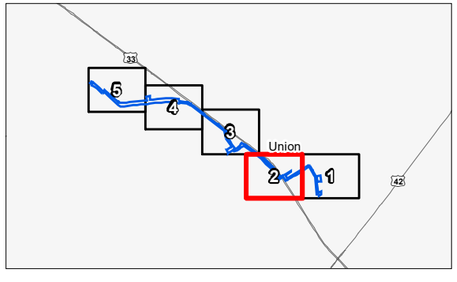
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- National Wetlands Inventory Feature

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
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2. Data Sources Include: Stantec, Columbia Gas, USGS, USFWS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
3

Title
National Wetlands Inventory Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

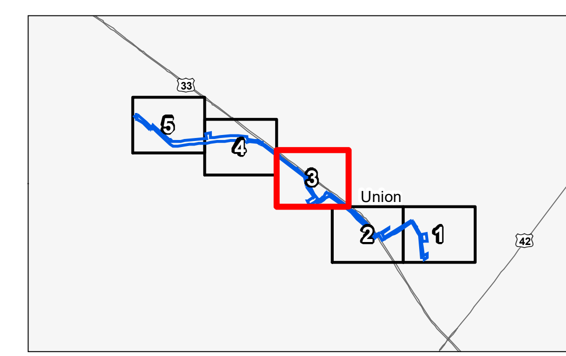
193707055
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- National Wetlands Inventory Feature

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
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2. Data Sources Include: Stantec, Columbia Gas, USGS, USFWS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
3

Title
National Wetlands Inventory Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location 193707055
Union County, Ohio

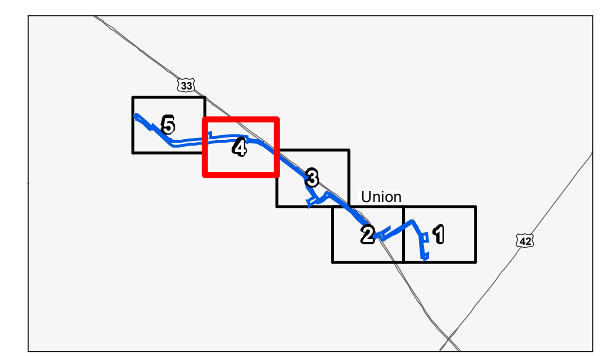
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- National Wetlands Inventory Feature

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
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3. Orthophotography: 2018 OGRIP

Stantec

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Figure No.
3

Title
National Wetlands Inventory Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location 193707055
Union County, Ohio

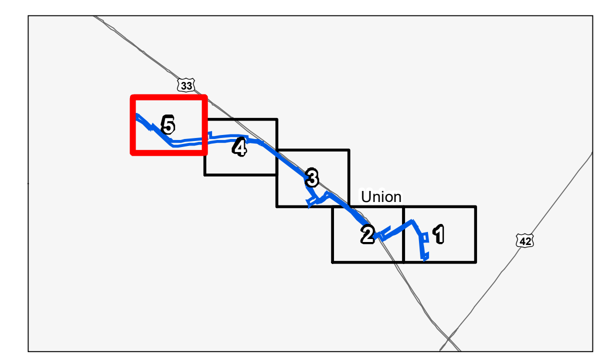
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 200 400 Feet
1:4,800 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- National Wetlands Inventory Feature

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, USFWS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

A.4 FIGURE 4 – WETLAND AND WATERBODY DELINEATION MAP

Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

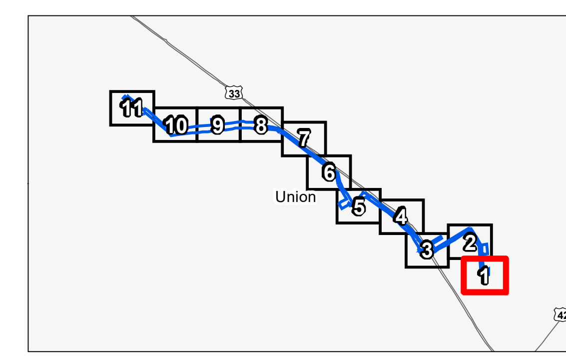
Project Location 193707055
Union County, Ohio

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

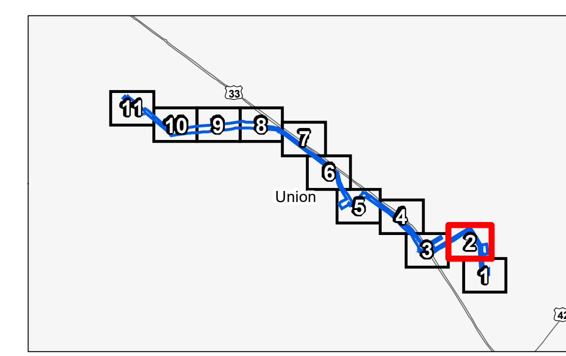
Project Location 193707055
Union County, Ohio

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
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2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

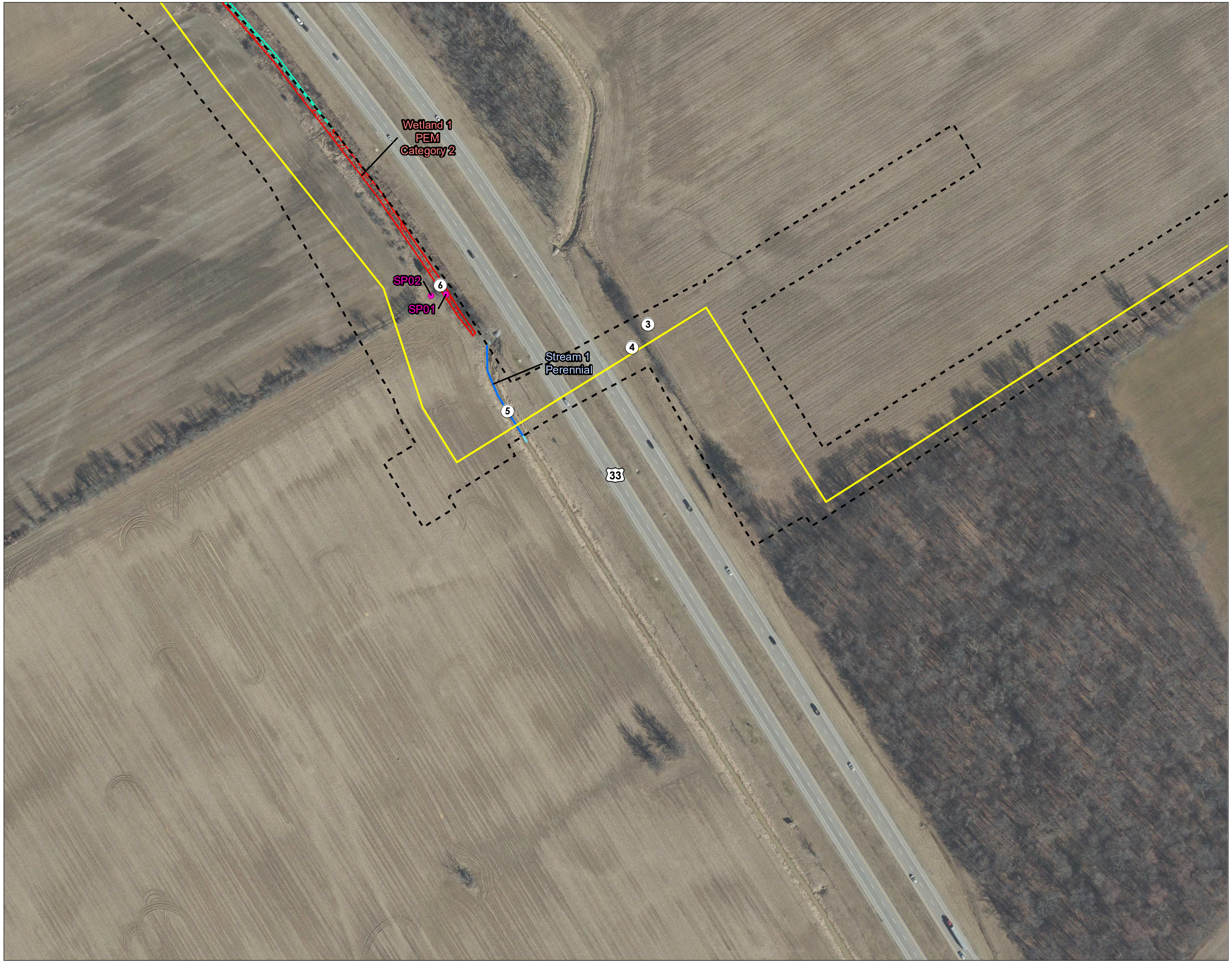


Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

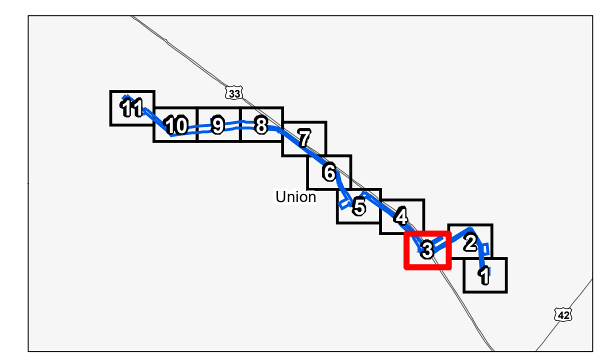
Project Location 193707055
Union County, Ohio

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
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2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

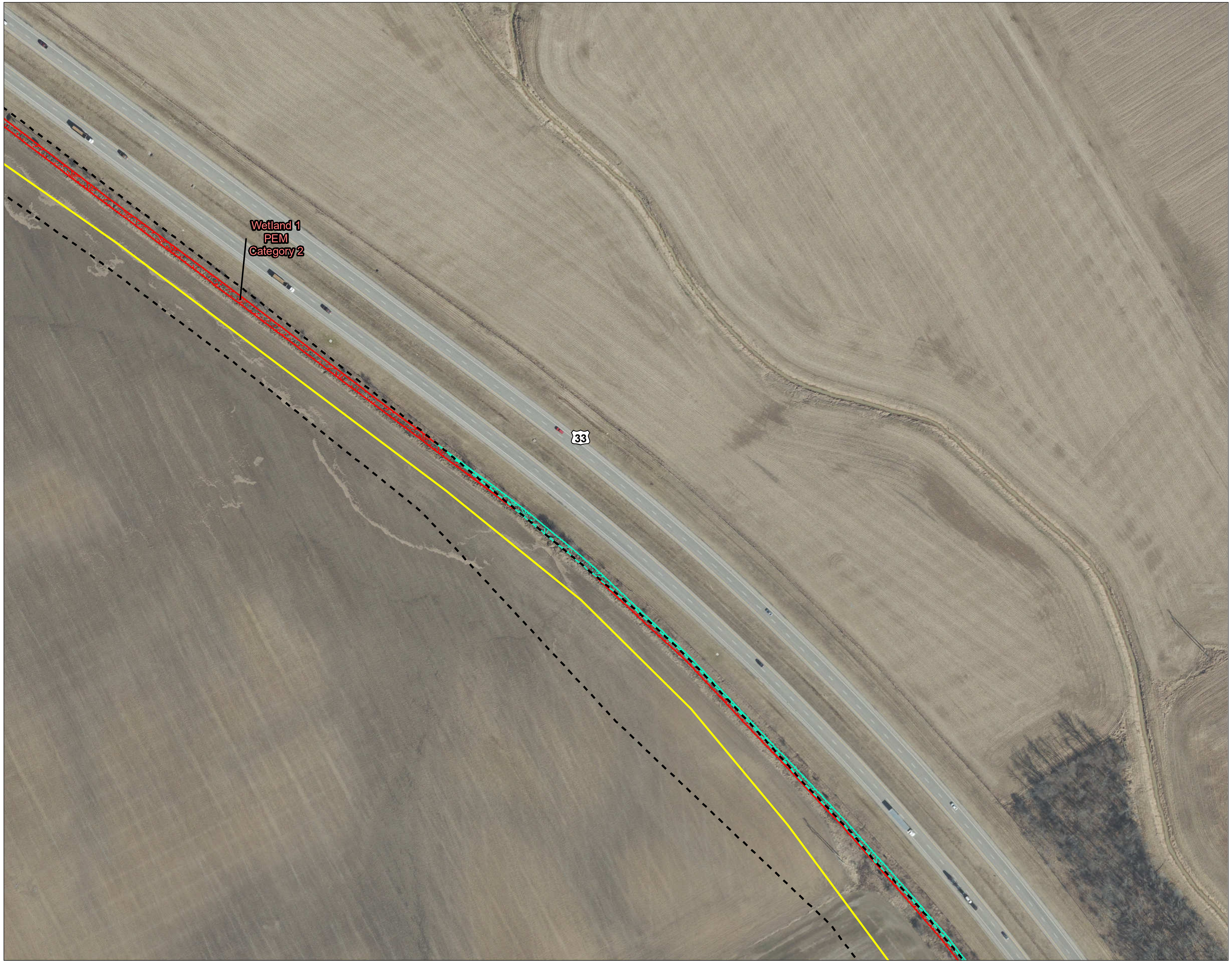


Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

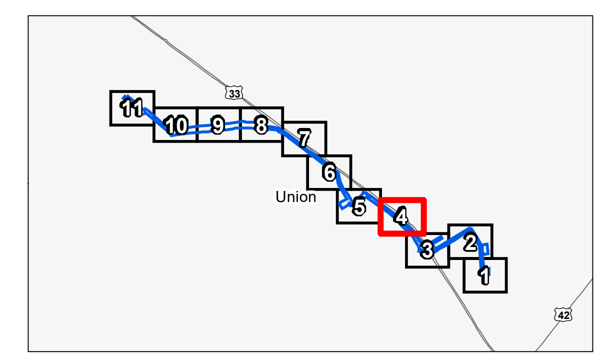
Project Location
Union County, Ohio

193707055
Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

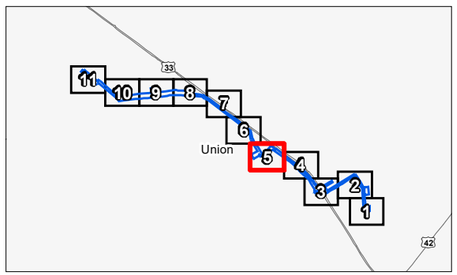
193707055

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
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2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

