

September 2021 Memo Report

Date:	September 29, 2021
Project No./Name:	R210388.05.200 / Ohio Valley Connector Expansion Plasma Compressor Station Wetland Delineation and Stream Identification Memo Report
Client Name:	Equitrans, L.P.
Trip Purpose:	Stream and Wetland Delineation
Trip Date(s):	September 15, 2021
GAI Personnel:	Cameron Krivich
cc:	Erin Debias, Equitrans Midstream

Summary of Events

GAI Consultants, Inc. (GAI) completed wetland delineations and stream identification field work on September 15, 2021 for Equitrans, L.P. (Equitrans), regarding the Ohio Valley Connector Expansion (Project) located in Monroe County, Ohio (OH). The Project involves the addition of one Titan T130 compressor unit to the existing Plasma Compressor station, and the additional mechanical and electronic equipment to support the horsepower increase. All work will be defined to the existing station limits and access roads.

Wetland delineations were conducted in accordance with the 1987 United States Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain Piedmont Region (Version 2.0)* (USACE, 2012). Wetlands were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Classification of the indicator status of vegetation is based on the North American Digital Flora: National Wetland Plant list, version 3.4 (USACE, 2018). Generally, waterbodies were identified as an environmental feature that has defined bed and banks, ordinary high water mark, and contain flowing or standing water for at least a portion of the year. Watercourses exhibiting a bed and bank within the study area were field-classified as perennial, intermittent, or ephemeral, based on estimated permanence or duration of in accordance with the Navigable Waters Protection Rule (final rule signed January 23, 2020).

No streams or wetlands were identified within the approximate 14.8-acre study area that encompasses the proposed Project workspaces and access roads.

Project mapping is provided in **Attachment A**. General photographs taken within the study area are provided in **Attachment B**. Descriptions of soils found within the Project study area are provided in **Attachment C**. Resumes of the personnel conducting the delineations are found in **Attachment D**.

Signed and Dated: **Jennifer Broush**

Digitally signed by Jennifer Broush
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email=j.broush@gaiconsultants.com,
c=US
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Printed Name: Jennifer C. Broush, MBA, Associate / Director, Environmental and Energy Services

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Attachment A Project and Resource Location Mapping

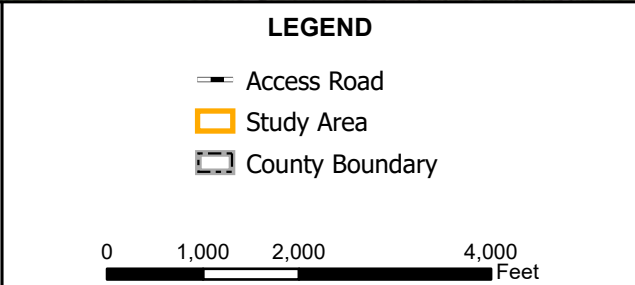
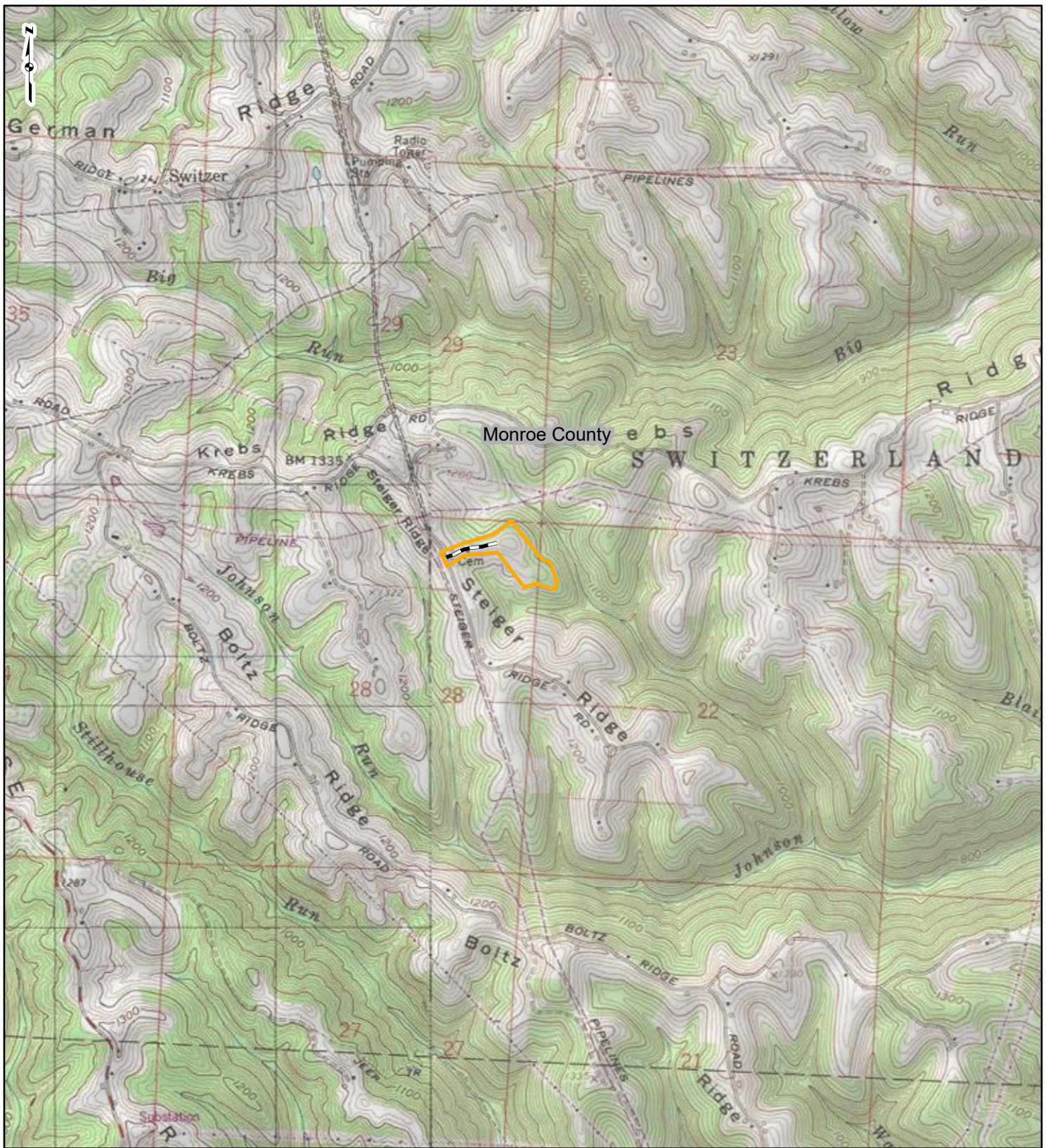