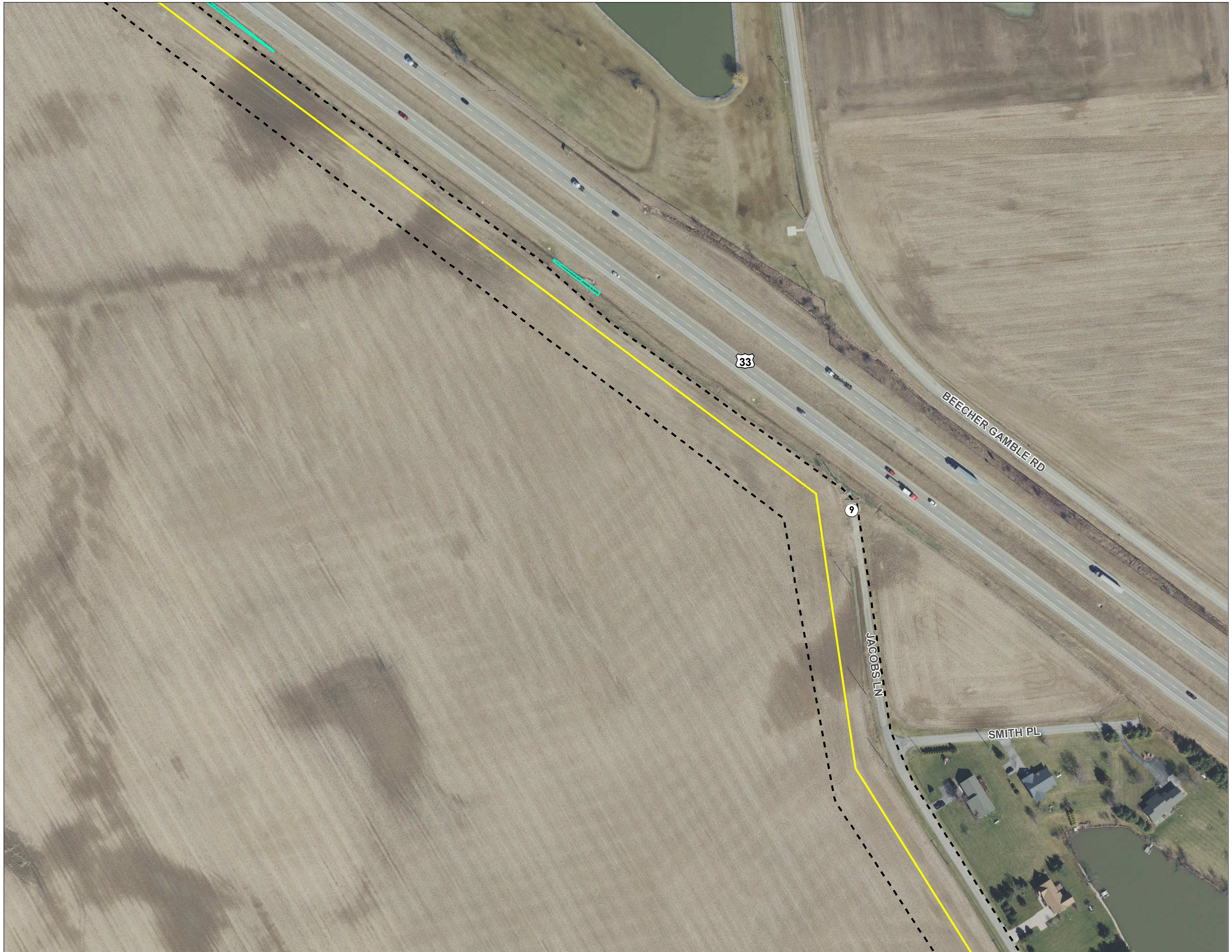


Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

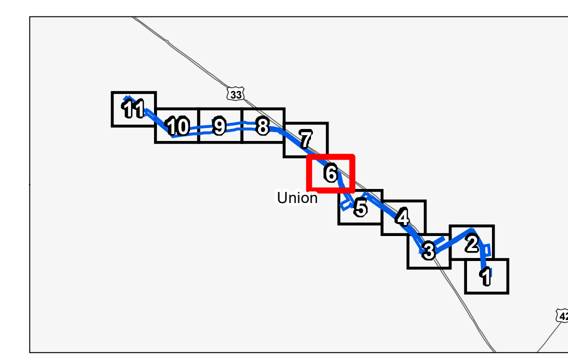
Project Location 193707055
Union County, Ohio

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

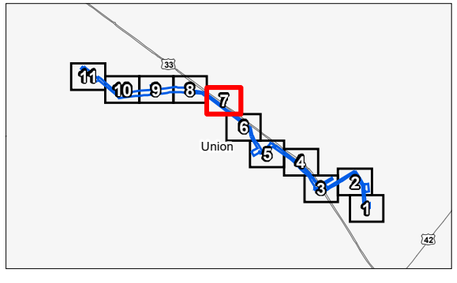
193707055

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

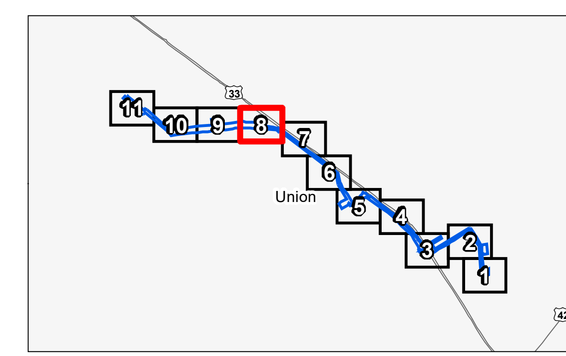
Project Location 193707055
Union County, Ohio

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
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Stantec

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Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

193707055

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
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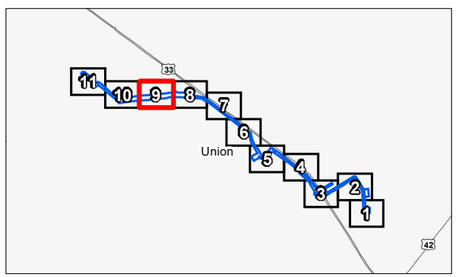
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
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Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location 193707055
Union County, Ohio
Prepared by CA on 2019-11-22
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0 100 200 Feet
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Legend
- Survey Corridor
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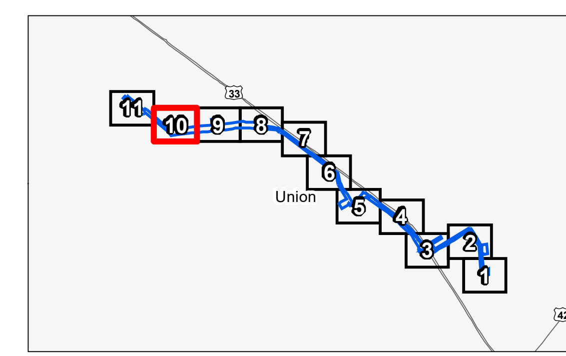
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
4

Title
Wetland and Waterbody Delineation Map

Client/Project
Columbia Gas of Ohio
Marysville Connector Pipeline Project
Wetland and Waterbody Delineation

Project Location
Union County, Ohio

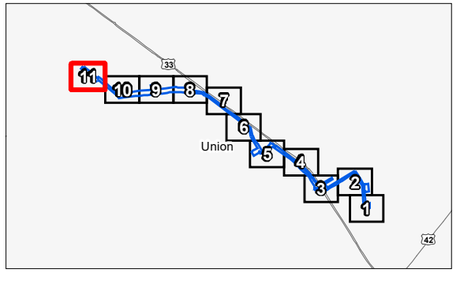
193707055

Prepared by CA on 2019-11-22
Technical Review by AS on 2019-12-04
Independent Review by MT on 2019-12-05

0 100 200 Feet
1:2,400 (At original document size of 11x17)

N

Legend
- Survey Corridor
- Approximate Proposed Pipeline
- Sample Point
- Photo Location
- Field Delineated Waterway
- Approximate Waterway
- Field Delineated Emergent Wetland
- Approximate Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP

Stantec

Appendix B DATA FORMS

B.1 WETLAND DETERMINATION FORMS

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Angela Sjollema	Investigator #2:	Julie Slater
Soil Unit:	Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes	NWI/WWI Classification:	N/A
Landform:	Toeslope	Local Relief:	Concave
Slope (%):	0	Latitude: 40.18004	Longitude: -83.249404
Datum:	WGS 1984		

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	11/20/19
County:	Union
State:	Ohio
Wetland ID:	Wetland 1
Sample Point:	SP01
Community ID:	PEM
Section:	N/A
Township:	N/A
Range:	N/A Dir: N/A

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes ☐ No	Hydric Soils Present?	☑ Yes ☐ No
Wetland Hydrology Present?	☑ Yes ☐ No	Is This Sampling Point Within A Wetland?	☑ **Yes** ☐ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☐):

Primary:
- ☑ A1 - Surface Water
- ☑ A2 - High Water Table
- ☑ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☑ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	☑ Yes ☐ No	Depth:	5	(in.)
Water Table Present?	☑ Yes ☐ No	Depth:	3.5	(in.)
Saturation Present?	☑ Yes ☐ No	Depth:	0	(in.)

Wetland Hydrology Present? ☑ Yes ☐ No

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

Remarks:

SOILS

Map Unit Name: Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	2	--	10YR 3/3	100	--	--	--	--	--	silty clay loam
2	6	--	2.5/10Y	97	5YR	4/6	3	C	PL	silty clay loam
6	17	--	2.5/10Y	100	--	--	--	--	--	silty clay loam
17	20	--	10YR 4/1	100	--	--	--	--	--	clay
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☐):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☑ F2 - Loamy Gleyed Matrix
- ☐ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: None Depth: N/A

Hydric Soil Present? ☑ Yes ☐ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 1 | Sample Point: SP01

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Typha angustifolia*	100	Y	OBL
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

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 spp.		x 1 =	
FACW spp.		x 2 =	
FAC spp.		x 3 =	
FACU spp.		x 4 =	
UPL spp.		x 5 =	

Total _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☑ Yes ☐ No Rapid Test for Hydrophytic Vegetation
- ☑ Yes ☐ No Dominance Test is > 50%
- ☐ Yes ☐ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☐ No Morphological Adaptations (Explain) *
- ☐ Yes ☐ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ☑ Yes ☐ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Angela Sjollema	Investigator #2:	Julie Slater
Soil Unit:	Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes	NWI/WWI Classification:	N/A
Landform:	Terrace	Local Relief:	Concave
Slope (%):	0	Latitude: 40.18003	Longitude: -83.249511
Datum:	WGS 1984		

Date:	11/20/19
County:	Union
State:	Ohio
Wetland ID:	Wetland 1
Sample Point:	SP02
Community ID:	Upland
Section:	N/A
Township:	N/A
Range:	N/A Dir: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ▪ Yes ◦ No

Are Vegetation ◦, Soil ◦, or Hydrology ◦ significantly disturbed?
Are Vegetation ◦, Soil ◦, or Hydrology ◦ naturally problematic?

Are normal circumstances present? ▪ Yes ◦ No

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? ▪ Yes ◦ No
Wetland Hydrology Present? ◦ Yes ▪ No
Hydric Soils Present? ◦ Yes ▪ No
Is This Sampling Point Within A Wetland? ◦ **Yes** ◦ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ▪):

Primary:
- ◦ A1 - Surface Water
- ◦ A2 - High Water Table
- ◦ A3 - Saturation
- ◦ B1 - Water Marks
- ◦ B2 - Sediment Deposits
- ◦ B3 - Drift Deposits
- ◦ B4 - Algal Mat or Crust
- ◦ B5 - Iron Deposits
- ◦ B7 - Inundation Visible on Aerial Imagery
- ◦ B8 - Sparsely Vegetated Concave Surface
- ◦ B9 - Water-Stained Leaves
- ◦ B13 - Aquatic Fauna
- ◦ B14 - True Aquatic Plants
- ◦ C1 - Hydrogen Sulfide Odor
- ◦ C3 - Oxidized Rhizospheres on Living Roots
- ◦ C4 - Presence of Reduced Iron
- ◦ C6 - Recent Iron Reduction in Tilled Soils
- ◦ C7 - Thin Muck Surface
- ◦ D9 - Gauge or Well Data
- ◦ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	◦ Yes	▪ No	Depth:	(in.)
Water Table Present?	◦ Yes	▪ No	Depth:	(in.)
Saturation Present?	◦ Yes	▪ No	Depth:	(in.)

Wetland Hydrology Present? ◦ Yes ▪ No

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

Remarks:

SOILS

Map Unit Name: Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	20	--	10YR 3/4	100	--	--	--	--	loam
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ▪):
- ◦ A1- Histosol
- ◦ A2 - Histic Epipedon
- ◦ A3 - Black Histic
- ◦ A4 - Hydrogen Sulfide
- ◦ A5 - Stratified Layers
- ◦ A10 - 2 cm Muck
- ◦ A11 - Depleted Below Dark Surface
- ◦ A12 - Thick Dark Surface
- ◦ S1 - Sandy Muck Mineral
- ◦ S3 - 5 cm Mucky Peat or Peat
- ◦ S4 - Sandy Gleyed Matrix
- ◦ S5 - Sandy Redox
- ◦ S6 - Stripped Matrix
- ◦ F1 - Loamy Muck Mineral
- ◦ F2 - Loamy Gleyed Matrix
- ◦ F3 - Depleted Matrix
- ◦ F6 - Redox Dark Surface
- ◦ F7 - Depleted Dark Surface
- ◦ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ◦ A16 - Coast Prairie Redox
- ◦ S7 - Dark Surface
- ◦ F12 - Iron-Manganese Masses
- ◦ TF12 - Very Shallow Dark Surface
- ◦ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: None Depth: N/A

Hydric Soil Present? ◦ Yes ▪ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 1 | Sample Point: SP02

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	*Ulmus americana*	13	Y	FACW
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	13		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	*Celtis occidentalis*	10	Y	FAC
2.	*Fraxinus pennsylvanica*	10	Y	FACW
3.	*Lonicera maackii*	10	Y	UPL
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	30		

Herb Stratum (Plot size: 5 ft radius)

1.	*Phalaris arundinacea*	90	Y	FACW
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	90		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: ***80%*** (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.		x 1 =	
FACW spp.		x 2 =	
FAC spp.		x 3 =	
FACU spp.		x 4 =	
UPL spp.		x 5 =	
Total	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ◦ Yes ▪ No Rapid Test for Hydrophytic Vegetation
- ▪ Yes ◦ No Dominance Test is > 50%
- ◦ Yes ◦ No Prevalence Index is ≤ 3.0 *
- ◦ Yes ◦ No Morphological Adaptations (Explain) *
- ◦ Yes ◦ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ▪ Yes ◦ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Angela Sjollema	Investigator #2:	Julie Slater
Soil Unit:	Pk - Pewamo silty clay loam, 0 to 1 percent slopes	NWI/WWI Classification:	N/A
Landform:	Toeslope	Local Relief:	Concave
Slope (%):	0	Latitude: 40.18703	Longitude: -83.26002 Datum: WGS 1984

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	11/20/19		
County:	Union		
State:	Ohio		
Wetland ID:	Wetland 1		
Sample Point:	SP03		
Community ID:	PEM		
Section:	N/A		
Township:	N/A		
Range:	N/A	Dir:	N/A

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? ☑ Yes ☐ No
Wetland Hydrology Present? ☑ Yes ☐ No
Hydric Soils Present? ☑ Yes ☐ No
Is This Sampling Point Within A Wetland? ☑ **Yes** ☐ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☐):

Primary:
- ☐ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☑ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	☐ Yes	☑ No	Depth:	(in.)
Water Table Present?	☐ Yes	☑ No	Depth:	(in.)
Saturation Present?	☐ Yes	☑ No	Depth:	(in.)

Wetland Hydrology Present? ☑ Yes ☐ No

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

Remarks:

SOILS

Map Unit Name: Pk - Pewamo silty clay loam, 0 to 1 percent slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	3	1	10YR 3/2	95	5YR 5/8	2	C	PL	silty clay loam
					5YR 4/6	3	C	M	silty clay loam
3	10	2	10YR 4/1	85	5YR 4/6	15	C	M	silty clay loam
10	20	3	10YR 5/1	50	10YR 5/8	50	C	M	clay
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☐):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☑ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: NA Depth:

Hydric Soil Present? ☑ Yes ☐ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 1 | Sample Point: SP03

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Phalaris arundinacea*	80	Y	FACW
2.	*Typha angustifolia*	20	Y	OBL
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ***100%*** (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.		x 1 =	
FACW spp.		x 2 =	
FAC spp.		x 3 =	
FACU spp.		x 4 =	
UPL spp.		x 5 =	

Total _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☑ Yes ☐ No Rapid Test for Hydrophytic Vegetation
- ☑ Yes ☐ No Dominance Test is > 50%
- ☐ Yes ☐ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☐ No Morphological Adaptations (Explain) *
- ☐ Yes ☐ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ☑ Yes ☐ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Angela Sjollema	Investigator #2:	Julie Slater
Soil Unit:	Pk - Pewamo silty clay loam, 0 to 1 percent slopes	NWI/WWI Classification:	N/A
Landform:	Terrace	Local Relief:	Linear
Slope (%):	0	Latitude: 40.18707	Longitude: -83.259954
Datum:	WGS 1984		

Date:	11/20/19
County:	Union
State:	Ohio
Wetland ID:	Wetland 1
Sample Point:	SP04
Community ID:	Upland
Section:	N/A
Township:	N/A
Range:	N/A Dir: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ▪ Yes ▫ No

Are Vegetation ▫, Soil ▫, or Hydrology ▫ significantly disturbed?
Are Vegetation ▫, Soil ▫, or Hydrology ▫ naturally problematic?

Are normal circumstances present? ▪ Yes ▫ No

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? ▫ Yes ▪ No
Wetland Hydrology Present? ▫ Yes ▪ No
Hydric Soils Present? ▫ Yes ▪ No
Is This Sampling Point Within A Wetland? ▫ **Yes** ▪ **No**

Remarks: Mown/tilled vegetation and soil

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ▫):

Primary:
- ▫ A1 - Surface Water
- ▫ A2 - High Water Table
- ▫ A3 - Saturation
- ▫ B1 - Water Marks
- ▫ B2 - Sediment Deposits
- ▫ B3 - Drift Deposits
- ▫ B4 - Algal Mat or Crust
- ▫ B5 - Iron Deposits
- ▫ B7 - Inundation Visible on Aerial Imagery
- ▫ B8 - Sparsely Vegetated Concave Surface
- ▫ B9 - Water-Stained Leaves
- ▫ B13 - Aquatic Fauna
- ▫ B14 - True Aquatic Plants
- ▫ C1 - Hydrogen Sulfide Odor
- ▫ C3 - Oxidized Rhizospheres on Living Roots
- ▫ C4 - Presence of Reduced Iron
- ▫ C6 - Recent Iron Reduction in Tilled Soils
- ▫ C7 - Thin Muck Surface
- ▫ D9 - Gauge or Well Data
- ▫ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	▫ Yes	▪ No	Depth:	(in.)
Water Table Present?	▫ Yes	▪ No	Depth:	(in.)
Saturation Present?	▫ Yes	▪ No	Depth:	(in.)