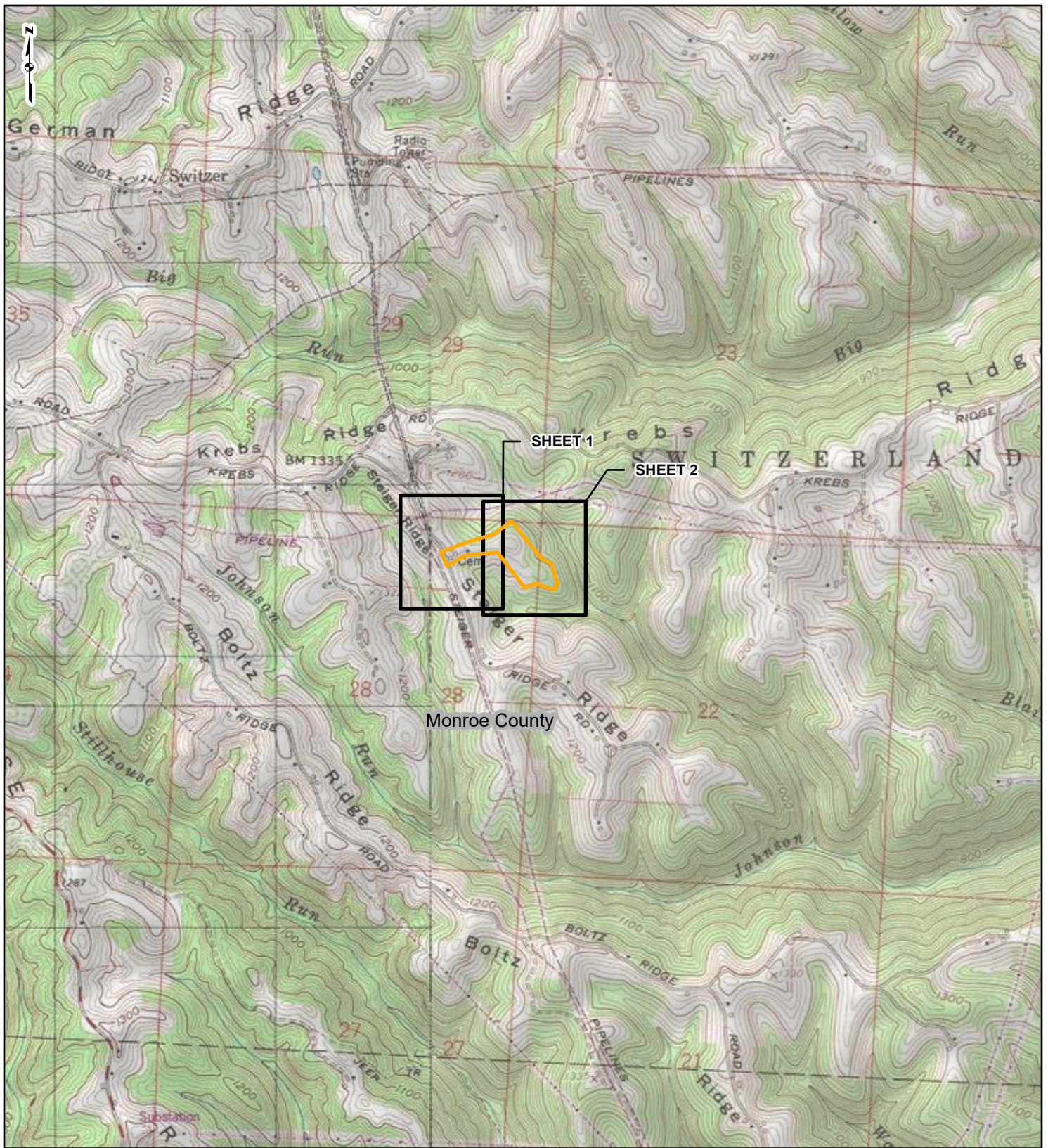
FIGURE 1
PROJECT LOCATION MAP
SHEET 1 OF 1

OHIO VALLEY CONNECTOR EXPANSION
EQUITRANS, L.P.

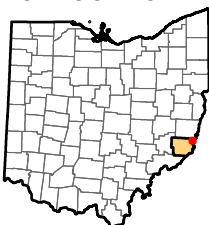



DRAWN BY: TAF DATE: 10/26/2021
CHECKED: TDB APPROVED: JJP

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: CAMERON (1978)
POWHATAN POINT (1978), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, ACCESSED 10/26/2021






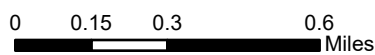
PROJECT LOCATION



MONROE COUNTY, OHIO

LEGEND

-  Study Area
-  Sheet Index
-  County Boundary



**FIGURE 2
RESOURCE LOCATION MAP
SHEET INDEX**

OHIO VALLEY CONNECTOR EXPANSION
EQUITRANS, L.P.

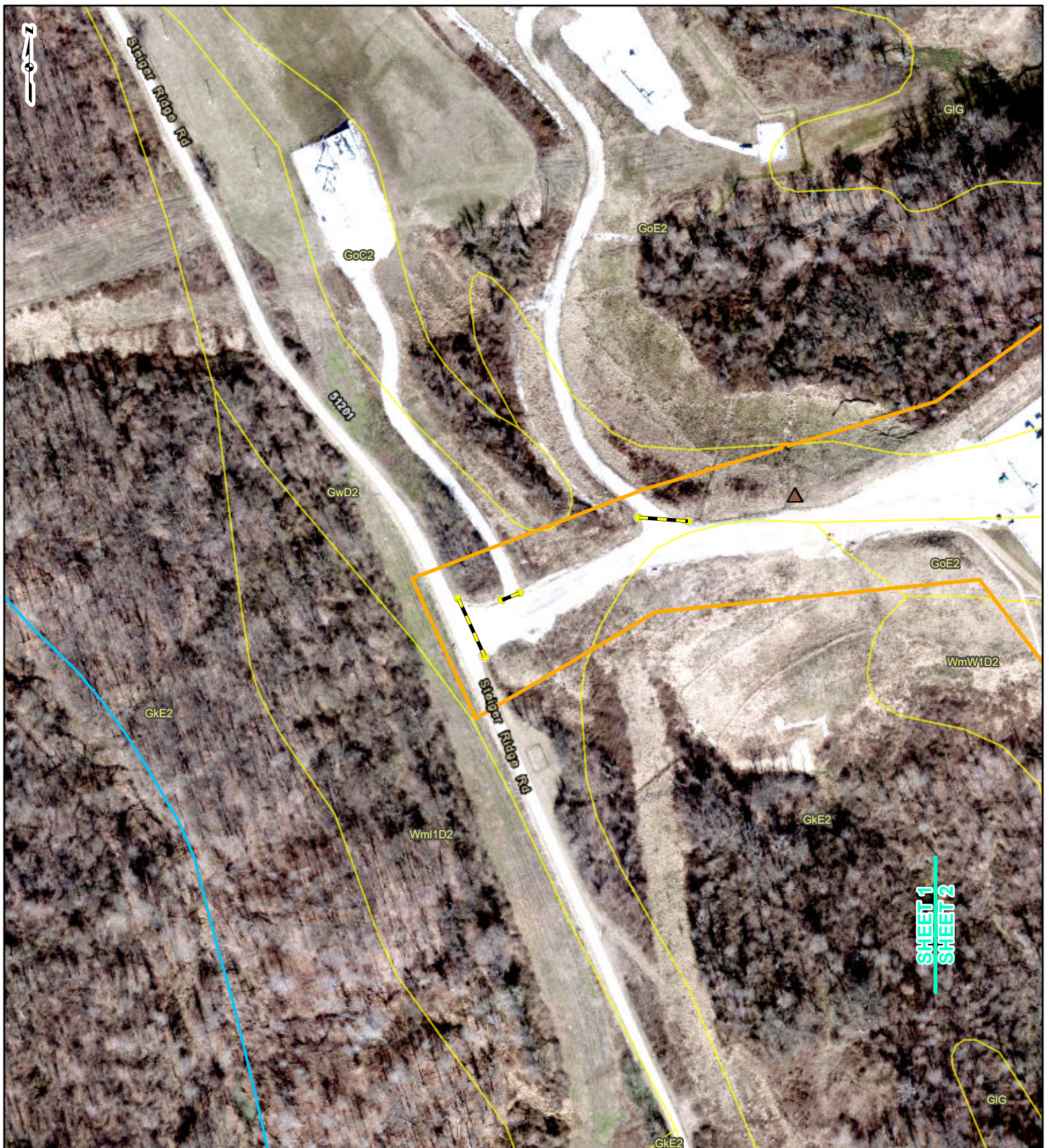


EQUITRANS

DRAWN BY: TAF
CHECKED: TDB

DATE: 10/26/2021
APPROVED: JJP

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES OBTAINED THROUGH ESRI USA TOPO MAPS, ACCESSED 10/26/2021



PROJECT LOCATION

MONROE COUNTY, OHIO

LEGEND

Study Area	Soil Test Pit	NHD Stream
Culvert	Upland Data Point	NWI Wetland
Culvert Point	Wetland Data Point	100-Year FEMA Floodplain
Groundwater Seep	Wetland Open End	Soil Type Boundary
Stream	Wetland	