Wetland Hydrology Present? ▫ Yes ▪ No

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

Remarks:

SOILS

Map Unit Name: Pk - Pewamo silty clay loam, 0 to 1 percent slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	20	1	10YR 3/2	100	--	--	--	--	silty clay loam
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ▫):
- ▫ A1- Histosol
- ▫ A2 - Histic Epipedon
- ▫ A3 - Black Histic
- ▫ A4 - Hydrogen Sulfide
- ▫ A5 - Stratified Layers
- ▫ A10 - 2 cm Muck
- ▫ A11 - Depleted Below Dark Surface
- ▫ A12 - Thick Dark Surface
- ▫ S1 - Sandy Muck Mineral
- ▫ S3 - 5 cm Mucky Peat or Peat
- ▫ S4 - Sandy Gleyed Matrix
- ▫ S5 - Sandy Redox
- ▫ S6 - Stripped Matrix
- ▫ F1 - Loamy Muck Mineral
- ▫ F2 - Loamy Gleyed Matrix
- ▫ F3 - Depleted Matrix
- ▫ F6 - Redox Dark Surface
- ▫ F7 - Depleted Dark Surface
- ▫ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ▫ A16 - Coast Prairie Redox
- ▫ S7 - Dark Surface
- ▫ F12 - Iron-Manganese Masses
- ▫ TF12 - Very Shallow Dark Surface
- ▫ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: NA Depth:

Hydric Soil Present? ▫ Yes ▪ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 1 | Sample Point: SP04

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Setaria faberi*	100	Y	FACU
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.	0	x 1 =	0
FACW spp.	0	x 2 =	0
FAC spp.	0	x 3 =	0
FACU spp.	100	x 4 =	400
UPL spp.	0	x 5 =	0
Total	100 (A)		400 (B)

Prevalence Index = B/A = *4.000*

Hydrophytic Vegetation Indicators:

- ◦ Yes ▪ No Rapid Test for Hydrophytic Vegetation
- ◦ Yes ▪ No Dominance Test is > 50%
- ◦ Yes ▪ No Prevalence Index is ≤ 3.0 *
- ◦ Yes ◦ No Morphological Adaptations (Explain) *
- ◦ Yes ◦ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ◦ Yes ▪ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Michelle Kearns	Investigator #2:	Charlie Allen
Soil Unit:	Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes	NWI/WWI Classification:	N/A
Landform:	Depression	Local Relief:	Concave
Slope (%):	1	Latitude: 40.1961	Longitude: -83.29315 Datum: WGS 1984

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

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed?
Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	11/20/19
County:	Union
State:	Ohio
Wetland ID:	Wetland 2
Sample Point:	SP05
Community ID:	PEM
Section:	N/A
Township:	N/A
Range:	N/A Dir: N/A

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes ☐ No	Hydric Soils Present?	☑ Yes ☐ No
Wetland Hydrology Present?	☑ Yes ☐ No	Is This Sampling Point Within A Wetland?	☑ **Yes** ☐ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☐):

Primary:
- ☐ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☑ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	☐ Yes	☑ No	Depth:	(in.)
Water Table Present?	☐ Yes	☑ No	Depth:	(in.)
Saturation Present?	☐ Yes	☑ No	Depth:	(in.)

Wetland Hydrology Present? ☑ Yes ☐ No

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

Remarks:

SOILS

Map Unit Name: Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	10	1	10YR 4/2	95	5YR 4/6	5	C	PL	clay loam
10	16	2	10YR 4/2	90	5YR 5/8	10	C	M	clay loam
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☐):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☑ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: Rock Depth: 16

Hydric Soil Present? ☑ Yes ☐ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 2 | Sample Point: SP05

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Phalaris arundinacea*	100	Y	FACW
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

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 spp.		x 1 =	0
FACW spp.		x 2 =	0
FAC spp.		x 3 =	0
FACU spp.		x 4 =	0
UPL spp.		x 5 =	0
Total	(A)		0 (B)

Prevalence Index = B/A = ***NA***

Hydrophytic Vegetation Indicators:

- ☑ Yes ☐ No Rapid Test for Hydrophytic Vegetation
- ☑ Yes ☐ No Dominance Test is > 50%
- ☐ Yes ☐ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☐ No Morphological Adaptations (Explain) *
- ☐ Yes ☐ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ☑ Yes ☐ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Michelle Kearns	Investigator #2:	Charlie Allen
Soil Unit:	Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes	NWI/WWI Classification:	N/A
Landform:	Side slope	Local Relief:	Convex
Slope (%):	3	Latitude: 40.19611	Longitude: -83.29313 Datum: WGS 1984

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	11/20/19
County:	Union
State:	Ohio
Wetland ID:	Wetland 2
Sample Point:	SP06
Community ID:	Upland
Section:	N/A
Township:	N/A
Range:	N/A Dir: N/A

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☐ Yes ☑ No	Hydric Soils Present?	☐ Yes ☑ No
Wetland Hydrology Present?	☐ Yes ☑ No	Is This Sampling Point Within A Wetland?	☐ **Yes** ☐ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☑):

Primary:
- ☐ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☐ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	☐ Yes	☑ No	Depth:	(in.)
Water Table Present?	☐ Yes	☑ No	Depth:	(in.)
Saturation Present?	☐ Yes	☑ No	Depth:	(in.)

Wetland Hydrology Present? ☐ Yes ☑ No

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

Remarks:

SOILS

Map Unit Name: Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)		Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	10	1	10YR 3/3	100	--	--	--	--	--	clay loam
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☑):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☐ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: very compacted soil Depth: 10 inches

Hydric Soil Present? ☐ Yes ☑ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 2 | Sample Point: SP06

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Zea mays*	80	Y	UPL
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	80		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks: 20% open ground

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.	0	x 1 =	0
FACW spp.	0	x 2 =	0
FAC spp.	0	x 3 =	0
FACU spp.	0	x 4 =	0
UPL spp.	80	x 5 =	400
Total	80 (A)		400 (B)

Prevalence Index = B/A = ***5.000***

Hydrophytic Vegetation Indicators:

- ☐ Yes ☑ No Rapid Test for Hydrophytic Vegetation
- ☐ Yes ☑ No Dominance Test is > 50%
- ☐ Yes ☑ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☐ No Morphological Adaptations (Explain) *
- ☐ Yes ☐ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ☐ Yes ☑ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Michelle Kearns	Investigator #2:	Charlie Allen
Soil Unit:	Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes	NWI/WWI Classification:	N/A
Landform:	Depression	Local Relief:	Concave
Slope (%):	1	Latitude: 40.19973	Longitude: -83.303292
Datum:	WGS 1934		

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	11/20/19
County:	Union
State:	Ohio
Wetland ID:	Wetland 3
Sample Point:	SP07
Community ID:	PEM
Section:	N/A
Township:	N/A
Range:	N/A Dir: N/A

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes ☐ No	Hydric Soils Present?	☑ Yes ☐ No
Wetland Hydrology Present?	☑ Yes ☐ No	Is This Sampling Point Within A Wetland?	☑ **Yes** ☐ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☐):

Primary:
- ☑ A1 - Surface Water
- ☑ A2 - High Water Table
- ☑ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☑ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	☑ Yes ☐ No	Depth:	0.5	(in.)
Water Table Present?	☑ Yes ☐ No	Depth:	0	(in.)
Saturation Present?	☑ Yes ☐ No	Depth:	0	(in.)

Wetland Hydrology Present? ☑ Yes ☐ No

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

Remarks:

SOILS

Map Unit Name: Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	7	1	10YR 4/2	95	5YR 4/6	5	C	PL	clay loam
7	21	2	10YR 4/2	95	5YR 4/6	5	C	M	clay loam
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☐):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☑ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: N/A Depth: N/A

Hydric Soil Present? ☑ Yes ☐ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 3 | Sample Point: SP07

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Phalaris arundinacea*	60	Y	FACW
2.	*Typha angustifolia*	40	Y	OBL
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ***100%*** (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL spp.		x 1 =	0
FACW spp.		x 2 =	0
FAC spp.		x 3 =	0
FACU spp.		x 4 =	0
UPL spp.		x 5 =	0
Total	(A)		0 (B)

Prevalence Index = B/A = ***NA***

Hydrophytic Vegetation Indicators:

- ☑ Yes ☐ No Rapid Test for Hydrophytic Vegetation
- ☑ Yes ☐ No Dominance Test is > 50%
- ☐ Yes ☐ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☐ No Morphological Adaptations (Explain) *
- ☐ Yes ☐ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ☑ Yes ☐ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Michelle Kearns	Investigator #2:	Charlie Allen
Soil Unit:	Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes	NWI/WWI Classification:	N/A
Landform:	Side slope	Local Relief:	Convex
Slope (%):	3	Latitude: 40.19975	Longitude: -83.30326 Datum: WGS 1984

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	11/20/19		
County:	Union		
State:	Ohio		
Wetland ID:	Wetland 3		
Sample Point:	SP08		
Community ID:	Upland		
Section:	N/A		
Township:	N/A		
Range:	N/A	Dir:	N/A

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes ☐ No	Hydric Soils Present?	☐ Yes ☑ No
Wetland Hydrology Present?	☐ Yes ☑ No	Is This Sampling Point Within A Wetland?	☐ **Yes** ☑ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☑):

Primary:
- ☐ A1 - Surface Water
- ☐ A2 - High Water Table
- ☐ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☐ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	☐ Yes	☑ No	Depth:	(in.)
Water Table Present?	☐ Yes	☑ No	Depth:	(in.)
Saturation Present?	☐ Yes	☑ No	Depth:	(in.)

Wetland Hydrology Present? ☐ Yes ☑ No

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

Remarks:

SOILS

Map Unit Name: Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	20	1	10YR 3/3	100	-- --	--	--	--	loam
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☑):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☐ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: N/A Depth: N/A

Hydric Soil Present? ☐ Yes ☑ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 3 | Sample Point: SP08

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Poa pratensis*	95	Y	FAC
2.	*Cirsium arvense*	5	N	FACU
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

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 spp.		x 1 =	0
FACW spp.		x 2 =	0
FAC spp.		x 3 =	0
FACU spp.		x 4 =	0
UPL spp.		x 5 =	0
Total	(A)		0 (B)

Prevalence Index = B/A = ***NA***

Hydrophytic Vegetation Indicators:

- ☑ Yes ☐ No Rapid Test for Hydrophytic Vegetation
- ☑ Yes ☐ No Dominance Test is > 50%
- ☐ Yes ☐ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☐ No Morphological Adaptations (Explain) *
- ☐ Yes ☐ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ☑ Yes ☐ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Michelle Kearns	Investigator #2:	Charlie Allen
Soil Unit:	Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes	NWI/WWI Classification:	N/A
Landform:	Depression	Local Relief:	Concave
Slope (%):	1	Latitude: 40.2001	Longitude: -83.30392 Datum: WGS 1984

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

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed?
Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic?

Are normal circumstances present? ☑ Yes ☐ No

Date:	11/20/19
County:	Union
State:	Ohio
Wetland ID:	Wetland 4
Sample Point:	SP09
Community ID:	PEM
Section:	N/A
Township:	N/A
Range:	N/A Dir: N/A

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	☑ Yes ☐ No	Hydric Soils Present?	☑ Yes ☐ No
Wetland Hydrology Present?	☑ Yes ☐ No	Is This Sampling Point Within A Wetland?	☑ **Yes** ☐ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ☐):

Primary:
- ☐ A1 - Surface Water
- ☑ A2 - High Water Table
- ☑ A3 - Saturation
- ☐ B1 - Water Marks
- ☐ B2 - Sediment Deposits
- ☐ B3 - Drift Deposits
- ☐ B4 - Algal Mat or Crust
- ☐ B5 - Iron Deposits
- ☐ B7 - Inundation Visible on Aerial Imagery
- ☐ B8 - Sparsely Vegetated Concave Surface
- ☐ B9 - Water-Stained Leaves
- ☐ B13 - Aquatic Fauna
- ☐ B14 - True Aquatic Plants
- ☐ C1 - Hydrogen Sulfide Odor
- ☑ C3 - Oxidized Rhizospheres on Living Roots
- ☐ C4 - Presence of Reduced Iron
- ☐ C6 - Recent Iron Reduction in Tilled Soils
- ☐ C7 - Thin Muck Surface
- ☐ D9 - Gauge or Well Data
- ☐ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	☐ Yes	☑ No	Depth:		(in.)
Water Table Present?	☑ Yes	☐ No	Depth:	0	(in.)
Saturation Present?	☑ Yes	☐ No	Depth:	0	(in.)

Wetland Hydrology Present? ☑ Yes ☐ No

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

Remarks:

SOILS

Map Unit Name: Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	7	1	10YR 4/2	95	5YR 4/6	5	C	PL	clay loam
7	21	2	10YR 4/2	95	5YR 4/6	5	C	M	clay loam
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ☐):
- ☐ A1- Histosol
- ☐ A2 - Histic Epipedon
- ☐ A3 - Black Histic
- ☐ A4 - Hydrogen Sulfide
- ☐ A5 - Stratified Layers
- ☐ A10 - 2 cm Muck
- ☐ A11 - Depleted Below Dark Surface
- ☐ A12 - Thick Dark Surface
- ☐ S1 - Sandy Muck Mineral
- ☐ S3 - 5 cm Mucky Peat or Peat
- ☐ S4 - Sandy Gleyed Matrix
- ☐ S5 - Sandy Redox
- ☐ S6 - Stripped Matrix
- ☐ F1 - Loamy Muck Mineral
- ☐ F2 - Loamy Gleyed Matrix
- ☑ F3 - Depleted Matrix
- ☐ F6 - Redox Dark Surface
- ☐ F7 - Depleted Dark Surface
- ☐ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ☐ A16 - Coast Prairie Redox
- ☐ S7 - Dark Surface
- ☐ F12 - Iron-Manganese Masses
- ☐ TF12 - Very Shallow Dark Surface
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: N/A Depth: N/A

Hydric Soil Present? ☑ Yes ☐ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 4 | Sample Point: SP09

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Phalaris arundinacea*	100	Y	FACW
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

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 spp.		x 1 =	0
FACW spp.		x 2 =	0
FAC spp.		x 3 =	0
FACU spp.		x 4 =	0
UPL spp.		x 5 =	0
Total	(A)		0 (B)

Prevalence Index = B/A = ***NA***

Hydrophytic Vegetation Indicators:

- ☑ Yes ☐ No Rapid Test for Hydrophytic Vegetation
- ☑ Yes ☐ No Dominance Test is > 50%
- ☐ Yes ☐ No Prevalence Index is ≤ 3.0 *
- ☐ Yes ☐ No Morphological Adaptations (Explain) *
- ☐ Yes ☐ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ☑ Yes ☐ No

Additional Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site:	Marysville Connector	Stantec Project #:	193707055
Applicant:	Columbia Gas of Ohio		
Investigator #1:	Michelle Kearns	Investigator #2:	Charlie Allen
Soil Unit:	Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes	NWI/WWI Classification:	N/A
Landform:	Side slope	Local Relief:	Convex
Slope (%):	3	Latitude: 40.2001	Longitude: -83.30386
Datum:	WGS 1984		

Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) ▪ Yes ◦ No

Are Vegetation ◦, Soil ◦, or Hydrology ◦ significantly disturbed?
Are Vegetation ◦, Soil ◦, or Hydrology ◦ naturally problematic?