0 100 200 400 Feet

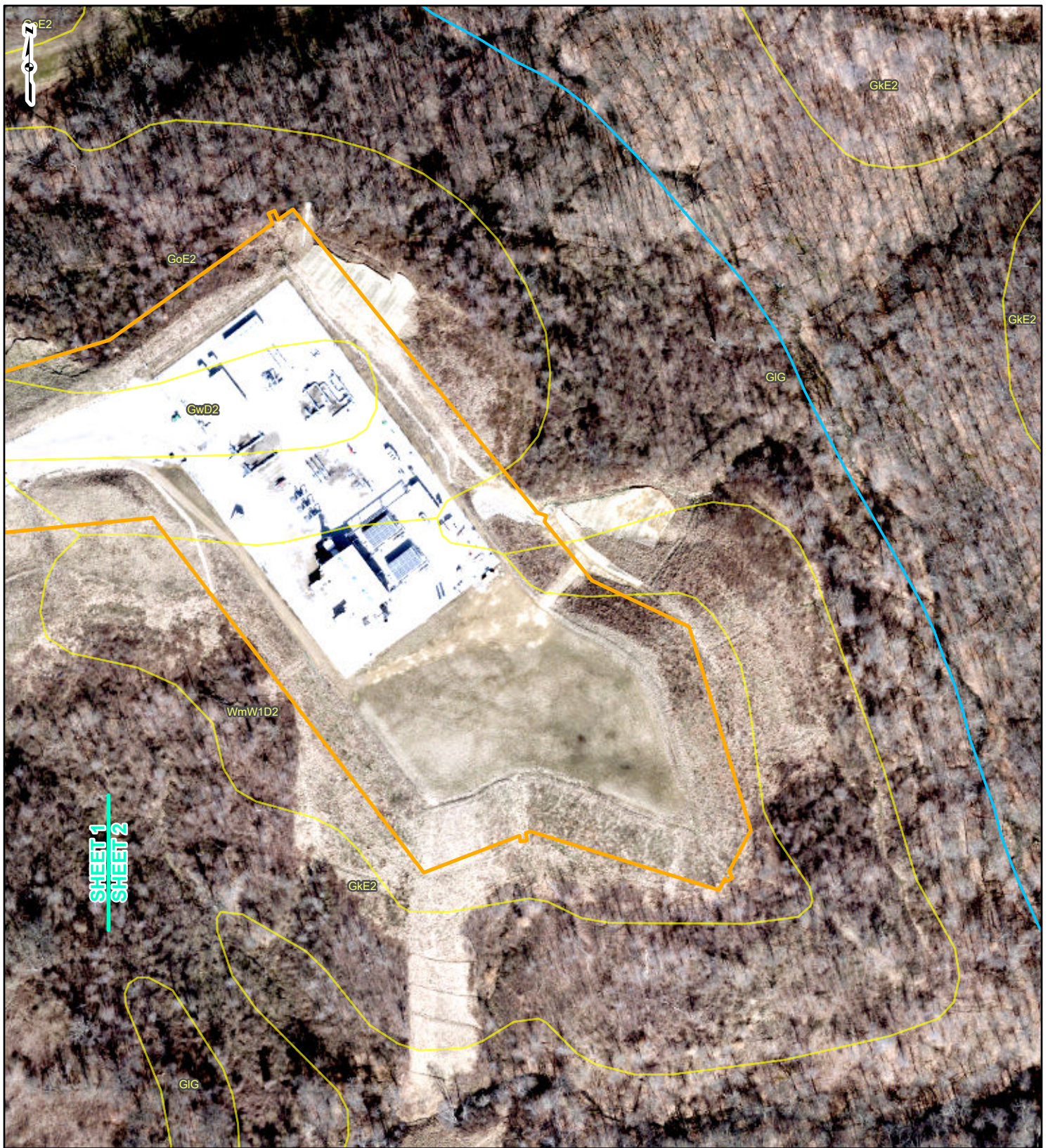
**FIGURE 2
RESOURCE LOCATION MAP
SHEET 1 OF 2**

OHIO VALLEY CONNECTOR EXPANSION
EQUITRANS, L.P.

gait.com/ohio/ohio

DRAWN BY: TAF DATE: 10/26/2021
CHECKED: TDB APPROVED: JJP

REFERENCE:
 ESRI WORLD TRANSPORTATION, AND OSIP 2020 6-INCH AERIAL IMAGERY, ACCESSED 10/26/2021
 USGS NATIONAL HYDROGRAPHY DATASET (NHD), (6/16/2020), USFWS NATIONAL WETLANDS INVENTORY (NWI), (10/1/2020), FEMA NATIONAL FLOOD HAZARD LAYER (NFHL) STATEWIDE, (7/26/2021), SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE, USDA/NRCS, (6/1/2020).
 G:\R210388.00 - GIS\AGPIR210388_00_EQM_Expansion\R210388_00_OVCC_Expansion_MAIN_Data_Editing_WDSIR_USFWS_Maps.aprx\R210388_00_WDSIR_Fig2_Resource_Location_Map



SHEET 1
SHEET 2

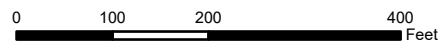
PROJECT LOCATION



MONROE COUNTY, OHIO

LEGEND

- | | | |
|------------------|--------------------|--------------------------|
| Study Area | Soil Test Pit | NHD Stream |
| Culvert | Upland Data Point | NWI Wetland |
| Culvert Point | Wetland Data Point | 100-Year FEMA Floodplain |
| Groundwater Seep | Wetland Open End | Soil Type Boundary |
| Stream | Wetland | |



**FIGURE 2
RESOURCE LOCATION MAP
SHEET 2 OF 2**

OHIO VALLEY CONNECTOR EXPANSION
EQUITRANS, L.P.



EQUITRANS

DRAWN BY: TAF
CHECKED: TDB

DATE: 10/26/2021
APPROVED: JJP

REFERENCE:
ESRI WORLD TRANSPORTATION, AND OSIP 2020 6-INCH AERIAL IMAGERY, ACCESSED 10/26/2021
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Attachment B Photographs

Site Photographs



Photo 1: Open field, located in West end of Study Area



Photo 2: Existing Station Pad



Photo 3: Existing Access Road



Photo 4: Existing Access Road traversing Project Area



Photo 5: Existing Access Road Entrance

September 2021 Memo Report

Attachment C Descriptions of Soils Found Within the Project Study Area



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Monroe County, Ohio

R210388_00_Study_Areas_Merge
d_OH_2021_09_27



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

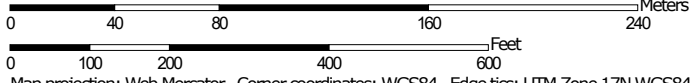
The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:2,890 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)


Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit


 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water


 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole


 Slide or Slip


 Sodic Spot


 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Monroe County, Ohio
 Survey Area Data: Version 17, Sep 9, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2014—Nov 5, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GkE2	Gilpin-Upshur complex, 18 to 35 percent slopes, moderately eroded	1.1	7.2%
GIG	Gilpin-Upshur complex, very steep, benched	0.3	2.1%
GoC2	Gilpin-Westmoreland silt loams, 6 to 12 percent slopes, moderately eroded	0.0	0.0%
GoE2	Gilpin-Westmoreland silt loams, 18 to 35 percent slopes, moderately eroded	3.5	23.7%
GwD2	Guernsey-Westmore silt loams, 12 to 18 percent slopes, moderately eroded	3.6	24.1%
WmW1D2	Westmoreland-Woodsfield silt loams, 12 to 18 percent slopes, eroded	6.4	43.0%
Totals for Area of Interest		14.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

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given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Monroe County, Ohio

GkE2—Gilpin-Upshur complex, 18 to 35 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 11lh
Elevation: 620 to 1,390 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Gilpin and similar soils: 60 percent
Upshur and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: channery silt loam
H3 - 23 to 30 inches: channery silt loam
H4 - 30 to 32 inches: unweathered bedrock

Properties and qualities

Slope: 18 to 35 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Upshur

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 35 inches: clay
H3 - 35 to 46 inches: channery silty clay loam
H4 - 46 to 56 inches: weathered bedrock

Properties and qualities

Slope: 18 to 35 percent
Depth to restrictive feature: 40 to 72 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Wellston