Are normal circumstances present? ▪ Yes ◦ No

Date:	11/20/19
County:	Union
State:	Ohio
Wetland ID:	Wetland 4
Sample Point:	SP10
Community ID:	Upland
Section:	N/A
Township:	N/A
Range:	N/A Dir: N/A

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? ▪ Yes ◦ No
Wetland Hydrology Present? ◦ Yes ▪ No
Hydric Soils Present? ◦ Yes ▪ No
Is This Sampling Point Within A Wetland? ◦ **Yes** ◦ **No**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present ▪):

Primary:
- ◦ A1 - Surface Water
- ◦ A2 - High Water Table
- ◦ A3 - Saturation
- ◦ B1 - Water Marks
- ◦ B2 - Sediment Deposits
- ◦ B3 - Drift Deposits
- ◦ B4 - Algal Mat or Crust
- ◦ B5 - Iron Deposits
- ◦ B7 - Inundation Visible on Aerial Imagery
- ◦ B8 - Sparsely Vegetated Concave Surface
- ◦ B9 - Water-Stained Leaves
- ◦ B13 - Aquatic Fauna
- ◦ B14 - True Aquatic Plants
- ◦ C1 - Hydrogen Sulfide Odor
- ◦ C3 - Oxidized Rhizospheres on Living Roots
- ◦ C4 - Presence of Reduced Iron
- ◦ C6 - Recent Iron Reduction in Tilled Soils
- ◦ C7 - Thin Muck Surface
- ◦ D9 - Gauge or Well Data
- ◦ Other (Explain in Remarks)

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

Field Observations:

Surface Water Present?	◦ Yes	▪ No	Depth:	(in.)
Water Table Present?	◦ Yes	▪ No	Depth:	(in.)
Saturation Present?	◦ Yes	▪ No	Depth:	(in.)

Wetland Hydrology Present? ◦ Yes ▪ No

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

Remarks:

SOILS

Map Unit Name: Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix Color (Moist)	Matrix %	Redox Features Color (Moist)	Redox Features %	Redox Features Type	Redox Features Location	Texture (e.g. clay, sand, loam)
0	10	1	10YR 4/2	100	-- --	--	--	--	clay loam
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--
--	--	--	--	--	-- --	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present ▪):
- ◦ A1- Histosol
- ◦ A2 - Histic Epipedon
- ◦ A3 - Black Histic
- ◦ A4 - Hydrogen Sulfide
- ◦ A5 - Stratified Layers
- ◦ A10 - 2 cm Muck
- ◦ A11 - Depleted Below Dark Surface
- ◦ A12 - Thick Dark Surface
- ◦ S1 - Sandy Muck Mineral
- ◦ S3 - 5 cm Mucky Peat or Peat
- ◦ S4 - Sandy Gleyed Matrix
- ◦ S5 - Sandy Redox
- ◦ S6 - Stripped Matrix
- ◦ F1 - Loamy Muck Mineral
- ◦ F2 - Loamy Gleyed Matrix
- ◦ F3 - Depleted Matrix
- ◦ F6 - Redox Dark Surface
- ◦ F7 - Depleted Dark Surface
- ◦ F8 - Redox Depressions

Indicators for Problematic Soils [1]
- ◦ A16 - Coast Prairie Redox
- ◦ S7 - Dark Surface
- ◦ F12 - Iron-Manganese Masses
- ◦ TF12 - Very Shallow Dark Surface
- ◦ Other (Explain in Remarks)

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

Restrictive Layer (If Observed) Type: Rock Depth: 10 inches

Hydric Soil Present? ◦ Yes ▪ No

Remarks:

WETLAND DETERMINATION DATA FORM
Midwest Region

Project/Site: Marysville Connector | Wetland ID: Wetland 4 | Sample Point: SP10

VEGETATION (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind.Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
	Total Cover =	0		

Herb Stratum (Plot size: 5 ft radius)

1.	*Poa pratensis*	90	Y	FAC
2.	*Taraxacum officinale*	5	N	FACU
3.	*Plantago lanceolata*	5	N	FACU
4.	--	--	--	--
5.	--	--	--	--
6	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
	Total Cover =	100		

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
	Total Cover =	0		

Remarks:

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 spp.		x 1 =	
FACW spp.		x 2 =	
FAC spp.		x 3 =	
FACU spp.		x 4 =	
UPL spp.		x 5 =	

Total _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ◦ Yes ▪ No Rapid Test for Hydrophytic Vegetation
- ▪ Yes ◦ No Dominance Test is > 50%
- ◦ Yes ◦ No Prevalence Index is ≤ 3.0 *
- ◦ Yes ◦ No Morphological Adaptations (Explain) *
- ◦ Yes ◦ No Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

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

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

Hydrophytic Vegetation Present ▪ Yes ◦ No

Additional Remarks:

B.2 ORAM FORMS

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

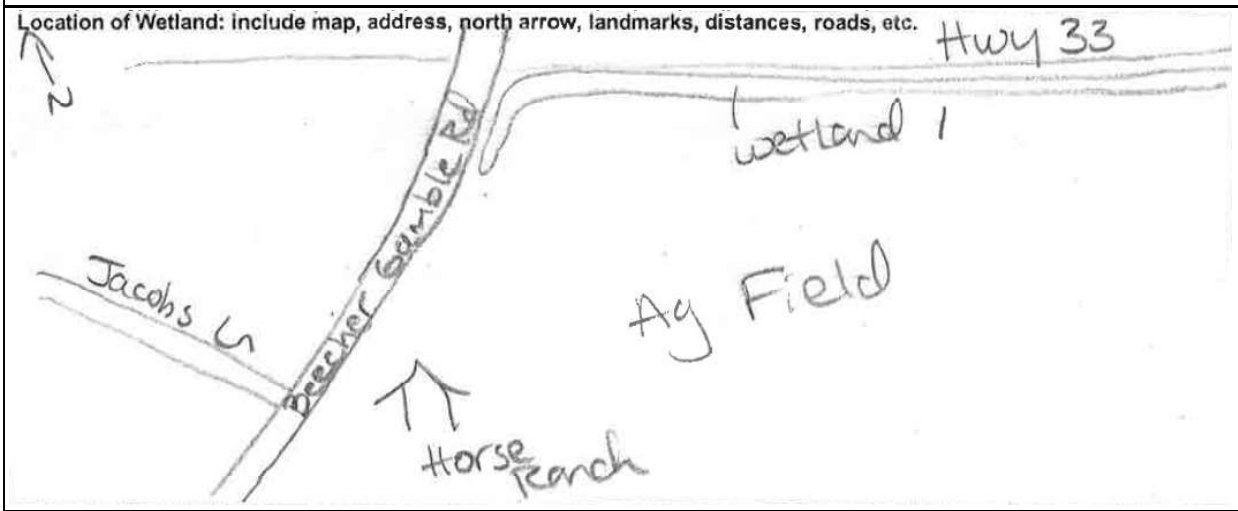
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	Angela Sjollema
Date:	11/20/2019
Affiliation:	Stantec Consulting Services Inc.
Address:	1500 Lake Shore Drive, Suite 100, Columbus, Ohio 43204
Phone Number:	614-643-4400
e-mail address:	angela.sjollema@stantec.com
Name of Wetland:	Wetland 1
Vegetation Communit(ies):	PEM
HGM Class(es):	Depression

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

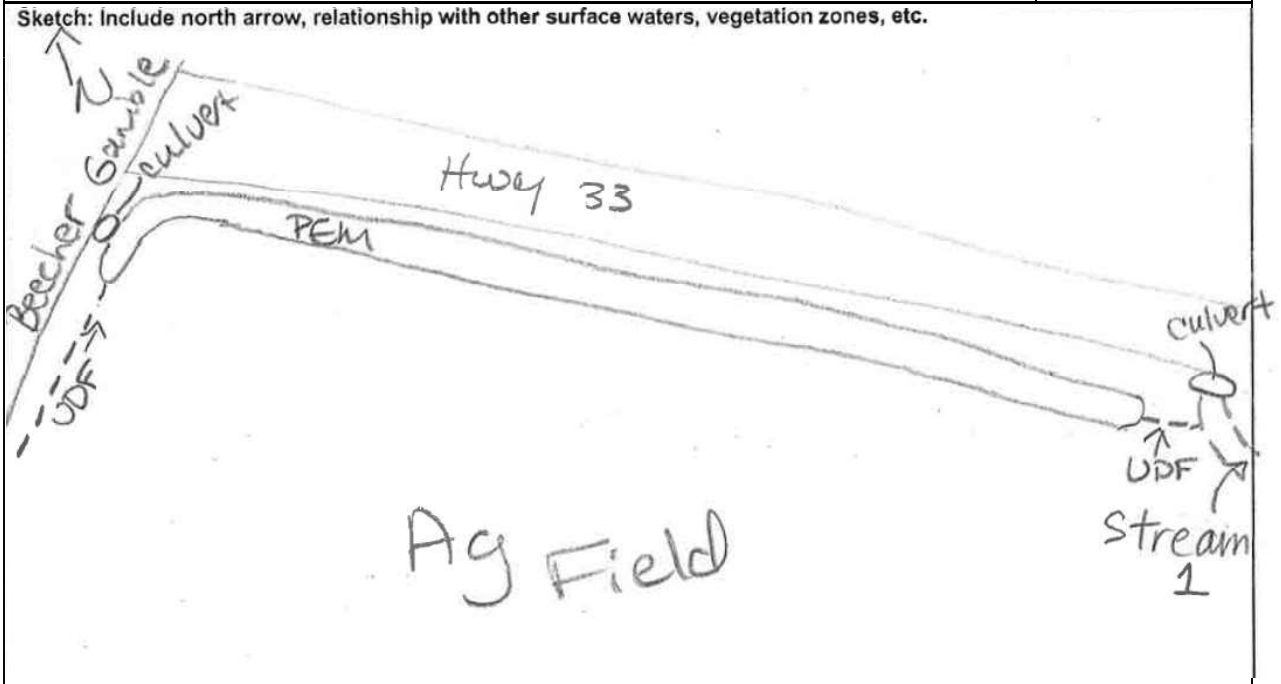


Lat/Long or UTM Coordinate	40.183979, -83.254306
USGS Quad Name	Marysville and Shawnee Hills Topo Quads
County	Union
Township	
Section and Subsection	
Hydrologic Unit Code	50600011904 (Sugar Run)
Site Visit	11/20/2019
National Wetland Inventory Map	Yes
Ohio Wetland Inventory Map	No
Soil Survey	Union County Soil Survey
Delineation report/map	Figure 4 - Wetland and Waterbody Delineation Report

Name of Wetland: Wetland 1

Wetland Size (acres, hectares): 1.12 acres

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



Comments, Narrative Discussion, Justification of Category Changes:

Wetland is fed by three sources: stormwater runoff from Highway 33 and Beecher - Gamble Road, tile drainage from the agricultural fields, and Stream 4.

Final score : 32 **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.

Wetland 1 Angela Sjollema 11/20/2019

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

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

Narrative Rating

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

Wetland 1 Angela Sjollema 11/20/2019

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

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ 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	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ 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	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

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

Site: Wetland 1	**Rater(s):** Angela Sjollema	**Date:** 11/20/2019

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)
- [x] 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.

1	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)
- [x] 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)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

17	20
max 30 pts.	subtotal

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

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

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [x] 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)
- [x] <0.4m (<15.7in) (1)

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

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] 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)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [x] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

15	35
max 20 pts.	subtotal

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

- [x] 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)
- [x] Poor to fair (2)
- [ ] Poor (1)

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

- [x] 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

35
subtotal this page

last revised 1 February 2001 jjm

Site: Wetland 1	**Rater(s):** Angela Sjollema	**Date:** 11/20/2019

35
subtotal first page

0 (max 10 pts.) | 35 (subtotal)

Metric 5. Special Wetlands.

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)

-3 (max 20 pts.) | 32 (subtotal)

Metric 6. Plant communities, interspersion, microtopography.

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

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
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.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] 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

32

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

Wetland 1 Angela Sjollema 11/20/2019

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	NO	If yes, Category 3.
	Question 4. Significant bird habitat	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	NO	If yes, Category 1.
	Question 6. Bogs	NO	If yes, Category 3.
	Question 7. Fens	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	1	
	Metric 3. Hydrology	17	
	Metric 4. Habitat	15	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-3	
	TOTAL SCORE	32	Category based on score breakpoints Category 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	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	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 *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	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	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
Category 2	☐	☒	☐

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

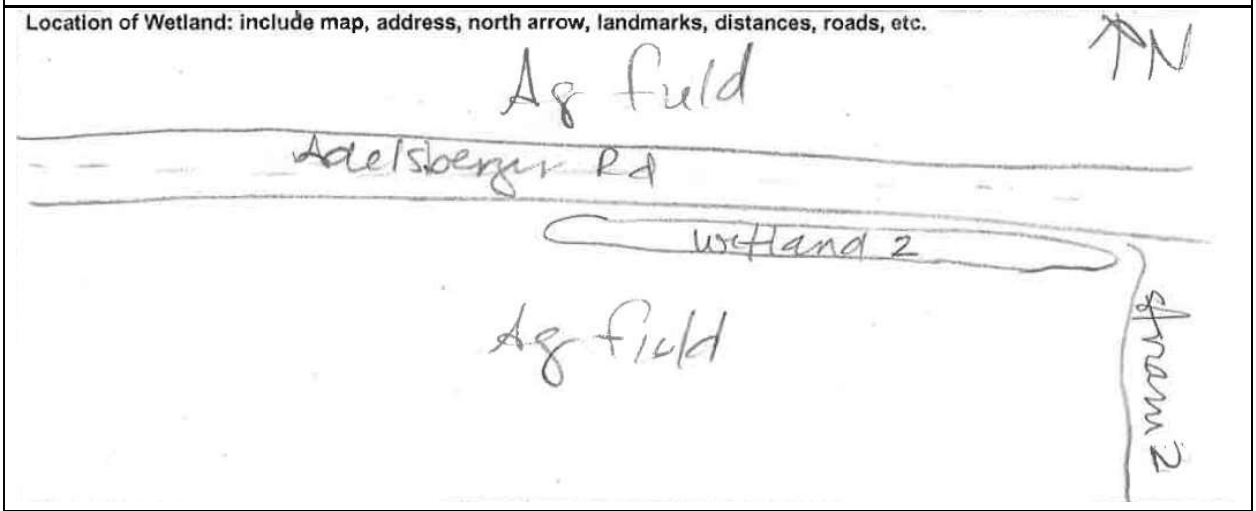
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	Michelle Kearns
Date:	11/20/2019
Affiliation:	Stantec Consulting Services Inc.
Address:	1500 Lake Shore Drive, Suite 100, Columbus, Ohio 43204
Phone Number:	614-486-4383
e-mail address:	michelle.kearns@stantec.com
Name of Wetland:	Wetland 2
Vegetation Communit(ies):	PEM
HGM Class(es):	Depression

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

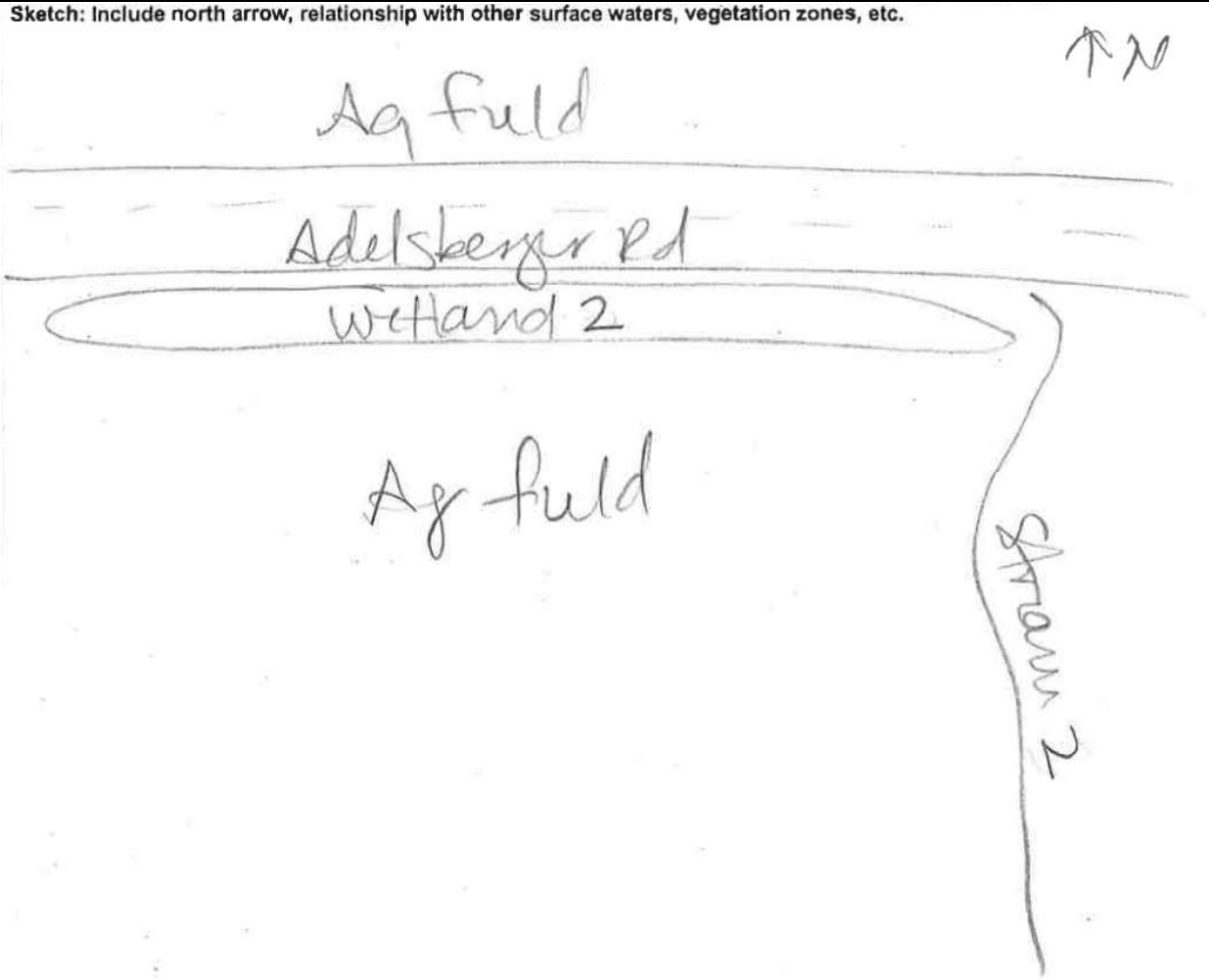


Lat/Long or UTM Coordinate	40.196261, -83.29241
USGS Quad Name	Marysville Topo Quad
County	Union
Township	
Section and Subsection	
Hydrologic Unit Code	50600010604 (Lower Mill Creek)
Site Visit	11/20/2019
National Wetland Inventory Map	Yes
Ohio Wetland Inventory Map	No
Soil Survey	Union County Soil Survey
Delineation report/map	Figure 4 - Wetland and Waterbody Delineation Report

Name of Wetland: Wetland 2

Wetland Size (acres, hectares): 0.10 acres

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



Comments, Narrative Discussion, Justification of Category Changes:

Final score : 25 **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.

Wetland 2 Michelle Kearns 11/20/2019

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

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

Narrative Rating

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

Wetland 2 Michelle Kearns 11/20/2019

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

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ 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	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ 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	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

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

Site: Wetland 2	**Rater(s):** Michelle Kearns	**Date:** 11/20/2019

Metric 1. Wetland Area (size).

max 6 pts.	subtotal
1	1

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)
- [x] 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
1	2

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)
- [x] 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)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

max 30 pts.	subtotal
12	14

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

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

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] 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)
- [x] <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)
- [x] 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)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [x] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

max 20 pts.	subtotal
14	28

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

- [x] 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)
- [x] Poor (1)

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

- [x] 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

subtotal this page
28

last revised 1 February 2001 jjm

Site: Wetland 2	**Rater(s):** Michelle Kearns	**Date:** 11/20/2019

28
subtotal first page

0 (max 10 pts.) | 28 (subtotal)

Metric 5. Special Wetlands.

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)

-3 (max 20 pts.) | 25 (subtotal)

Metric 6. Plant communities, interspersion, microtopography.

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

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
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.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] 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

25

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

Wetland 2 Michelle Kearns 11/20/2019

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	NO	If yes, Category 3.
	Question 4. Significant bird habitat	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	NO	If yes, Category 1.
	Question 6. Bogs	NO	If yes, Category 3.
	Question 7. Fens	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	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	1	
	Metric 3. Hydrology	12	
	Metric 4. Habitat	14	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-3	
	TOTAL SCORE	25	Category based on score breakpoints Category 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: 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 *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	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 *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	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	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
Category 1	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

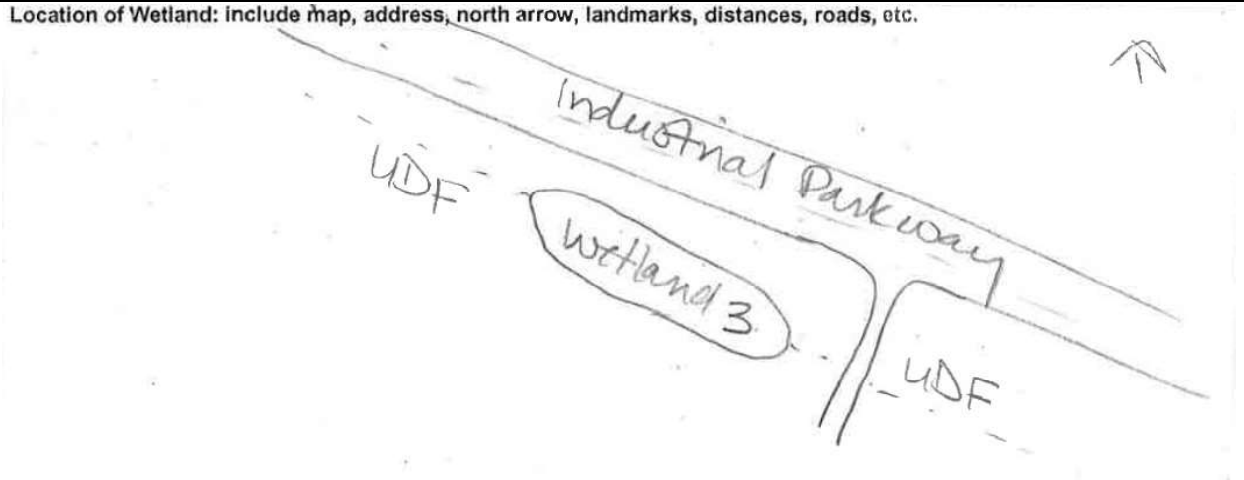
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	Michelle Kearns
Date:	11/20/2019
Affiliation:	Stantec Consulting Services Inc.
Address:	1500 Lake Shore Drive, Suite 100, Columbus, Ohio 43204
Phone Number:	614-486-4383
e-mail address:	michelle.kearns@stantec.com
Name of Wetland:	Wetland 3
Vegetation Communit(ies):	PEM
HGM Class(es):	Depression

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

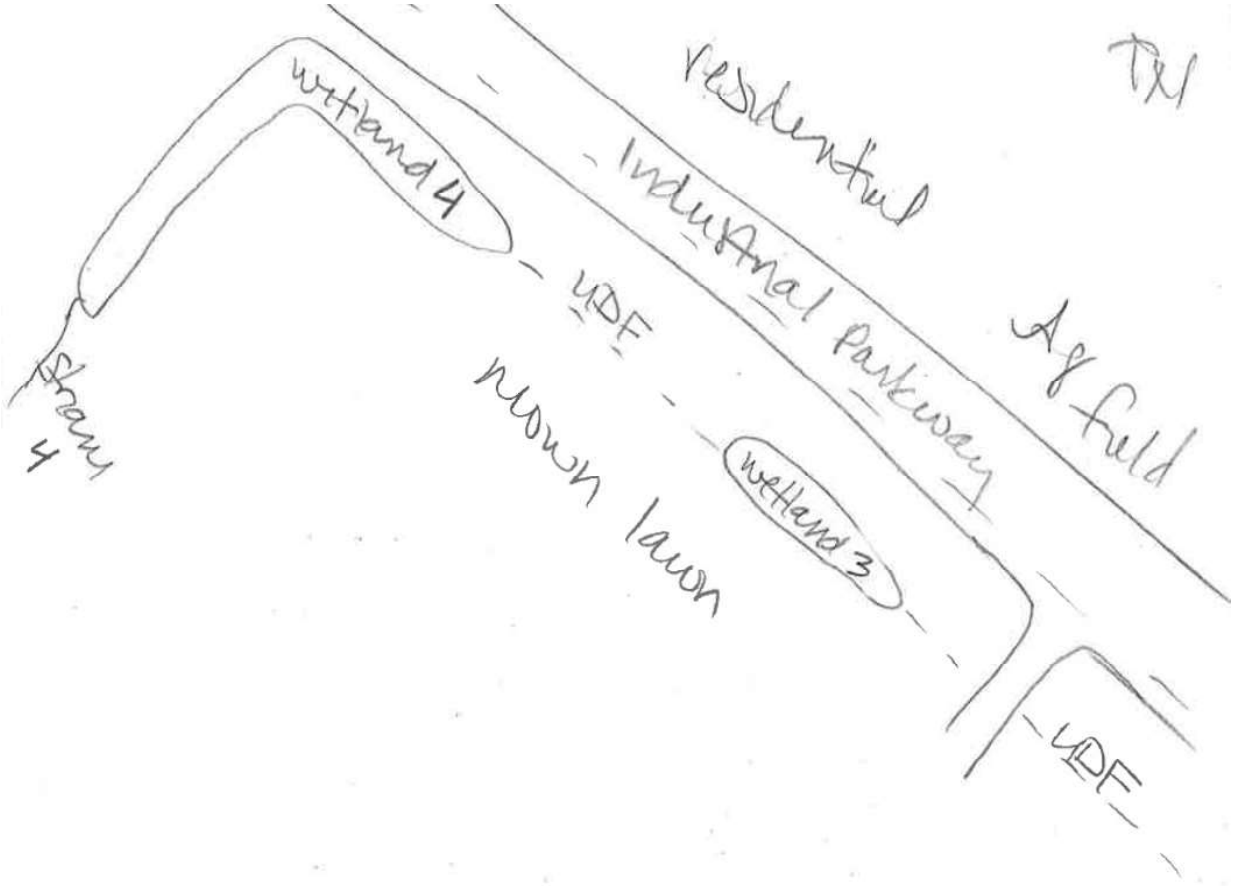


Lat/Long or UTM Coordinate	40.199725, -83.3033
USGS Quad Name	Marysville Topo Quad
County	Union
Township	
Section and Subsection	
Hydrologic Unit Code	50600010604 (Lower Mill Creek)
Site Visit	11/20/2019
National Wetland Inventory Map	Yes
Ohio Wetland Inventory Map	No
Soil Survey	Union County Soil Survey
Delineation report/map	Figure 4 - Wetland and Waterbody Delineation Report

Name of Wetland: Wetland 3

Wetland Size (acres, hectares): 0.02 acres

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



Comments, Narrative Discussion, Justification of Category Changes:

Final score : 15 **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.

Wetland 3 Michelle Kearns 11/20/2019

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

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

Narrative Rating

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

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

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ 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	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ 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	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

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

Site: Wetland 3	**Rater(s):** Michelle Kearns	**Date:** 11/20/2019

Metric 1. Wetland Area (size).

max 6 pts.	subtotal
0	0

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)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

max 14 pts.	subtotal
1	1

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)
- [x] 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)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

max 30 pts.	subtotal
11	12

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

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] 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)
- [x] 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)
- [x] <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)
- [x] 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)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [x] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

max 20 pts.	subtotal
6	18

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

- [x] 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)
- [x] Poor (1)

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

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

Check all disturbances observed

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

subtotal this page
18

last revised 1 February 2001 jjm

Site: Wetland 3	**Rater(s):** Michelle Kearns	**Date:** 11/20/2019

18
subtotal first page

Metric 5. Special Wetlands.

0 max 10 pts. | 18 subtotal

Check all that apply and score as indicated.

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

Metric 6. Plant communities, interspersion, microtopography.

-3 max 20 pts. | 15 subtotal

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

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
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.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] 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

15

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

Wetland 3 Michelle Kearns 11/20/2019

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

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: 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 *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	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 *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	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	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
Category 1	☒	☐	☐

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

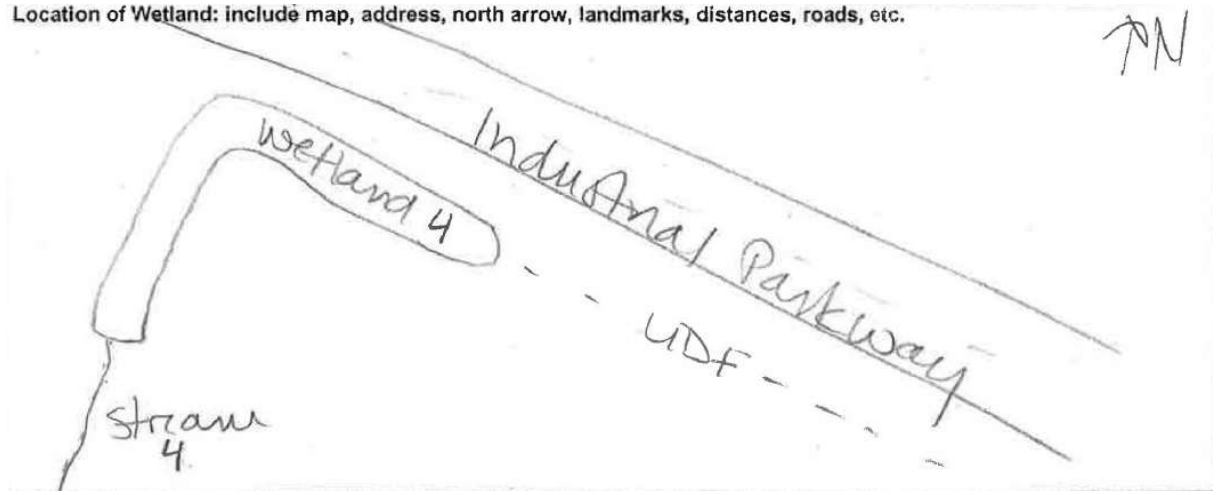
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	Michelle Kearns
Date:	11/20/2019
Affiliation:	Stantec Consulting Services Inc.
Address:	1500 Lake Shore Drive, Suite 100, Columbus, Ohio 43204
Phone Number:	614-486-4383
e-mail address:	michelle.kearns@stantec.com
Name of Wetland:	Wetland 4
Vegetation Communit(ies):	PEM
HGM Class(es):	Depression

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

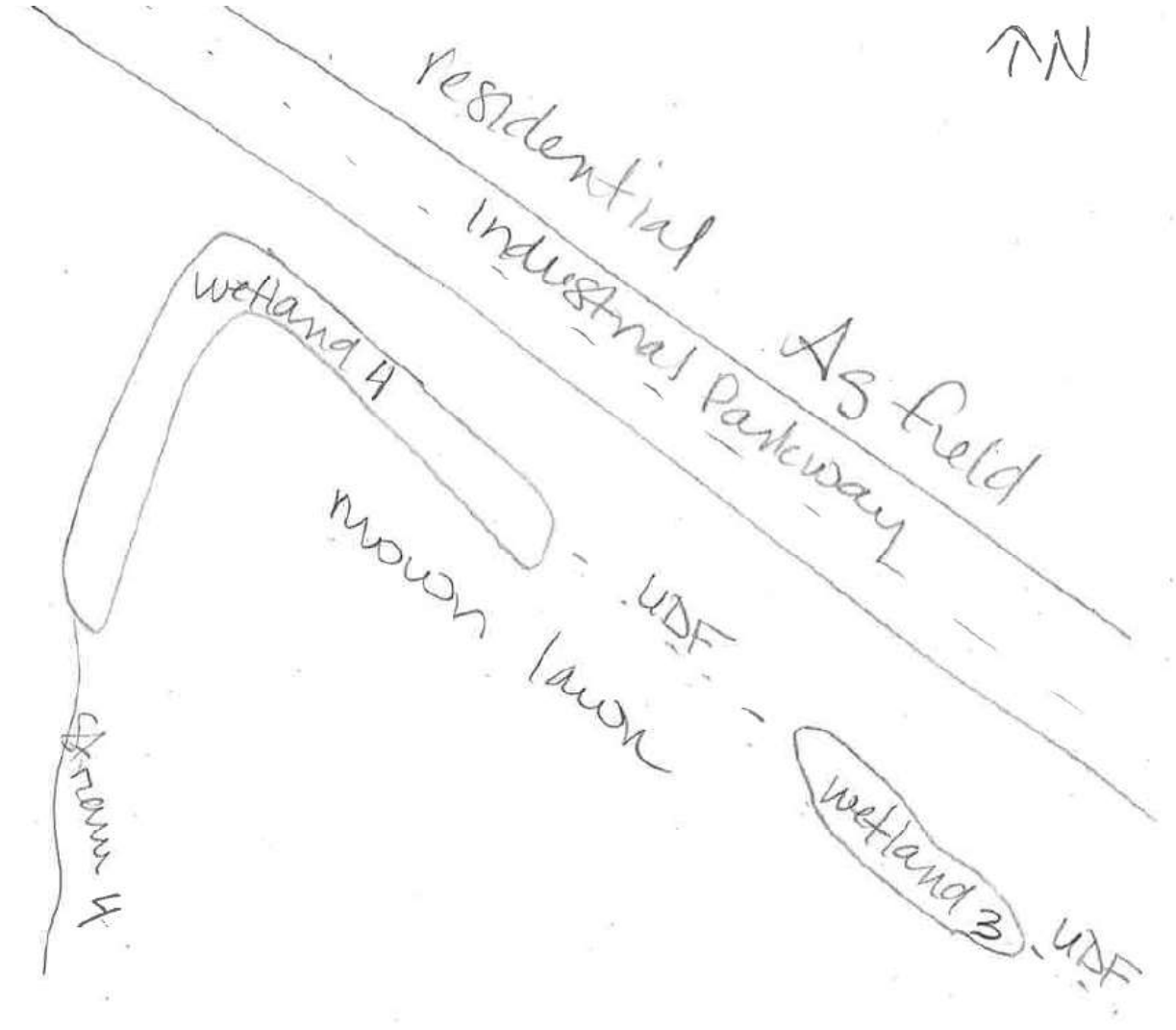


Lat/Long or UTM Coordinate	40.200044, -83.304206
USGS Quad Name	Marysville Topo Quad
County	Union
Township	
Section and Subsection	
Hydrologic Unit Code	50600010604 (Lower Mill Creek)
Site Visit	11/20/2019
National Wetland Inventory Map	Yes
Ohio Wetland Inventory Map	No
Soil Survey	Union County Soil Survey
Delineation report/map	Figure 4 - Wetland and Waterbody Delineation Report

Name of Wetland: Wetland 4

Wetland Size (acres, hectares): 0.06 acres

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



Comments, Narrative Discussion, Justification of Category Changes:

Final score : 34 **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.