Percent of map unit: 2 percent
Landform: Hills

Coolville

Percent of map unit: 2 percent
Landform: Hills

Summitville

Percent of map unit: 2 percent
Landform: Hills

Rarden

Percent of map unit: 2 percent
Landform: Hills

Woodsfield

Percent of map unit: 2 percent
Landform: Hills

GIG—Gilpin-Upshur complex, very steep, benched

Map Unit Setting

National map unit symbol: 11In
Elevation: 620 to 1,360 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Gilpin and similar soils: 60 percent
Upshur and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: channery silt loam
H3 - 23 to 30 inches: channery silt loam
H4 - 30 to 32 inches: unweathered bedrock

Properties and qualities

Slope: 35 to 70 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Upshur

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 35 inches: clay
H3 - 35 to 46 inches: channery silty clay loam
H4 - 46 to 56 inches: weathered bedrock

Properties and qualities

Slope: 35 to 70 percent
Depth to restrictive feature: 40 to 72 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Wellston

Percent of map unit: 2 percent
Landform: Hills

Stones or boulders on the surface

Percent of map unit: 2 percent

Seeps

Percent of map unit: 2 percent

Woodsfield

Percent of map unit: 2 percent
Landform: Hills

Summitville

Percent of map unit: 1 percent
Landform: Hills

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: Unranked

**GoC2—Gilpin-Westmoreland silt loams, 6 to 12 percent slopes,
moderately eroded**

Map Unit Setting

National map unit symbol: 111s
Elevation: 710 to 1,500 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Gilpin and similar soils: 60 percent
Westmoreland and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: channery silt loam
H3 - 23 to 30 inches: channery silt loam
H4 - 30 to 32 inches: unweathered bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Custom Soil Resource Report

Hydrologic Soil Group: C
Hydric soil rating: No

Description of Westmoreland

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 38 inches: channery silt loam
H3 - 38 to 56 inches: very channery silt loam
H4 - 56 to 58 inches: unweathered bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Zanesville

Percent of map unit: 3 percent
Landform: Hills

Wellston

Percent of map unit: 3 percent
Landform: Hills

Stones on the surface

Percent of map unit: 2 percent

Severely eroded areas

Percent of map unit: 2 percent

**GoE2—Gilpin-Westmoreland silt loams, 18 to 35 percent slopes,
moderately eroded**

Map Unit Setting

National map unit symbol: 11lw
Elevation: 620 to 1,500 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Gilpin and similar soils: 60 percent
Westmoreland and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 23 inches: channery silt loam
H3 - 23 to 30 inches: channery silt loam
H4 - 30 to 32 inches: unweathered bedrock

Properties and qualities

Slope: 18 to 35 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e

Custom Soil Resource Report

Hydrologic Soil Group: C
Hydric soil rating: No

Description of Westmoreland

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 38 inches: channery silt loam
H3 - 38 to 56 inches: very channery silt loam
H4 - 56 to 58 inches: unweathered bedrock

Properties and qualities

Slope: 18 to 35 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Bedrock greater than 6 feet

Percent of map unit: 3 percent

Upshur

Percent of map unit: 3 percent
Landform: Hills

Wellston

Percent of map unit: 2 percent
Landform: Hills

Summitville

Percent of map unit: 2 percent
Landform: Hills

**GwD2—Guernsey-Westmore silt loams, 12 to 18 percent slopes,
moderately eroded**

Map Unit Setting

National map unit symbol: 11m9
Elevation: 850 to 1,220 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 120 to 172 days
Farmland classification: Not prime farmland

Map Unit Composition

Guernsey and similar soils: 70 percent
Westmore and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guernsey

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium over residuum

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 20 inches: silty clay loam
H3 - 20 to 46 inches: clay
H4 - 46 to 80 inches: silty clay
H5 - 80 to 90 inches: weathered bedrock

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: 40 to 84 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Forage suitability group: Unnamed (G126XYA-6OH)
Other vegetative classification: Unnamed (G126XYA-6OH)
Hydric soil rating: No