Wetland 4 Michelle Kearns 11/20/2019

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

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

Narrative Rating

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

Wetland 4 Michelle Kearns 11/20/2019

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

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES ☐ Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO ☒ Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES ☐ 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	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES ☐ Wetland is a Category 3 wetland. Go to Question 11	NO ☒ Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES ☐ 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	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

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

Site: Wetland 4	**Rater(s):** Michelle Kearns	**Date:** 11/20/2019

Metric 1. Wetland Area (size).

0 (max 6 pts.) | 0 (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)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

3 (max 14 pts.) | 3 (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)
- [x] 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)
- [x] LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

20 (max 30 pts.) | 23 (subtotal)

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

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

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] 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)
- [x] <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)
- [x] Seasonally saturated in upper 30cm (12in) (1)

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

- [x] 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.

14 (max 20 pts.) | 37 (subtotal)

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

- [x] 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)
- [x] Poor (1)

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

- [x] 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

37 (subtotal this page)

last revised 1 February 2001 jjm

Site: Wetland 4	**Rater(s):** Michelle Kearns	**Date:** 11/20/2019

37
subtotal first page

0 (max 10 pts.) | 37 (subtotal)

Metric 5. Special Wetlands.

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)

-3 (max 20 pts.) | 34 (subtotal)

Metric 6. Plant communities, interspersion, microtopography.

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

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
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.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] 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

34

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

Wetland 4 Michelle Kearns 11/20/2019

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	NO	If yes, Category 3.
	Question 4. Significant bird habitat	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	NO	If yes, Category 1.
	Question 6. Bogs	NO	If yes, Category 3.
	Question 7. Fens	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	NO	If yes, Category 3
	Question 11. Relict Wet Prairies	NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	20	
	Metric 4. Habitat	14	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-3	
	TOTAL SCORE	34	Category based on score breakpoints Category 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	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	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 *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	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	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
Category 1	☐	☒	☐

End of Ohio Rapid Assessment Method for Wetlands.

B.3 QHEI FORMS

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 37

Stream & Location: Stream 1 / COH Marysville Connector **RM:** _ _ _._ **Date:** 11 / 20 / 19

Scorers Full Name & Affiliation: J. Slater / Stantec Consulting Services

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 40 . 1794 / 83. 2490 Office verified location ☐

1] SUBSTRATE

Check *ONLY* **Two** substrate *TYPE BOXES*; estimate % or note every type present

Check ONE (*Or 2 & average*)

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☒ ☐ HARDPAN [4]	40	40
☐ ☐ BOULDER [9]	10	10	☐ ☒ DETRITUS [3]	30	30
☐ ☐ COBBLE [8]			☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]			☐ ☐ SILT [2]	20	20
☐ ☐ SAND [6]			☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

ORIGIN	EMBEDDEDNESS	QUALITY
☐ LIMESTONE [1]	SILT	☐ HEAVY [-2]
☒ TILLS [1]		☒ MODERATE [-1]
☐ WETLANDS [0]		☐ NORMAL [0]
☐ HARDPAN [0]		☐ FREE [1]
☐ SANDSTONE [0]		☒ EXTENSIVE [-2]
☐ RIP/RAP [0]		☐ MODERATE [-1]
☐ LACUSTURINE [0]		☐ NORMAL [0]
☐ SHALE [-1]		☐ NONE [1]
☐ COAL FINES [-2]		

Substrate 5 *Maximum 20*

Comments

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

____ UNDERCUT BANKS [1]	____ POOLS > 70cm [2]	____ OXBOWS, BACKWATERS [1]
2 OVERHANGING VEGETATION [1]	____ ROOTWADS [1]	____ AQUATIC MACROPHYTES [1]
____ SHALLOWS (IN SLOW WATER) [1]	____ BOULDERS [1]	____ LOGS OR WOODY DEBRIS [1]
____ ROOTMATS [1]		

AMOUNT

Check ONE (*Or 2 & average*)

☐ EXTENSIVE >75% [11]
☒ MODERATE 25-75% [7]
☐ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20 8

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☒ MODERATE [2]
☒ LOW [2]	☒ FAIR [3]	☒ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel Maximum 20 10

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
☒ ☒ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	☐ ☐ FOREST, SWAMP [3]	☐ ☐ CONSERVATION TILLAGE [1]
☐ ☐ MODERATE [2]	☐ ☐ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]	☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ HEAVY / SEVERE [1]	☒ ☐ NARROW 5-10m [2]	☒ ☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ ☐ MINING / CONSTRUCTION [0]
	☐ ☒ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]	
	☐ ☐ NONE [0]	☒ ☒ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10 5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	
Check **ONE** (*ONLY!*)	Check ONE (*Or 2 & average*)	Check ALL that apply	
☐ > 1m [6]	☐ POOL WIDTH > RIFFLE WIDTH [2]	☐ TORRENTIAL [-1]	☒ SLOW [1]
☐ 0.7-<1m [4]	☒ POOL WIDTH = RIFFLE WIDTH [1]	☐ VERY FAST [1]	☒ INTERSTITIAL [-1]
☐ 0.4-<0.7m [2]	☐ POOL WIDTH < RIFFLE WIDTH [0]	☐ FAST [1]	☐ INTERMITTENT [-2]
☐ 0.2-<0.4m [1]		☐ MODERATE [1]	☐ EDDIES [1]
☒ < 0.2m [0]		*Indicate for reach - pools and riffles.*	

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current Maximum 12 1

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☒ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8 0

6] GRADIENT

(12.6 ft/mi)

DRAINAGE AREA

(3.83 mi²)

☐ VERY LOW - LOW [2-4]
☒ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 0 %GLIDE: 100
%RUN: 0 %RIFFLE: 0

Gradient Maximum 10 8

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☒ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
☒ NORMAL	☐
☐ LOW	☐
☐ DRY	☐

DISTANCE

- ☐ 0.5 Km
- ☒ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

_____ meters

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☐ 20-<40 cm	☐
☐ 40-70 cm	☐
☒ > 70 cm/ CTB	☐
☐ SECCHI DEPTH	☐

1st _____ cm pass

2nd _____ cm

CANOPY

- ☒ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Temp = 8.0 degrees C; pH = 7.8; conductivity = 1.56 micro hos/cm

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

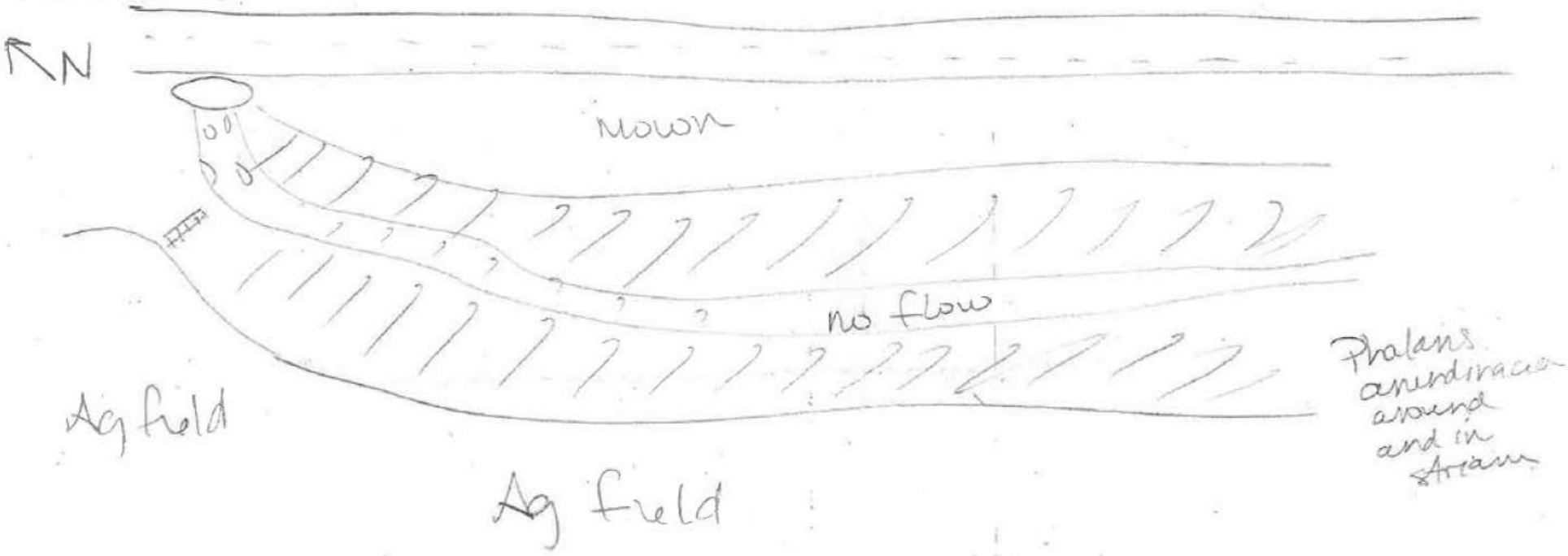
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

x̄ width	3 ft
x̄ depth	1 ft
max. depth	
x̄ bankfull width	4 ft
bankfull x̄ depth	1.5ft
W/D ratio	
bankfull max. depth	
floodprone x^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing:



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 41

Stream & Location: Stream 2 / COH Marysville Connector **RM:** _ _ _._ **Date:** 11 / 20 / 19

Scorers Full Name & Affiliation: M. Kearns / Stantec Consulting Services

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 40 . 1959 / 83. 2912 Office verified location ☐

1] SUBSTRATE

Check *ONLY* **Two** substrate *TYPE BOXES*; estimate % or note every type present

Check ONE (*Or 2 & average*)

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☒ HARDPAN [4]	x	
☐ ☐ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☐ COBBLE [8]			☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]			☒ ☐ SILT [2]	x	
☐ ☐ SAND [6]			☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

ORIGIN
- ☐ LIMESTONE [1]
- ☒ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ☒ NORMAL [0]
- ☐ FREE [1]

EMBEDDEDNESS
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☒ NORMAL [0]
- ☐ NONE [1]

Substrate 7 *Maximum 20*

Comments

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

1 UNDERCUT BANKS [1]	POOLS > 70cm [2]	OXBOWS, BACKWATERS [1]
OVERHANGING VEGETATION [1]	ROOTWADS [1]	AQUATIC MACROPHYTES [1]
SHALLOWS (IN SLOW WATER) [1]	BOULDERS [1]	LOGS OR WOODY DEBRIS [1]
ROOTMATS [1]		

AMOUNT

Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ☐ MODERATE 25-75% [7]
- ☒ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20 4

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ☐ MODERATE [3]
- ☒ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☐ GOOD [5]
- ☒ FAIR [3]
- ☒ POOR [1]

CHANNELIZATION
- ☒ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ☐ HIGH [3]
- ☒ MODERATE [2]
- ☐ LOW [1]

Comments

Channel Maximum 20 12

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION L	EROSION R	
☒	☒	NONE / LITTLE [3]
☐	☐	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH L	RIPARIAN WIDTH R	
☐	☐	WIDE > 50m [4]
☒	☒	MODERATE 10-50m [3]
☐	☐	NARROW 5-10m [2]
☐	☐	VERY NARROW < 5m [1]
☐	☐	NONE [0]

FLOOD PLAIN QUALITY L	FLOOD PLAIN QUALITY R	
☐	☐	FOREST, SWAMP [3]
☒	☒	SHRUB OR OLD FIELD [2]
☐	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☐	☐	OPEN PASTURE, ROWCROP [0]

☐	☐	CONSERVATION TILLAGE [1]
☐	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10 8

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check **ONE** (*ONLY!*)
- ☐ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☒ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)
- ☒ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ☐ SLOW [1]
- ☒ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current Maximum 12 2

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☒ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8 0

6] GRADIENT

(32.9 ft/mi)

DRAINAGE AREA

(1.42 mi²)

- ☐ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☒ HIGH - VERY HIGH [10-6]

%POOL: 60 **%GLIDE:** 40

%RUN: 0 **%RIFFLE:** 0

Gradient Maximum 10 8

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☒ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
☒ NORMAL	☐
☐ LOW	☐
☐ DRY	☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☒ OTHER

90 meters

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☒ 20-<40 cm	☐
☐ 40-70 cm	☐
☐ > 70 cm/ CTB	☐
☐ SECCHI DEPTH	☐

CANOPY

- ☒ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

pass 1st _____ cm

pass 2nd _____ cm

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Temp = 7.9 degrees C; pH = 7.6; conductivity = 1.78 micro hos/cm

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

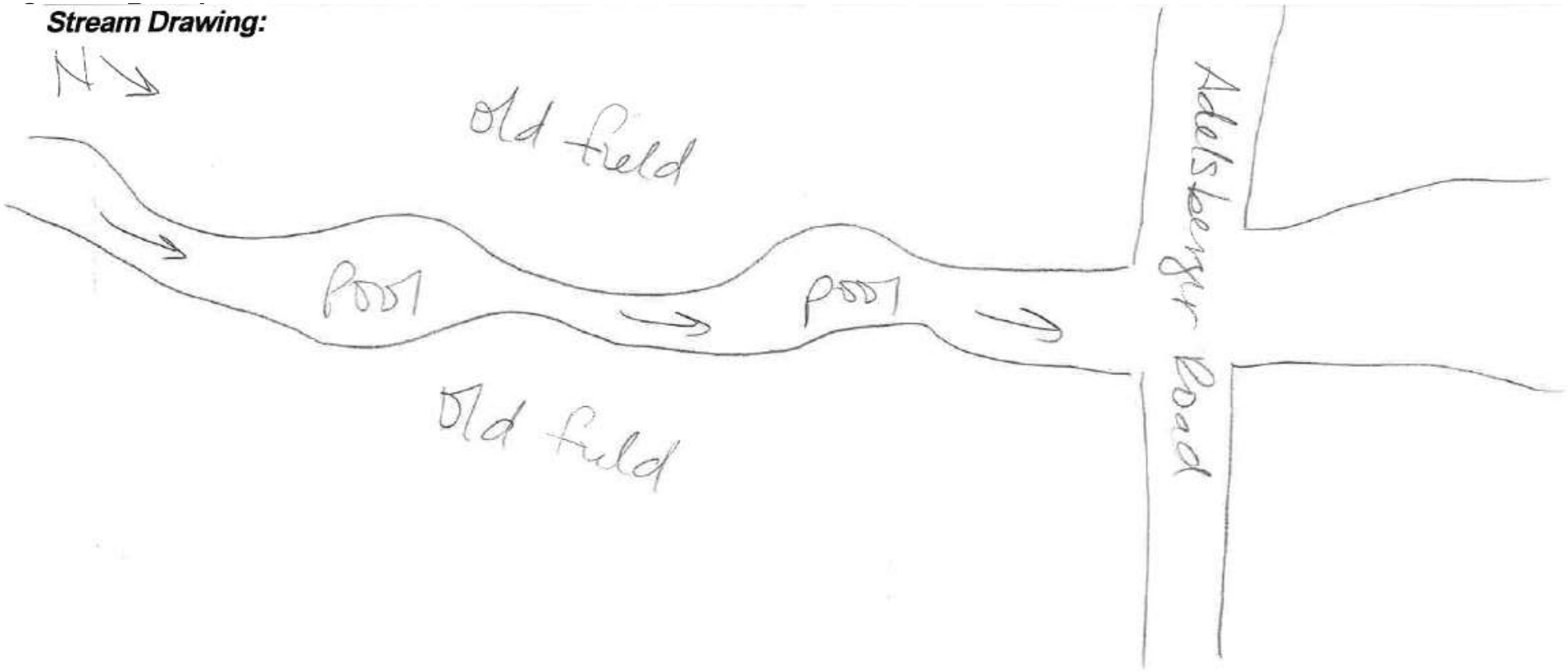
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

x̄ width	2 ft
x̄ depth	0.5 ft
max. depth	
x̄ bankfull width	3.2ft
bankfull x̄ depth	3.5ft
W/D ratio	
bankfull max. depth	
floodprone x^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing:



B.4 HHEI FORMS

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : **31**

SITE NAME/LOCATION: **COH Marysville Connector**

SITE NUMBER: **Stream 3** RIVER BASIN: _____ DRAINAGE AREA (mi²): **0.55**

LENGTH OF STREAM REACH (ft): **144** LAT. **40.19628** LONG. **-83.29725** RIVER CODE: _____ RIVER MILE: _____

DATE: **11/20/19** SCORER: **M. Kearns** COMMENTS: **intermittent, culverted**

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

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

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

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0%	☐	SILT [3 pt]	0%
☐	BOULDER (>256 mm) [16 pts]	0%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐	BEDROCK [16 pt]	0%	☐	FINE DETRITUS [3 pts]	0%
☐	COBBLE (65-256 mm) [12 pts]	0%	☑	CLAY or HARDPAN [0 pt]	100%
☐	GRAVEL (2-64 mm) [9 pts]	0%	☐	MUCK [0 pts]	0%
☐	SAND (<2 mm) [6 pts]	0%	☐	ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: **0.00%** (A) Substrate Percentage Check: 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **0** **TOTAL NUMBER OF SUBSTRATE TYPES:** **1**

HHEI Metric Points

Substrate Max = 40

1

A + B

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

☐	> 30 centimeters [20 pts]	☐	> 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: _____ **MAXIMUM POOL DEPTH (centimeters):** **20**

Pool Depth Max = 30

25

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 (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: _____ **AVERAGE BANKFULL WIDTH (meters):** **0.90**

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

COMMENTS: _____

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

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

COMMENTS: _____

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

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

STREAM GRADIENT ESTIMATE

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

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

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

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☑ EWH Name: Mill Creek Distance from Evaluated Stream 2.00

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

USGS Quadrangle Name: Marysville NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Union Township / City: Millcreek Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 11/11/19 Quantity: 0.11

Photograph Information: upstream, downstream, substrates

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

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

Field Measures: Temp (°C) 7.30 Dissolved Oxygen (mg/l) _____ pH (S.U.) 6.80 Conductivity (µmhos/cm) 2,980

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

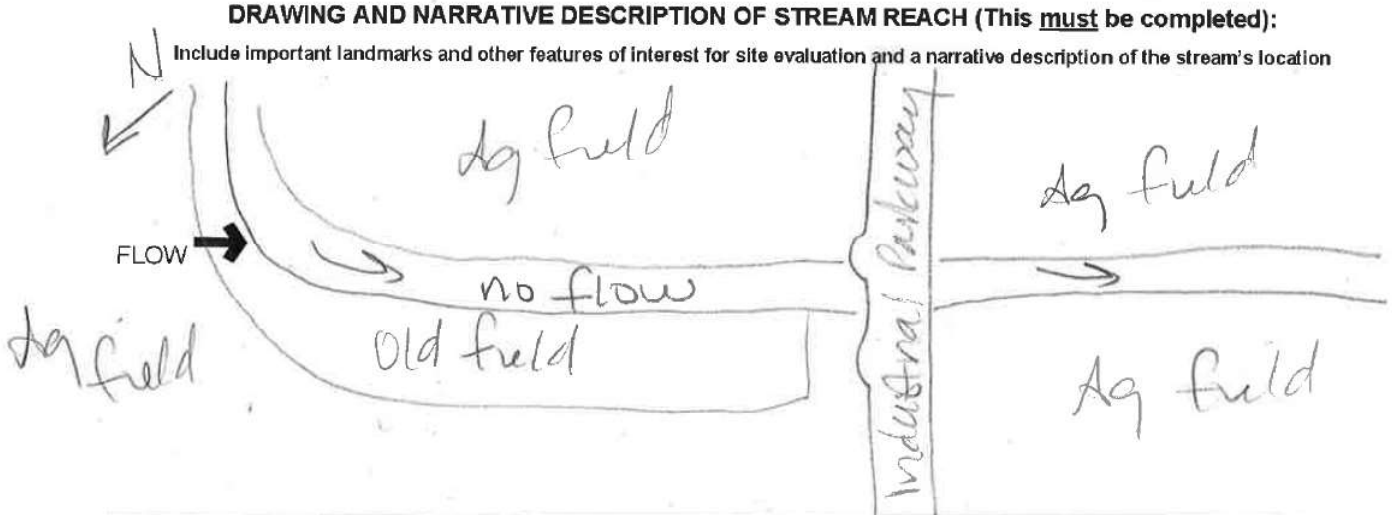
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

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



Save as pdf Reset Form

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 21

SITE NAME/LOCATION: COH Marysville Connector

SITE NUMBER: Stream 4 RIVER BASIN: _____ DRAINAGE AREA (mi^2): 0.53

LENGTH OF STREAM REACH (ft): 92 LAT.: 40.19995 LONG.: -83.30434 RIVER CODE: _____ RIVER MILE: _____

DATE: 11/20/19 SCORER: M. Kearns COMMENTS: ephemeral

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

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

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

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]	0%	☐☐	SILT [3 pt]	0%
☐☐	BOULDER (>256 mm) [16 pts]	0%	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐☐	BEDROCK [16 pt]	0%	☐☐	FINE DETRITUS [3 pts]	0%
☐☐	COBBLE (65-256 mm) [12 pts]	0%	☐☐	CLAY or HARDPAN [0 pt]	100%
☐☐	GRAVEL (2-64 mm) [9 pts]	0%	☐☐	MUCK [0 pts]	0%
☐☐	SAND (<2 mm) [6 pts]	0%	☐☐	ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0.00% (A) Substrate Percentage Check: 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 0 **TOTAL NUMBER OF SUBSTRATE TYPES:** 1

HHEI Metric Points

Substrate Max = 40

1

A + B

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

☐	> 30 centimeters [20 pts]	☑	> 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: _____ **MAXIMUM POOL DEPTH (centimeters):** 8

Pool Depth Max = 30

15

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

☐	> 4.0 meters (> 13') [30 pts]	☐	> 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 (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: _____ **AVERAGE BANKFULL WIDTH (meters):** 0.90

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

COMMENTS: _____

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: _____

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

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

STREAM GRADIENT ESTIMATE

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

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

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

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☑ EWH Name: **Mill Creek** Distance from Evaluated Stream **2.00**

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

USGS Quadrangle Name: **Marysville** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Union** Township / City: **Millcreek Township**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **11/11/19** Quantity: **0.11**

Photograph Information: **upstream, downstream, substrates**

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

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

Field Measures: Temp (°C) **4.70** Dissolved Oxygen (mg/l) _____ pH (S.U.) **6.60** Conductivity (µmhos/cm) **870**

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

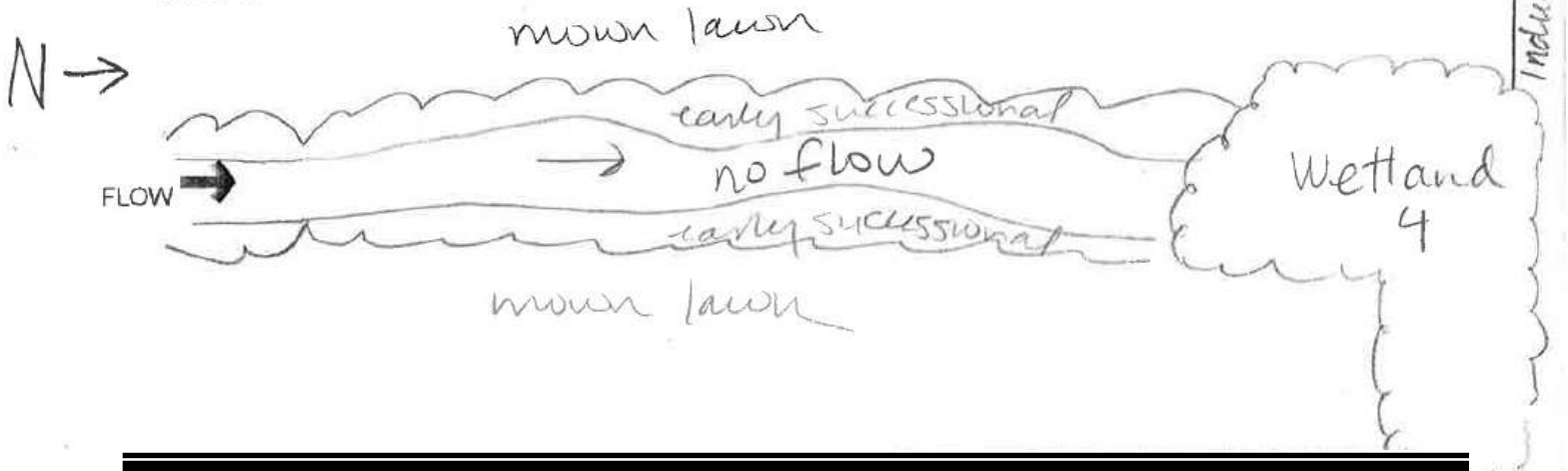
Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

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



Save as pdf Reset Form

Appendix C PHOTOGRAPHS

Photo Location 1.View of cropland habitat. Photograph taken facing northeast.

Photo Location 2. View of cropland habitat. Photograph taken facing southeast.

Photo Location 3. View of cropland habitat. Photograph taken facing south.

Photo Location 4. View of maintained right-of-way and State Route 33. Photograph taken facing west.

Photo Location 5. View of Stream 1. Photograph taken facing upstream, northwest.

Photo Location 5. View of Stream 1. Photograph taken facing downstream, southeast.

Photo Location 5. View of Stream 1, typical substrates.

Photo Location 6. View of Wetland 1 (SP01). Photograph taken facing north.

Photo Location 6. View of Wetland 1 (SP01). Photograph taken facing east.

Photo Location 6. View of Wetland 1 (SP01). Photograph taken facing south.

Photo Location 6. View of Wetland 1 (SP01). Photograph taken facing west.

Photo Location 7. View of Wetland 1 (SP03). Photograph taken facing north.

Photo Location 7. View of Wetland 1 (SP03). Photograph taken facing east.

Photo Location 7. View of Wetland 1 (SP03). Photograph taken facing south.

Photo Location 7. View of Wetland 1 (SP03). Photograph taken facing west.

Photo Location 8. View of old field habitat and cropland habitat. Photograph taken facing northeast.

Photo Location 9. View of developed/urban habitat and maintained right-of-way. Photograph taken facing south.

Photo Location 10. View of maintained lawn habitat. Photograph taken facing east.

Photo Location 11. View of cropland habitat. Photograph taken facing east.

Photo Location 12. View of Stream 2. Photograph taken facing upstream, south.

Photo Location 12. View of Stream 2. Photograph taken facing downstream, north.

Photo Location 12. View of Stream 2, typical substrates.

Photo Location 13. View of Wetland 2. Photograph taken facing north.

Photo Location 13. View of Wetland 2. Photograph taken facing east.

Photo Location 13. View of Wetland 2. Photograph taken facing south.

Photo Location 13. View of Wetland 2. Photograph taken facing west.

Photo Location 14. View of Stream 3. Photograph taken facing upstream, south.

Photo Location 14. View of Stream 3. Photograph taken facing downstream, north.

Photo Location 14. View of Stream 3, typical substrates.

Photo Location 15. View of old field habitat. Photograph taken facing east.

Photo Location 16. View of cropland habitat. Photograph taken facing northwest.

Photo Location 17. View of maintained right-of-way. Photograph taken facing southeast.

Photo Location 18. View of maintained lawn habitat. Photograph taken facing west.

Photo Location 19. View of Wetland 3. Photograph taken facing north.

Photo Location 19. View of Wetland 3. Photograph taken facing east.

Photo Location 19. View of Wetland 3. Photograph taken facing south.

Photo Location 19. View of Wetland 3. Photograph taken facing west.

Photo Location 20. View of Wetland 4. Photograph taken facing north.

Photo Location 20. View of Wetland 4. Photograph taken facing east.

Photo Location 20. View of Wetland 4. Photograph taken facing south.

Photo Location 20. View of Wetland 4. Photograph taken facing west.

Photo Location 21. View of early successional habitat and Stream 4. Photograph taken facing upstream, southwest.

Photo Location 21. View of Stream 4. Photograph taken facing downstream, northeast.

Photo Location 21. View of Stream 4, typical substrates.

Photo Location 22. View of maintained lawn habitat. Photograph taken facing northwest.

Appendix D List of Easements

Columbia Gas of Ohio - Marysville Connector Pipeline Project
List of Easements

Easement No.	Title Owner	Parcel No.	Physical Address	Mailing Address	Legal Description (R-S-T-ML)	Ag. Land District Expiration Date
1	Daniel A. Gamble, Cheryl Burn and Diane Meadows	14-0006012.0000	Watkins California Rd. Marysville, OH 43040	149 Squires Ct. Powell, OH 43065	VMS 3475	No
2	Kauffman Family Farm, LLC	14-0006010.0000	11484 Watkins-California Rd. Marysville, OH 43040	11484 Watkins-California Rd. Marysville, OH 43040	VMS 3475	No
3	Schrader 10944, LLC, an Ohio limited liability company	14-0006008.0000	Watkins California Rd. Marysville, OH 43040	10944 Watkins-California Rd. Marysville, OH 43040	VMS 3475	No
4	Robert Elwood Williams	14-0006006.0000	Watkins California Rd. Marysville, OH 43040	7280 Butler Ave. Plain City, OH 43064	VMS 3475	No
5	Daniel A. Gamble; Cheryl Burns; & Diane Meadows	14-0006004.0020	11981 Watkins California Rd. Marysville, OH 43040	149 Squires Court Powell, OH 43065	VMS 3475	No
6	Walbonns, LLC	14-0005019.0000	Industrial Parkway, Plain City, OH 43064	435 Metro Place N. Suite 460 Dublin, OH 43017	VMS 5166 SPLIT AC TO #26	No, 2014-April 2019
7	Paul L. Jacquemin & Mary M. Jacquemin, for their joint lives with remainder to the survivor of them	14-0005021.0000	11430 Industrial Parkway, Marysville, OH 43040	10030 New California Rd. Plain City, OH 43064	VMS 5166	No
8	Phelps Preferred Investments, LLC	14-0002006.0000	Beecher Gamble Rd Plain City, OH 43064	PO Box 448 Milford Center, OH 43045	VMS 5274	No
9	Denise L. Phillips	14-0002007.0000	12406 Beecher Gamble Rd Marysville, OH 43040	12406 Beecher Gamble Rd. Marysville, OH 43040	VMS 5274	No

Columbia Gas of Ohio - Marysville Connector Pipeline Project
List of Easements

10	N/A - Part of Rt. 536 - Beecher Gamble Rd. ROW	N/A - Part of Rt. 536 - Beecher Gamble Rd. ROW	N/A no Parcel #	N/A - Part of Rt. 536 - Beecher Gamble Rd. ROW	VMS 5274	N/A, no parcel #
11	Phelps Preferred Investments, LLC	14-0002002.0000	Beecher Gamble Rd. Plain City, OH 43064	PO Box 448 Milford Center, OH 43045	VMS 5417	No
12	Phelps Preferred Investments, LLC	25-0009012.0000	Beecher Gamble Rd. Plain City, OH 43064	PO Box 448 Milford Center, OH 43045	VMS 1394	No
13	Daniel L. Adelsberger & Judy A. Adelsberger, husband and wife, for their joint lives, the remainder to the survivor of them	25-0009008.0000	12754 Adelsberger Rd. Marysville, OH 43040	12754 Adelsberger Rd. Marysville, OH 43040	VMS 1394	No
14	Parkway Farms Inc., an Ohio Corp.	25-0009010.0000	Industrial Parkway, Marysville, OH 43040	12678 Industrial Parkway Marysville, OH 43040	VMS 1394	Yes, 2019-2024
15	Patrick Bailey and Whitney Bailey	25-0008014.0000	12860 Industiral Parkway, Marysville, OH 43040	12860 Industrial Parkway, Marysville, OH 43040	VMS 3349	Yes, 2018-2023
16	Charles Peter Renner	25-0008013.0000	13260 Adelsberger Rd. Marysville, OH 43040	10956 Rausch Rd. Marysville, OH 43040	VMS 3349	No
17	Keith Rausch, who receives an undivided one-half interest in the following real estate and Kevin Rausch and Cheryl S. Raush, who receives an undivided one-half interest in the following real estate, as joint tenants with right of survivorship	25-0008009.0000	13482 Industrial Parkway, Marysville, OH 43040	13757 Fladt Rd. Marysville, OH 43040	VMS 3349	Yes, 2019-2024
18	Marysville Commerce One LLC	27-0001028.0000	13311 Industrial Parkway, Marysville, OH 43040	13311 Industrial Parkway Marysville, OH 43040	VMS 3349	No
19	Vayance Technologies, Inc.	27-0001029.0000	13601 Industrial Parkway, Marysville, OH 43040	c/o Continental Inc. 13601 Industrial Parkway Marysville, OH 43040	VMS 3349	No

Appendix E Agency Correspondence

Ohio Department of Natural Resources
MIKE DEWINE, GOVERNOR MARY MERTZ, DIRECTOR

Office of Real Estate
John Kessler, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6621
Fax: (614) 267-4764

December 4, 2019

Charlie Allen
Stantec
1500 Lake Shore Drive Suite 100
Columbus OH 43204-3800

Re: 19-942; Marysville Connector Project

Project: The proposed project involves the construction of a new 12-inch distribution class steel natural gas pipeline, and one district regulator station.