Description of Westmore

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess over residuum

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 51 inches: silty clay loam
H3 - 51 to 68 inches: clay
H4 - 68 to 70 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Forage suitability group: Unnamed (G126XY000OH)
Other vegetative classification: Unnamed (G126XY000OH)
Hydric soil rating: No

Minor Components

Sandstone and limestone on the surface

Percent of map unit:

WmW1D2—Westmoreland-Woodsfield silt loams, 12 to 18 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2n9wy
Elevation: 800 to 1,500 feet
Mean annual precipitation: 38 to 45 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Westmoreland and similar soils: 45 percent
Woodsfield and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Westmoreland

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Fine-loamy residuum weathered from interbedded sedimentary rock

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 40 inches: silty clay loam
C - 40 to 52 inches: very channery silt loam
R - 52 to 54 inches: bedrock

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: 38 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.07 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Forage suitability group: Unnamed (G126XYA-1OH)
Other vegetative classification: Unnamed (G126XYA-1OH)
Hydric soil rating: No

Description of Woodsfield

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Fine-silty loess over clayey residuum

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 20 inches: silty clay loam
2Bt - 20 to 36 inches: silty clay
2C - 36 to 44 inches: clay
2Cr - 44 to 46 inches: bedrock

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: 38 to 60 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Forage suitability group: Unnamed (G126XYA-1OH)
Other vegetative classification: Unnamed (G126XYA-1OH)
Hydric soil rating: No

Minor Components

Guernsey

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

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Dormont

Percent of map unit: 7 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

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Attachment D Resumes



Cameron D. Krivich

Senior Environmental Specialist Professional Summary

Education

BS, Biology, 2011, University of Pittsburgh

Skills

Biology

Environmental Investigations and Analysis

Wetland and Stream Delineation

Threatened and Endangered Species

Environmental Permitting

Cultural Resources

■ Certifications / Training

40-Hour Wetland Delineation Course

PA DCNR Wild Plant Management Permit

Scientific Collectors Permit

Ohio Wetland/Stream Training

MSHA Safety Training

CNX On-Site Safety Training

OSHA 10 Hr. Construction Industry
Training

Pymatuning Laboratory of Field Ecology
Course in Forest Ecology

Industry Experience

GAI Consultants, Inc., 2011-Present

Villa St. Joseph, 2006-2011

UPMC Children's Hospital of Pittsburgh,
2008-2009

Mr. Krivich specializes in environmental field studies including wetland and stream delineations, rare/threatened/endangered (RTE) species surveys, habitat assessments, soil/water sampling, wetland monitoring, Global Positioning System operation/data collection, and writing supportive wetland reports/documents for natural gas and environmental projects. He also has experience in macroinvertebrate surveys, ArcGIS, biological laboratory work, environmental permitting, surveying, and cultural resources investigations.

Professional Experience

- Over 50 Pipeline Projects, various locations. Senior Environmental Specialist. Performed various tasks including: wetland/stream delineations; Indiana bat telemetry surveys; cultural resources surveys; RTE surveys and habitat assessments; macroinvertebrate stream surveys; invasive species monitoring; and wetland monitoring.
- Over 20 Transmission Line Projects, various locations. Senior Environmental Specialist. Performed various tasks including: wetland/stream surveys; wetland monitoring; RTE surveys; cultural resources survey; wetland/stream delineations; and surveying.
- Four Well Pad Projects, various locations. Senior Environmental Specialist. Performed various tasks including: wetland/stream delineation and RTE habitat assessments.
- Five Compressor Station Projects, various locations. Senior Environmental Specialist. Performed various tasks including: wetland/stream delineation; wetland/stream survey; Massasauga rattlesnake survey; and RTE plant survey/habitat assessment.
- Three Generating Station Projects, various locations. Senior Environmental Specialist. Performed various tasks including: RTE survey and wetland/stream delineation.

Publications / Presentations

- 2009 Christopher R. Crowe, Kong Chen, Derek A. Pociask, John F. Alcorn, Cameron Krivich, Richard I. Enelow, Ted M. Ross, Joseph L. Witztum, and Jay K. Kolls. "Critical Role of IL-17RA in Immunopathology of Influenza Infection." *The Journal of Immunology*. 2009.