Location: The proposed project is located in Mill Creek Township, Union County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following record at or within a one-mile radius of the project area:

Great blue heron rookery

The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

The project is within the vicinity of records for the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. Presence of the Indiana bat has been established in the area, and therefore additional summer surveys would not constitute presence/absence in the area. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of for the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the Northern rifffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, the elephant-ear (*Elliptio crassidens crassidens*), a state endangered mussel, and the pondhorn (*Uniomerus tetralasmus*), a state threatened mussel. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the Scioto madtom (*Noturus trautmani*), a state endangered and federally endangered fish, and the Tippecanoe darter (*Etheostoma Tippecanoe*), a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, the project is not likely to impact these species.

The project is within the range of the king rail (*Rallus elegans*), a state endangered bird. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to August 1. If no wetland habitat will be impacted, the project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus cyaneus*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species'

nesting period of May 15 to August 1. If this habitat will not be impacted, the project is not likely to impact this species.

The project is within the range of the loggerhead shrike (*Lanius ludovicianus*), a state endangered bird. The loggerhead shrike nests in hedgerows, thickets and fencerows. They hunt over hayfields, pastures, and other grasslands. If thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 to August 1. If this habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Sarah Tebbe, Environmental Specialist, at (614) 265-6397 or Sarah.Tebbe@dnr.state.oh.us if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

From: susan_zimmermann@fws.gov on behalf of Ohio, FW3
To: Allen, Charlie; nathan.reardon@dnr.state.oh.us; kate.parsons@dnr.state.oh.us
Subject: Columbia Gas, Marysville Connector, Union County (Stantec File: 193707055)
Date: Tuesday, November 19, 2019 1:45:27 PM

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
Ecological Services Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / Fax (614) 416-8994

TAILS#03E15000-2020-TA-0229

Dear Mr. Allen,

We have received your recent correspondence requesting information about the subject proposal. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

FEDERALLY LISTED SPECIES COMMENTS: All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags =3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves and abandoned mines.

The proposed project is in the vicinity of one or more confirmed records of Indiana bats. Therefore, we recommend that trees =3 inches dbh be saved wherever possible. Because the

project will result in a small amount of forest clearing relative to the available habitat in the immediately surrounding area, habitat removal is unlikely to result in significant impacts to these species. Since Indiana bat presence in the vicinity of the project has been confirmed, clearing of trees =3 inches dbh during the summer roosting season may result in direct take of individuals. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and tree removal is unavoidable, we recommend that removal of any trees =3 inches dbh only occur between October 1 and March 31. Following this seasonal tree clearing recommendation should ensure that any effects to Indiana bats and northern long-eared bats are insignificant or discountable. **Please note that, because Indiana bat presence has already been confirmed in the project vicinity, any additional summer surveys would not constitute presence/absence surveys for this species.**

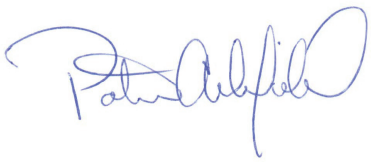
If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at john.kessler@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,



Patrice M. Ashfield
Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Kate Parsons, ODNR-DOW

Appendix F Inadvertent Release Plan

Columbia Gas

Marysville Connector Pipeline Project

SPCC Plan for Drill Fluids & Cuttings

1 Introduction

Horizontal directional drilling is recognized as the least environmentally disturbing construction technique available for installing pipelines under rivers and other obstacles. The primary alternative to HDD would be open trenching.

The measures presented in this plan will become integral components in the construction procedure.

The equipment to be used in an HDD operation includes: HDD rig, power unit/control cab, mud pump, mud mixing/cleaning plant, backhoe, crane, and other miscellaneous support supplies and equipment.

2 Purpose of the plan

The purpose of this plan is to establish monitoring and response criteria that will minimize the environmental effects of the HDD operation. In particular this plan addresses the containment and control of drilling fluids. The HDD operation uses drilling fluid to facilitate the drilling of a borehole and installation of the product pipe. The fluid also serves to stabilize the surrounding formations and provide a seal that reduces the risk of the fluid migrating into the formation. The fluid is composed of naturally occurring clay and water. The clay is insoluble and made up of small particles that function as both a lubricant for the drill head and pipe and a sealant that fills the pore spaces surrounding the drill hole. Various benign, non-toxic additives may be added to the drilling fluid to optimize its properties.

3 Loss or release of Drilling fluid

With HDD, it is possible that some of the drilling fluids will be lost in fractures within the formation. In cases where the fracture is horizontal these lost fluids will not surface. While it is not anticipated, in other cases, drilling fluids may reach the surface (e.g., the fracture comes close enough to the surface that the pressure causes the release of drilling fluid above ground). Such a release is termed an inadvertent return.

A key to containing and controlling an inadvertent return is early detection and quick response by the HDD crew. This plan will identify the activities to be monitored and appropriate response actions to be taken to ensure that any release of drilling fluid is minimized. The plan outlines a process of monitoring the drilling fluid in order to identify a loss-of-returns situation and to determine if there is a release to the surface. Specific

measures to be taken to reduce the amount and likelihood of surfacing drilling fluid, and other actions to be taken, are included.

As stated above, the drilling fluid mixture typically consists of water and bentonite clay. Inert, non-toxic polymers may be added to the mixture to improve its properties. In the event of an inadvertent return Lost Circulation Materials (LCM) may also be added to the fluid. LCM's typically include cotton dust, cottonseed hulls, wood fiber, and mica and cedar fiber.

4 HDD installation process

A typical HDD installation starts with drilling a small diameter pilot hole. The pilot hole is then enlarged in successive increments until its diameter is large enough to accommodate the product pipe. This enlarging process is termed "reaming". Finally the previously assembled string of product pipe is pulled into the bore.

4.1 Pilot hole drilling

The drilling of the pilot hole includes the use of drilling fluid to run the drill motor or jet bit to cut through the earth material, to seal off fractures in the formation, to lubricate the drill pipe during installation, and to remove the drilled soil or cuttings from the bore. The drilling fluid is pumped down the inside of the drill pipe and exits through the drill bit. The fluid then can return to the surface at the rig site through the annular space between the outside of the drill pipe and the borehole. The fluid returning to the drill site is called "returns". At the beginning of the pilot hole, a large percentage of the drilling fluid returns to the rig site. As the drill progresses, more of the returns are absorbed by the earth or rock formation and are not returned to the rig site. At some point, gravity and friction overtake the ability of the fluid to return to the drill site. It is not uncommon to not have any of the fluid return to the drill site during the majority of the bore, without any release of the fluid to the surface. The drilling fluid is usually absorbed by the formation or is drawn down into fractures. It is important to understand that a loss of returns, even a complete loss of returns, is a fairly normal occurrence during HDD that does not necessarily mean the drilling fluid is coming to the surface or impacting the river bottom environment.

When the pilot hole is completed and the drill bit "punches out", a relatively small quantity of drilling fluid will be released at this surface point; however, it will be quickly contained and controlled.

4.2 Reaming and pipe pulling

Reaming will be carried out in either the same or the opposite direction from pilot hole drilling whereas pipe will be pulled in from the opposite direction. The reamer will progress from one end to the other of the drilled hole. During reaming and pipe pulling a considerable percentage of the drilling fluid used will exit the borehole at either the "entry point" or the "exit point". The returns emitted at both sites will be collected and cleaned for recycling. Normally the primary "cleaning plant" will be located at the "entry point" next

to the rig, therefore returns from the "exit point" must be cleaned with a second "pipeside" plant, or pumped back to the rig side via a "return line", or collected and trucked back via vac trucks.

During reaming and pipe pulling, drilling fluid may be lost into the surrounding formation in much the same manner as during the drilling of the pilot hole. The only significant difference is that the volumes of fluid that are used are larger.

During drilling of the pilot hole, reaming or pipe pulling, a complete and sudden loss of returns could be an indication that a significant ground fracture has been encountered. In most cases, the drilling fluids are drawn down by gravity or seal off the fracture. A complete and sudden loss of returns is a signal to the HDD crew to watch closely for a possible surface release. This plan uses this, as well as visual indications, as triggers for response and mitigation actions.

5 Typical Control Measures used

Typical measures that are put in place to ensure that a release of drill fluid will be effectively dealt with include the following:

5.1 Training

Supervisory and other key personnel that will be on site will have received training with respect to the control and containment of drilling fluid. The training includes:

- the details of this plan,
- the need for environmental protection,
- environmental resources located at or near the site,
- specific permitting conditions and requirements,
- the need to monitor the HDD operation,
- lines of communication,
- lines of authority and responsibility,
- the information the HDD contractor will need to provide to the Owner and other site representatives,
- contact names and phone numbers of the appropriate individuals and agencies, and
- Events that need to be reported and to whom.

5.2 HDD Monitoring

The site superintendent has the overall responsibility for monitoring the HDD operations for inadvertent returns. He may delegate this responsibility as he sees fit. The drill rig operator or driller is the individual who is responsible for monitoring drilling fluid pressures and fluid returns. In the event of a significant drop in down hole fluid pressure or fluid

returns the driller will notify the site superintendent. The superintendent, with the assistance of the more senior crewmembers is also responsible for visually monitoring the length of the bore for inadvertent returns.

During the clean up of spilled drilling fluid, the characteristics of the fluid released, quantities of fluid being cleaned up, the extent of the release and any apparent effects, and general progress of work will be documented in the daily reports submitted to the Owner and in the driller's log.

5.3 Response & Notification

The HDD contractor shall immediately notify Owner's representative of any sudden losses in returns or any inadvertent returns. If an inadvertent return to the ground surface or into the river bottom is observed, the HDD contractor will take certain reasonable actions to eliminate, reduce, or control the release. The actions to be taken will depend on the location and time of release, the geologic conditions there and the volume of the release. This section outlines the response measures that will be implemented for inadvertent returns to the ground surface or into a river bottom.

5.4 Inadvertent return to the Ground Surface

If a release occurs in an upland area, the HDD contractor will take appropriate reasonable actions to reduce, eliminate or control the release. The actions to be taken will depend on the location of the release point and the amount of fluid being released. The actions may include:

- Constructing a small pit or sand bag coffer around the release point, installing a section of geotextile filter fabric ("silt fence") and or hay bales to trap as much sediment as possible, and placing a pump hose in the pit to pump the drilling fluid back to the bore site.
- Using a Vac Truck to clean up and return the drilling fluids to the bore site to be recycled or if drill fluids are deemed unrecyclable take them to the pre approved disposal site.
- Reducing drilling fluid pressures,
- Thickening drilling fluid mixture, and
- Adding pre-approved loss circulation materials (LCM's) to the fluid mixture
- Ceasing pumping operations

Which of these actions will be implemented will depend on the specific boring conditions at the time of the release and the volume of the release. The HDD contractor, in consultation with the Owner, will determine which methods are the most appropriate to eliminate, reduce or control the release. Drilling fluid that is recovered will be recycled and reused to the extent that is practical. The HDD contractor will document the nature of the release including physical characteristics of the fluid, the location and extent (area, estimated volume and duration), the modified procedures used to reduce the rate of

leakage, and the extent to which these measures are successful in controlling or eliminating the release.

5.5 Inadvertent return into a River Bottom

If an underwater release occurs, the HDD contractor will take appropriate reasonable actions to reduce, eliminate or control the release. The actions to be taken will depend on the location of the release point and the amount of fluid being released. The actions may include:

- reducing drilling fluid pressures,
- thickening drilling fluid mixture,
- adding pre-approved loss circulation materials (LCM's) to the fluid mixture, or
- ceasing pumping operations

The measures listed above can be used to limit or possibly stop the release of drilling fluid onto the river bottom. Which of these measures will be used will depend on the specific boring conditions at the time of the release and the volume of the release. The HDD contractor, in consultation with the Owner, will determine which methods are the most appropriate to eliminate, reduce or control the release. The HDD contractor will document the nature of the release including physical characteristics of the fluid, the location and extent (area, estimated volume and duration), the modified procedures used to reduce the rate of leakage, and the extent to which these measures are successful in controlling or eliminating the release.

5.6 Returns to entry and exit points

Measures will be implemented to contain and control the drilling fluid at the HDD crossing entry point and exit point. These measures typically consist of the excavation of a small containment pit around the points. Pumps will be used to remove any fluid that collects in the pit and pump it to either a fluid cleaning system or to a steel storage tank. All drilling fluid that is recovered will be recycled and reused. It is normal that drilling fluid is spilled on the drill rig when threaded connections in the drill string are broken. This fluid will be contained and directed by means of a shallow trench to the entry pit where it will be collected and recycled.

5.7 Documentation

The daily reports that will be submitted to the Owner and the drillers log will contain all relevant information pertaining to any inadvertent returns and the measures implemented to contain and control them.

5.8 Cleanup

Immediately following the successful completion of the pipeline pullback, the HDD contractor will clean all affected areas of trash and debris. All excess drilling fluids remaining in pits and tanks will be collected and disposed of by:

- farming into the permanent ROW if permitted, or
- hauling to pre-approved disposal areas
- Final cleanup must be acceptable to the landowner, the project Owner, and controlling local, state and federal agencies.

5.9 Hole Abandonment Procedure

Abandoned drill holes penetrating unconsolidated materials or fractured bedrock should be sealed by grouting the entire length of the hole.

Drilled holes that have been contaminated or may cause an environmental hazard should be sealed by the pressure grout method. This is done with a conductor pipe, called a tremie pipe, starting at the end of the drill hole and slowly pulling the conductor pipe toward the entry point at a rate no faster than the grout material fills and displaces water from the hole and until the hole is completely filled. The grout mixture used should be a Portland cement mixed with 2 to 10 percent high solids bentonite clay mixed according to the correct water-to-cement ratio. Commercially available premixed bentonite grout designed for sealing wells may also be used. Drill pipe may be used as conductor pipe.

Abandonment must be acceptable to the landowner, the project Owner, and controlling local, state and federal agencies.

5.10 Post Project follow-up

Post project follow-up will only be necessary if a major or sustained release of drilling fluid occurs. The post project follow-up will include:

- video taping the locations where the release occurred
- determining if environmental impact has occurred, and
- developing remediation actions in conjunction with the appropriate agencies